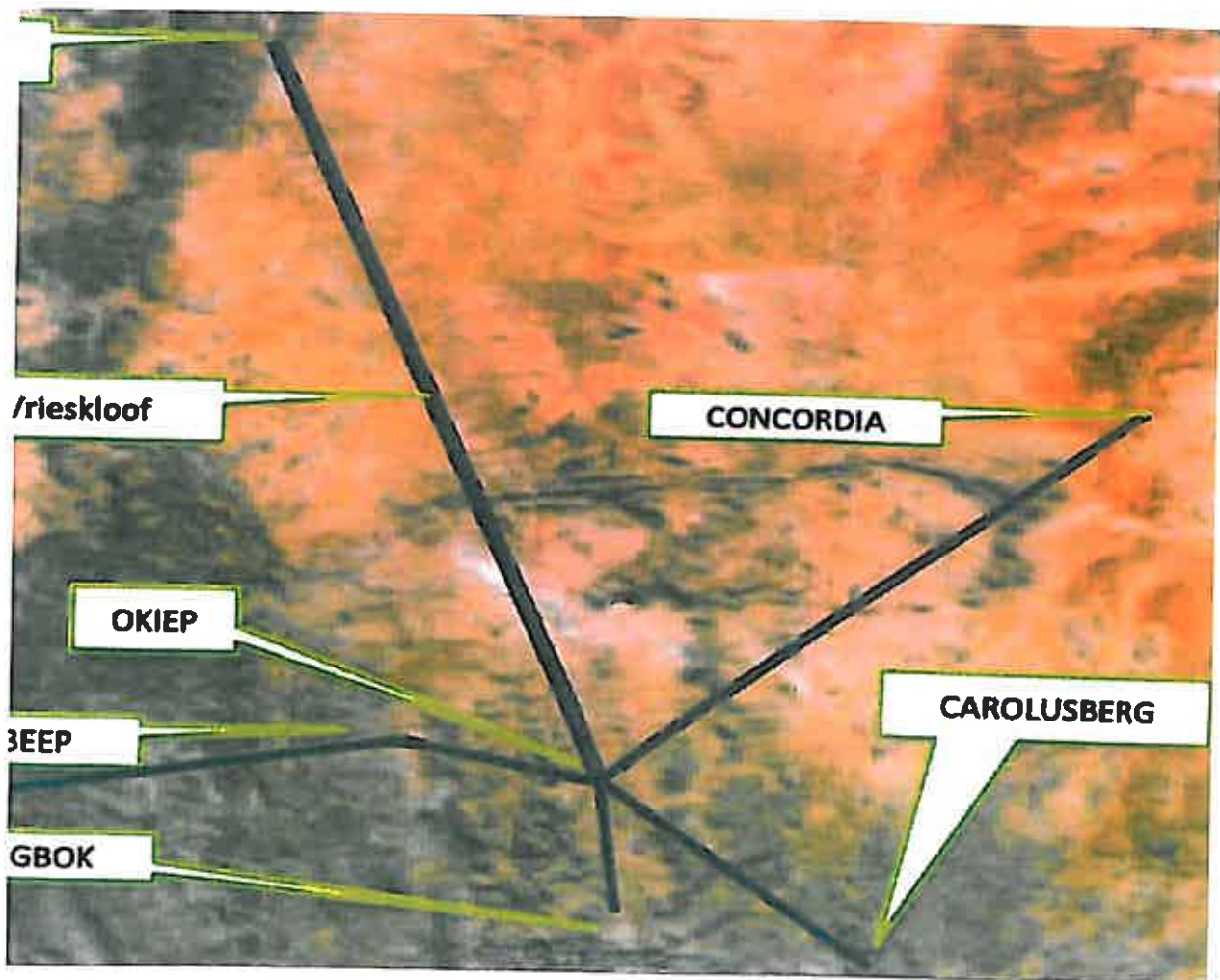


NAMAKWA WATER

(PROPOSED REFURBISHMENT OF NAMAKWA BULK WATER
SUPPLY PIPELINE, CONCORDIA COMMONAGE)



DENC REF NO. NC/BA/NAM/NAM/NAB3/2011
NCP/EIA/0000063/2011

Namakwa water

**DRAFT BASIC ASSESMENT REPORT FOR AUTHORIZATION IN TERMS OF THE
NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF
1998), AS AMENDED AND THE ENVIRONMENTAL IMPACT ASSESSMENT
REGULATIONS, 2010 FOR:**

PREPARED FOR:

Sedibeng Water Board
P/Bag X05
Bultfontein, Free state
9660

PREPARED BY:

EnviroAfrica
P. O. BOX 5367
Helderberg
7135
Fax: (086) 512 0154
Tel: (021) 851 1616



REFURBISHMENT OF NAMAKWA BULK WATER SUPPLY PIPELINE

BASIC ASSESSMENT REPORT

Project applicant:	Sedibeng Water Board		
Business reg. no./ID. no.:	N/a		
Contact person:			
Postal address:	Private Bag X 05, Bothaville, 9660		
Telephone:	(056) 515 0309	Cell:	N/a
E-mail:	ceosec@sedibengwater.co.za	Fax:	(056) 515 0259

Prepared by:

Environmental Assessment Practitioner/Firm:	EnviroAfrica cc		
Business reg. no./ID. no.:	CK 97 46008/23		
Contact person:	Bernard de Witt		
Postal address:	P. O. Box 5367 HELDERBERG, 7135		
Telephone:	021 8511616	Cell:	0824489991
E-mail:	bernard@enviroafrica.co.za	Fax:	0865108904

(For official use only)

File Reference Number:

Application Number:

Date Received:

BASIC ASSESSMENT REPORT

REFURBISHMENT OF NAMAKWA BULK WATER SUPPLY PIPELINE

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2010.

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, 2010 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. The report must be typed within the spaces provided in the form. The size of the spaces provided are 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.
3. Where applicable tick the boxes that are applicable or black out the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. 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.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. 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.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?
 If YES, please complete form XX for each specialist thus appointed:
 Any specialist reports must be contained in Appendix D.

YES X	NO
-------	----

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail:

BACKGROUND

Namakwa Water was a Water Board established in terms of the Water Services Act, Act 108 of 1997. The primary purpose of Namakwa Water Board was the provision of sustainable potable water services to the towns of Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee in the Namaqualand region of the Northern Cape. The water service area is a water scarce area that is characterized by small towns spread over a vast area. The Water Service Authority (WSA) in the area is the Nama Khol Municipality.

Sedibeng Water took over the responsibilities and service area of the Namakwa Water Board on 4 April 2011.

Water is being abstracted from the Orange River at a point near Goodhouse. The raw water abstracted is delivered to the purification and treatment works at Henkries and after treatment, the potable water is distributed via pipelines to the towns as stated above. The total population in the area supplied with potable water is approximately 55 000 people.

CURRENT INFRASTRUCTURE

The current network consists of an extracting facility at the Orange River, a primary flocculation facility at Henkriesmond, a purification plant at Henkries and 4 pumping stations. The network also consists of a number of concrete reservoirs of which the main distribution reservoirs are Eenriet near Steinkopf and Vaalhoek in Okiep. The approximately 200km of distribution pipes have an average age is 38 years. The pipeline varies in size from 520 mm steel to 150 mm asbestos pipeline.

The distribution network is operated by 31 high volume pumps, of which the capacity of some is up to 71 liters per second. These pumps have to be manually operated and monitor 24 hours continuously.

Urgent infrastructure replacements and repairs should be carried out to insure continuous supply. Currently supply is interrupted on a frequent basis leaving the population of 48000 without potable water. As Springbok is the main town in the region it has a hospital, prison, various old age homes and schools with hostel. This area is compounded by the interrupted supply of bulk water services.

The current pipeline was installed in 1973 and its condition deteriorated to such an extent that since 1992 and after parts of the pipeline (20km in total) has to be replaced.

PROPOSED ACTIVITY (Pipeline Refurbishment)

The proposed activity entails the replacement of 2 separate sections of potable water pipelines in the Namakwa region. However as no other sources of potable water are locally available the current pipelines need to be in operation while the replacement is done. The proposed replacement of pipelines will therefore be done in phases to insure the continuation of services.

Pipeline 1: Bulletrap turn-off to Kliphoogte (+-6km)

The approximately 6km long pipeline will be replaced from where the most frequent pipeline failures occurs is at the lowest point where the pressure is at its highest. The planned replacement will start to the north of Bulletrap take-off. The current underground pipeline will be removed and a new pipeline will be installed within the same trench. This will be done to limit the impact on the area surrounding the pipeline as this area is already disturbed. The new pipeline will be of similar material (steel pipe) and size (520mm) to insure that the gravitational feed of the current pipeline is kept. The pipeline will be at least 1 meter underground level and at least 1 meter under the river bed where crossings of rivers or streams might be encountered. The only visible part of the pipeline will be the current air vents and scoured valves that were erected when the pipeline was originally installed.

The supply of water to the communities during the construction phase will be insured by a temporary pipeline that is installed within the servitude of the current pipeline.

Pipeline 2: Okiep to Nababeep (+-11km)

The towns of Nababeep and Kleinsee as well as the mining and other take-off point along the 80km route to Kleinsee

BASIC ASSESSMENT REPORT

receives its water from the reservoir and pump station at Okiep. The water is pumped along 11km 200mm steel and a 250mm asbestos pipeline and is partly above ground and partly below ground. As water has to reach the Little Crest reservoir at an altitude of 1041m above sea level an additional pump station at Garagoup is needed. If this reservoir can be eliminated and an additional take off point can be created along the gravity mains pipeline at Rootwinkel the pipeline can not only be shortened to 7km but the second pump station can also be eliminated.

In addition a new 4 mega liter reservoir will need to be constructed at Nababeep and the pipeline will need to be rerouted along the old railway line. The pipeline diameter will also have to be increased to 300mm. However this will enable the removal of the asbestos and steel pipe line that is currently in use.

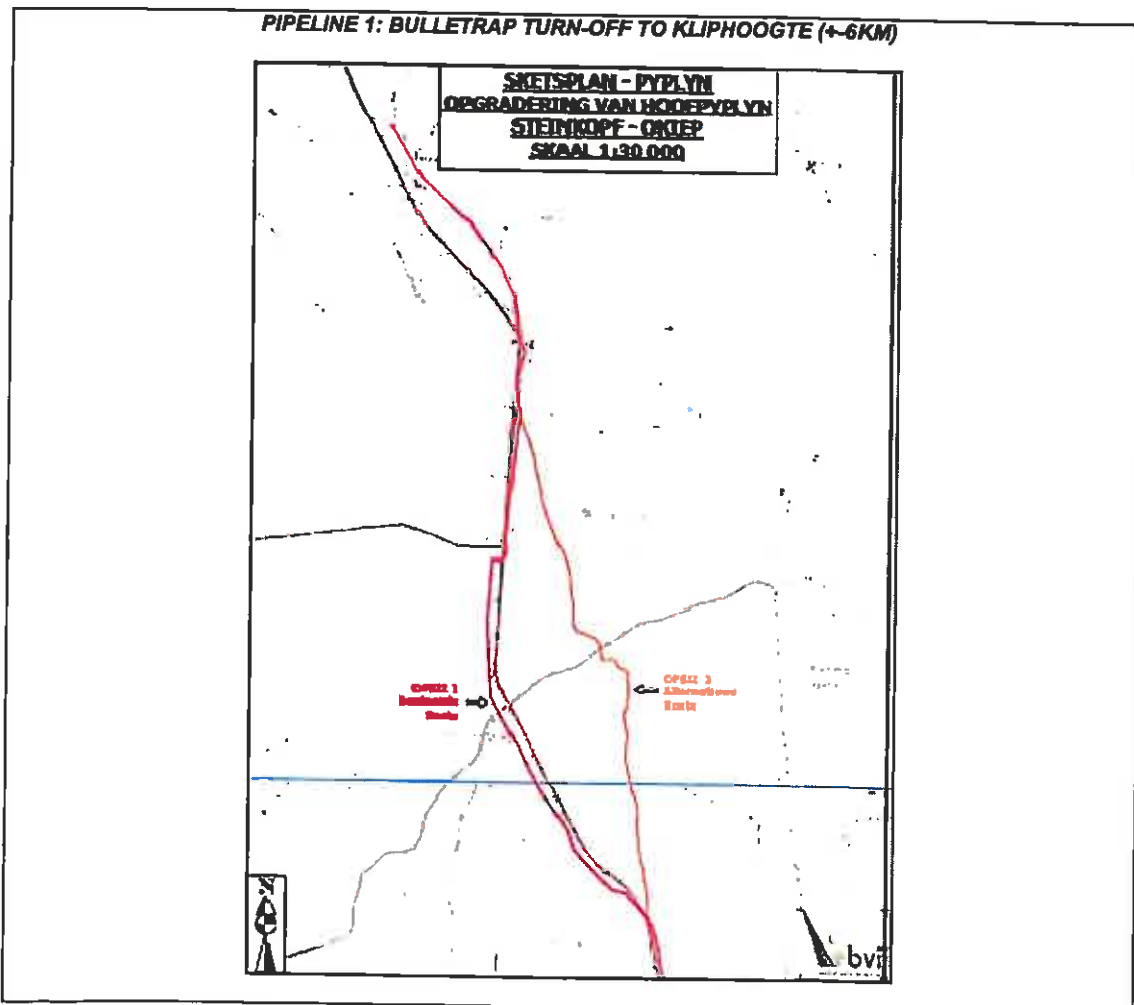
2. FEASIBLE AND REASONABLE ALTERNATIVES

"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. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity 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.

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



BASIC ASSESSMENT REPORT

BIODIVERSITY ASSESSMENT – APPENDIX D4

Alternative 1 (Preferred Alt)

The preferred alternative is to locate the replacement pipeline within the old pipeline trench. This will entail the placement and installation of a temporary pipeline (to ensure continual water supply during the construction of the new pipeline), the excavation and removal of the original pipeline, the placement of the new pipeline and rehabilitation of the construction area (as well as the removal and rehabilitation of the temporary pipeline and its route). In theory this should result in the lowest impact, since the pipeline will be placed within an already disturbed area and service access has already been established along this route. The duration of the impact is considered to be short term (coupled with the construction period). With mitigation, almost all significant impacts could be negated. Was it not for the fact that this route also includes crossing the Skaap River and its tributaries it should have been a clear-cut first choice.

Alternative 2

The second alternative investigated was to place the pipeline to the east of the N7 running along a ridge on a higher elevation. Due to this higher elevation the static pressure of the pipeline will be less which should reduce maintenance. However, the terrain do not allow for trenches, which means that the pipeline will have to be placed above ground (on short pillars). No temporary pipeline will have to be installed and no major excavations will be necessary. Unfortunately, the pipeline will constitute a very conspicuous new and permanent visual feature of the landscape (which at present is still relatively natural with only the N7 and the power lines impacting upon the landscape). Note that the new proposed pipeline will be very conspicuous from the N7.

ARCHEOLOGICAL ASSESSMENT – APPENDIX D2

Findings:

No pre-colonial archaeological remains were documented during the Scoping Impact assessment.

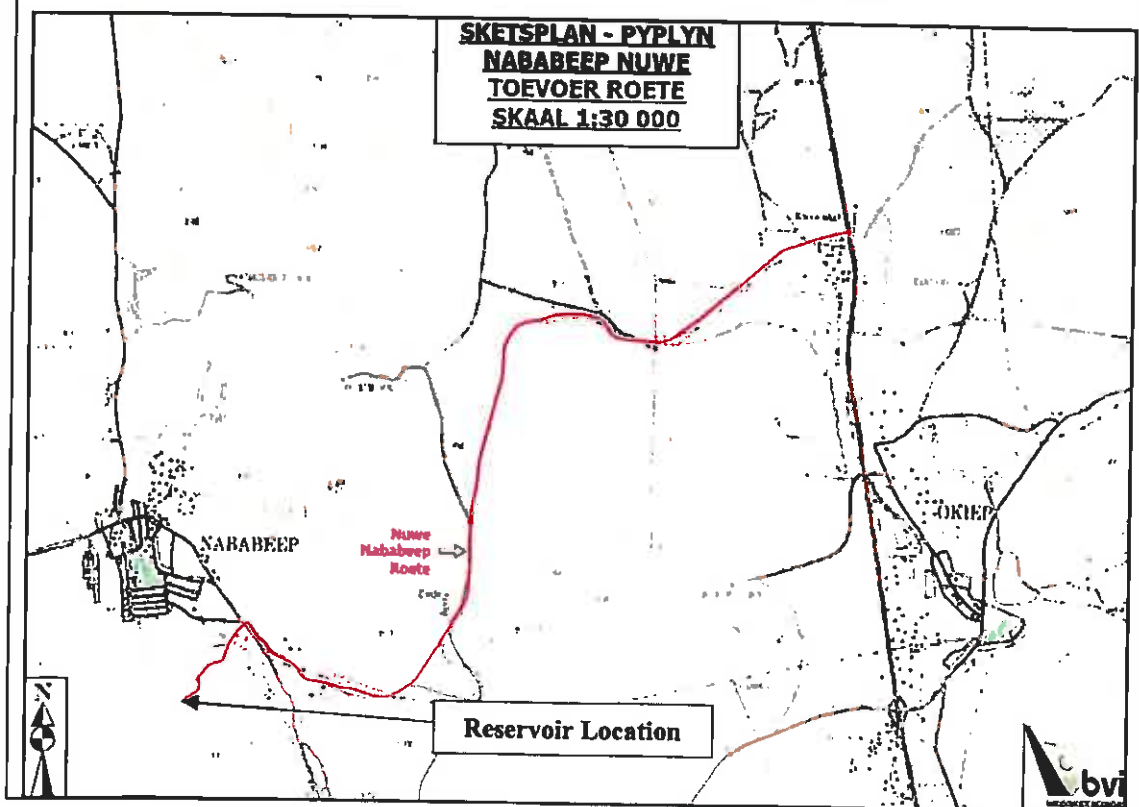
The ruined remains of a late 19th/early 20th Century veewagterhuis (shepherd's hut) was documented about 75m west of the proposed pipeline route. The remains (S29 29.103 E17 51.303) comprise a few boulders scattered in a loose circular arrangement. Some rusted metal, bits of fence wire, pieces of case bottle glass, and a few fragments of Annular ware, Blue and White porcelain and white (undecorated ceramic) was found scattered about. No other cultural remains were found.

Conclusion:

While Alternative 1 (replacement of the existing pipeline west of the N7) is the preferred route, Alternative 2, which follows the alignment of the existing Eskom servitude, is also suitable.

Indications are that Alternative 2 will not impact on any significant archaeological remains. While some Stone Age material may be located, these are likely to be mostly dispersed occurrences.

PIPELINE 2: OKIEP (ROOMWINKEL) TO NABABEEP (~11KM)



BASIC ASSESSMENT REPORT

As an alternative the current pipeline route was investigated but was rejected. The current pipeline runs from the pump station in over a mountain to the town of Nababeep. The current route is not accessible and new roads will have to be built along the pipeline over the mountain. This will cause very high biophysical and visual impacts. The feasibility of replacing the old pipeline on a new route will not only limit the capital cost of construction but also its operational cost.

The new proposed route (preferred) will be running along an existing road on a lower elevation. The pipeline will be constructed above ground directly on top of the existing disintegrated old railway line. The route is directly connected to the main line and runs around the mountain is not only shorter but also eliminate the need for two high pressure pump stations as water will gravity feed into the new reservoir. Due to this lower elevation the static pressure of the pipeline will be less which will enable the pipeline to be lay above ground level for easier maintenance in future.

ARCHEOLOGICAL ASSESSMENT – APPENDIX D3

The existing water supply pipeline between Okiep and Nababeep was installed in 1973 and its condition has deteriorated rapidly since 1992. The proposed project entails the replacement of the aging pipeline between Rooiwinkel and Nababeep. The distance of the pipeline is about 11 km. In addition, a new concrete reservoir will be built near Nababeep that will supply the town with potable water.

The current water supply pipeline is located alongside the historic copper railway line between Rooiwinkel and Nababeep. In the early 1850s copper was discovered at Okiep near Springbok and was initially shipped from Hondeklip Bay to Cape Town. Later, in 1855, the Cape Copper Company built a jetty at Port Nolloth and transported their copper ore from Okiep to Port Nolloth initially by mule trucks, but in 1869 the Cape Copper Company began construction on a railway line and in 1894 the first locomotive 'Clara' was used to transport the ore to the coast. The railway line between Okiep and Nababeep was built as part of this network of railway lines used to transport the ore to the coast.

The railway line between Okiep and Nababeep was discontinued in the 1940s and the railway lines removed sometime in the 1950s and used in the construction of Eskom power lines in region (Mr Christian Carstens Bvl Consulting Engineers pers. comm.). In that time the railway line has fallen into disrepair.

On behalf of the Nama Khoi Municipality, Bvl Consulting Engineers are proposing to lay the new water supply pipeline between Rooiwinkel and Nababeep, directly on top of the old copper railway line. No physical alteration of the railway line will take place however, as the pipes will be laid on pre-cast concrete plinths that will be placed on top of the line.

Findings:

No pre-colonial archaeological remains were documented during the Scoping Impact assessment of the proposed pipeline between Rooiwinkel and Nababeep.

No archaeological remains were found in the footprint area of the proposed concrete reservoir, which is an old abandoned borrow pit.

While most of the historic copper railway line has fallen into disrepair and ruin, smaller sections of the line are still intact and could be 're-used'. Of particular interest for historical archaeology is the presence of four stone built bridge crossings. Apart from Bridge Crossing 1 (S 29 34.135 E 17 50.382) which has almost collapsed, the remaining Bridge Crossings 3 (S 29 34.762 E 17 49.546), and 4 (S 29 35.288 E 17 49.432) are well preserved and in very good condition. Bridge Crossing 2, unfortunately, was not visited due to time constraints. The stone built bridges are quite intricate and have been built using a combination of dry packed shale and sandstone and rough daga (or cement).

The locomotive 'Clara' final 'resting place' is at the Nababeep Museum.

Conclusion:

Indications are that the proposed project is viable, but extreme care must be taken to protect the integrity of the historic railway line and particularly the Bridge Crossings.

The proposed project does present opportunities in order for this to be achieved.

Recommendations:

With regard to the proposed construction of a water supply pipeline between Rooiwinkel and Nababeep and the proposal to lay the new pipeline on top of the historic copper railway line (by means of pre-cast concrete plinths), the following recommendations are made:

1. The heritage practitioner supports the proposal with the following provisions:
2. A detailed recording (photographic and technical) of all the Bridge Crossings must be made by a suitably qualified heritage practitioner.
3. A more detailed account of the history of the railway line between Okiep and Nababeep must be done.
4. Bvl Consulting Engineers have indicated their willingness to help to rebuild Bridge Crossing 1, in consultation with a specialist heritage consultant.
5. No ruins, structures or features older than 60 years may be destroyed, altered, or renovated without a permit issued by Heritage Northern Cape.
6. A copy of this report must be submitted to the South African Heritage Resources Agency in Cape Town (Att Ms M. Galimberti PO Box 4367, Cape Town, 8000), and Northern Cape Heritage (Att Mr J. Sinthumule Private Bag X5004, Kimberley, 8300. Phone 053 807 4710 e-mail jsinthumule@ncpg.gov.za).

BASIC ASSESSMENT REPORT

THE NO-GO ALTERNATIVE:

Various studies have been under taken for alternative sources of potable water for the Nama Khoi Municipality. The latest study was conducted by the Department of Water Affairs, Kimberley, 2011 that lead to the conclusion that water from the Orange river is the only source of sufficient and sustainable quantity. This source has been utilized since 1973 when the purification works was built at Henkries for the sole purpose of the supply of potable water to the area. However as the infrastructure has reach the end as its useful live it has to be replaced now.

If the pipeline is not refurbished, communities and towns in the area will suffer more cut offs from the only potable water source in the area, which could cause detrimental effects. In addition major losses in water will occur if the pipeline deterioration and leakages are not properly repaired.

3. ACTIVITY POSITION

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.

List alternative sites if applicable.

Alternative:

Alternative S1 (preferred or only route alternative)
Alternative S2 (if any)
Alternative S3 (if any)

Latitude (S)

Longitude (E):

Latitude (S)	Longitude (E)

IN THE CASE OF LINEAR ACTIVITIES:

Pipeline 1: Bulletrap turn-off to Kliphooigte (+6km)

Alternative:

Alternative S1 (preferred or only route alternative)

- Starting point of the activity (Bulletrap)
- Middle point of the activity
- End point of the activity (Near Okiep)

Alternative S2 (if any)

- Starting point of the activity (Bulletrap)
- Middle point of the activity
- End point of the activity (Near Okiep)

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):

Longitude (E):

Latitude (S)	Longitude (E)
29° 27.258'S	17° 50.390'E
29° 29.108'S	17° 49.935'E
29° 31.127'S	17° 51.541'E

Latitude (S)	Longitude (E)
29° 27.258'S	17° 50.390'E
29° 29.114'S	17° 51.874'E
29° 31.127'S	17° 51.541'E

Latitude (S)	Longitude (E)

Pipeline 2: Okiep to Nababeep (+11km)

Alternative:

Alternative S1 (preferred or only route alternative)

- Starting point of the activity (Rooiwinkel)
- Middle point of the activity
- End point of the activity (Nababeep)

Alternative S2 (if any)

- Starting point of the activity
- Middle point of the activity

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity

Alternative S4 (if any)

- Starting point of the activity
- Middle point of the activity

Latitude (S):

Longitude (E):

Latitude (S)	Longitude (E)
29° 33.645'S	17° 52.015'E
29° 34.737'S	17° 49.524'E
29° 36.482'S	17° 47.444'E

Latitude (S)	Longitude (E)

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.

¹ "Alternative S.." refer to site alternatives.

BASIC ASSESSMENT REPORT

4. PHYSICAL SIZE OF THE ACTIVITY

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

Pipeline 1: Bulletrap turn-off to Kliphoogte (+6km)

Alternative:

Alternative A1² (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

(6km x 3m) = 18 000m²

(6km x 3m) = 18 000m²

m

Length of the activity:

+6000 m

+6000 m

m

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

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

N/a m²

N/a m²

m

Pipeline 2: Oklep to Nababeep (+-11km)

Alternative:

Alternative A1³ (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

(11km x 3m) = 33 000m²

m

m

Length of the activity:

+/- 11 000 m

m

m

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

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the site/servitude:

N/a m²

m

m

5. SITE ACCESS

Does ready access to the site exist?

If NO, what is the distance over which a new access road will be built

YES X	NO
m	

Describe the type of access road planned:

N/a

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.

6. SITE OR 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:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;

² "Alternative A." refers to activity, process, technology or other alternatives.

³ "Alternative A." refers to activity, process, technology or other alternatives.

BASIC ASSESSMENT REPORT

- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invaded with alien species);
- 6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.10 the positions from where photographs of the site were taken.

7. 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 form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 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.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

- What is the expected capital value of the activity on completion?
- What is the expected yearly income that will be generated by or as a result of the activity?
- Will the activity contribute to service infrastructure?
- Is the activity a public amenity?
- How many new employment opportunities will be created in the development phase of the activity?
- What is the expected value of the employment opportunities during the development phase?
- What percentage of this will accrue to previously disadvantaged individuals?
- How many permanent new employment opportunities will be created during the operational phase of the activity?
- What is the expected current value of the employment opportunities during the first 10 years?
- What percentage of this will accrue to previously disadvantaged individuals?

R 45 000 000
R 30 000 000
YES X NO
YES X NO
+100
R 5 000 000
100%
-+10
R 0
100%

9(b) Need and desirability of the activity

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

The current pipeline is already older than 35 years and has therefore deteriorated to such an extent that frequent pipeline failures occur. Large volumes of water have also been lost due to leaks along the pipeline. This resulted in the entire population of 45 000 within the Nama Khoi Municipality being left without any potable water as this is the only source of potable water available. The overall project will entail the replacement of the entire +200km pipeline in sections of which this +6 km pipeline from Bulletrap towards Okiep and the 11km pipeline from Rooiwinkel to Nababeep is part of this project.

Indicate any benefits that the activity will have for society in general:

The replacement is essential for the continuous supply of potable water to the surrounding community.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The pipeline runs along an uninhabited area where the only activity is subsistence farming. The local farms extract water from wells and boreholes and watering points supply along the pipeline.

With the proposed refurbishment of the existing degraded bulk water supply pipeline the following towns will all be serviced with potable water: Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee in the Namaqualand region of the Northern Cape.

BASIC ASSESSMENT REPORT

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES X	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES X	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES X	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO X
6.	Will the proposed land use / development set a precedent?	YES	NO X
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO X
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO X
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES X	NO
2.	Explain:		
The replacement is essential for the continuous supply of potable water to the surrounding community.			
Will the land use / development have any benefits for the local communities where it will be located?			
3.	Explain:	YES X	NO
4.	<p>The pipeline runs along an uninhabited area where the only activity is subsistence farming. The local farms extract water from wells and boreholes and watering points supply along the pipeline.</p> <p>With the proposed refurbishment of the existing degraded bulk water supply pipeline the following towns will all be serviced with potable water: Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee in the Namaqualand region of the Northern Cape.</p>		

10. 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:	Administering authority:	Date:
1) Land Use Planning Ordinance (LUPO)	Local Authority	To follow the EA
2) Heritage Approval submitted	SAHRA (Northern Cape)	Submitted
3) National Environmental Management Act (NEMA) and the Environmental Impact Assessment (EIA) Regulations 2010.	DENC	This App
4) General Authorization with regards to river crossings	Department of Water Affairs	To be submitted

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES X	NO
m ³	

If yes, what estimated quantity will be produced per month?

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

Very little are foreseen, for most will be reused to cover the existing pipeline once the new 6km pipeline is constructed within the same trench. The 11km pipeline will be aboveground causing no excavation. Spoil material left over after closing up of the trenches will be disposed of in old worked out borrow pits belonging to the local municipality.

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

All domestic type solid waste, builders' rubble etc will be disposed of at Nama Khoi Municipality Solid Waste Disposal Site.

Will the activity produce solid waste during its operational phase?

YES	NO X
m ³	

If yes, what estimated quantity will be produced per month?

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

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

BASIC ASSESSMENT REPORT

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 relevant legislation? YES NO

If yes, inform the competent authority and request a change to an application for scoping and EIA.

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.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? YES NO X

If yes, what estimated quantity will be produced per month? m³

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 X

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:

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere? YES NO X

If yes, is it controlled by any legislation of any sphere of government? 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.

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

The project itself will not be producing any emissions, but during the construction, earth moving machinery will be employed for the duration of the construction phase which will produce diesel smoke and carbon monoxide as all internal combustion engines do.

11(d) Generation of noise

Will the activity generate noise? YES NO X

If yes, is it controlled by any legislation of any sphere of government? YES NO X

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.

If no, describe the noise in terms of type and level:

The project itself will not be producing any noise, but during the construction, earth moving machinery will be employed for the duration of the construction phase which will produce engine noise. The activity is very remote and will therefore not impact on any people residing in the area.

12. 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
	X				

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:

Does the activity require a water use permit from the Department of Water Affairs? litres
 YES NO X

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

13. ENERGY EFFICIENCY

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

The pipeline to be replaced is a gravitational feed from a main reservoir. The design for the replacement will also be of the same size to insure that energy available is utilize and no additional energy will be needed

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

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 C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):

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

3. Has a specialist been consulted to assist with the completion of this section?
 If YES, please complete form XX for each specialist thus appointed:
 All specialist reports must be contained in Appendix D.

YES	NO
-----	----

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Pipeline 1: Bulletrap turn-off to Kliphooft (+6km)

Due to the activity being a linear development – some areas are flat and others are a bit more elevated along the +6km route.

Alternative S1:

Flat X	1:50 – 1:20 X	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 X	1:50 – 1:20 X	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
------	-------------	-------------	-------------	--------------	-------------	------------------

Pipeline 2: Okiep to Nababeep (+11km)

Due to the activity being a linear development – some areas are flat and others are a bit more elevated along the +11km route.

Alternative S1:

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

Alternative S2 (if any):

Flat X	1:50 – 1:20 X	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
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley X (11km)
- 2.5 Open valley X (6km)
- 2.6 Plain
- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

BASIC ASSESSMENT REPORT

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

Both pipeline routes have to cross a series of rivers found along the route.

	Alternative S1:		Alternative S2			
Shallow water table (less than 1.5m deep)	YES	NO X	YES	NO X		
Dolomite, sinkhole or doline areas	YES	NO X	YES	NO X		
Seasonally wet soils (often close to water bodies)	YES X	NO	YES X	NO		
Unstable rocky slopes or steep slopes with loose soil	YES	NO X	YES	NO X		
Dispersive soils (soils that dissolve in water)	YES	NO X	YES	NO X		
Soils with high clay content (clay fraction more than 40%)	YES	NO X	YES	NO X		
Any other unstable soil or geological feature	YES	NO X	YES	NO X		
An area sensitive to erosion	YES	NO X	YES	NO X		

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).

Biodiversity Assessment Appendix D4

Topography:

The study area follows the N7 through a small valley or "poort" in-between the Rietberg to the east and Ratelpoort to the west. The topography in this area slopes gently towards the centre of this valley (a bit steeper on the eastern side). The elevation on site varies between 650m (in the valley bottom) to about 900 m along the slopes. A number of drainage lines (tributaries) are present on site, all of which drains into the Skaap River at the valley bottom.

Soils:

Soils are described as soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part or most of the landscape. In some areas it may have restricted soil depth, excessive drainage, high erodibility, low natural fertility. May be water-intake areas, but generally with restricted land use options.

Rivers:

The non-perennial Skaap River runs along the bottom of the valley, with drainage channels and tributaries crisscrossing the study area. During the 2004 National Spatial Biodiversity Assessment, the Skaap River system has been classified as an endangered river system, which places a special emphasis on the management and protection of this river system.

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

4.1 Natural veld – good condition^E (11km & 6km)

4.2 Natural veld – scattered aliens^E

4.3 Natural veld with heavy alien infestation^E

4.4 Veld dominated by alien species^E

4.5 Gardens

4.6 Sport field

4.7 Cultivated land

4.8 Paved surface

4.9 Building or other structure X (11km = build over railway line & 6km = build within existing pipeline trench)

4.10 Bare soil X (11km & 6km)

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 X (11km & 6km)	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
---	---	--	--	---------

BASIC ASSESSMENT REPORT

Sport field	Cultivated land	Paved surface	Building or other structure X (11km = build over railway line & 6km = build within existing pipeline trench)	Bare soil X(11km & 6km)
-------------	-----------------	---------------	---	-------------------------

If any of the boxes marked with an "X" 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.

Biodiversity Assessment Appendix D4

Land use & Cover:

The Google image of the area, confirmed by the site visit, shows that the area is still almost completely natural (apart from the N7 which bisects the study area from north to south, smaller 2-spour tracks found in the area and the Power lines running almost parallel to the N7). No other infrastructure or land-use has been observed. Overall most of the study area is largely natural covered by natural vegetation with the Skaap River and tributaries also present. No intensive agricultural practices (apart from possible grazing) have been observed. The surrounding areas show the same largely natural veld extending in almost all directions.

Vegetation:

In accordance with the 2006 Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) two broad vegetation types are expected in the study area, namely Namaqualand Klipkoppe Shrubland and Namaqualand Blomveld both classified as being Least Threatened.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does 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:

- 5.1 Natural area X
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial^{AN}
- 5.9 Heavy industrial^{AN}
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or siltmes dam^A
- 5.14 Quarry, sand or borrow pit X (Nabapeep Reservoirs)
- 5.15 Dam or reservoir X (Reservoirs located at Nabapeep)
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N X (old train station not in use anymore)
- 5.23 Railway line^N X (old railway not in use anymore)
- 5.24 Major road (4 lanes or more)^N X (N7 lies to the east of the site)
- 5.25 Airport^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station^N
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture X
- 5.34 River, stream or wetland X (Pipeline crosses the river in several places)
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge X (the 11km pipeline runs between mountains)
- 5.37 Museum (Nabapeep Museum Clara)
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site (stone bridges and certain ruins of the railway line)
- 5.42 Other land uses (describe)

BASIC ASSESSMENT REPORT

If any of the boxes marked with an "X" are ticked, how this impact will / be impacted upon by the proposed activity.

If YES, specify and explain:	5.22 Train station or shunting yard "X" (old train station not in use anymore) 5.23 Railway line "X" (old railway not in use anymore) Special care must be taken in the vicinity of sections of the railway line and train station – see Archaeological Assessment Appendix D3)
------------------------------	--

If any of the boxes marked with an "N/A" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:	N/a
------------------------------	-----

If any of the boxes marked with an "X" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:	N/a
------------------------------	-----

6. 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 X	NO
	Uncertain	
	Please refer to the Archaeological Assessment Appendix D3 for the 11km pipeline (Okiep – Nababeep)	

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

Briefly explain the findings of the specialist:

ARCHEOLOGICAL ASSESSMENT – APPENDIX D3
<p>The existing water supply pipeline between Okiep and Nababeep was installed in 1973 and its condition has deteriorated rapidly since 1992. The proposed project entails the replacement of the aging pipeline between Rooiwinkel and Nababeep (Figure 2). The distance of the pipeline is about 11 kms. In addition, a new concrete reservoir will be built near Nababeep that will supply the town with potable water.</p> <p>The current water supply pipeline is located alongside the historic copper railway line between Rooiwinkel and Nababeep. In the early 1850s copper was discovered at Okiep near Springbok and was initially shipped from Hondeklip Bay to Cape Town. Later, in 1855, the Cape Copper Company built a jetty at Port Nolloth and transported their copper ore from Okiep to Port Nolloth initially by mule trucks, but in 1869 the Cape Copper Company began construction on a railway line and in 1894 the first locomotive 'Clara' was used to transport the ore to the coast. The railway line between Okiep and Nababeep was built as part of this network of railway lines used to transport the ore to the coast.</p> <p>The railway line between Okiep and Nababeep was discontinued in the 1940s and the railway lines removed sometime in the 1950s and used in the construction of Eskom powerlines in region (Mr Christian Carstens Bvi Consulting Engineers pers. comm.). In that time the railway line has fallen into disrepair.</p> <p>On behalf of the Nama Khoi Municipality, Bvi Consulting Engineers are proposing to lay the new water supply pipeline between Rooiwinkel and Nababeep, directly on top of the old copper railway line. No physical alteration of the railway line will take place however, as the pipes will be laid on pre-cast concrete plinths that will be placed on top of the line.</p> <p>Findings: No pre-colonial archaeological remains were documented during the Scoping Impact assessment of the proposed pipeline between Rooiwinkel and Nababeep.</p> <p>No archaeological remains were found in the footprint area of the proposed concrete reservoir, which is an old abandoned borrow pit.</p> <p>While most of the historic copper railway line has fallen into disrepair and ruin, smaller sections of the line are still intact and could be 're-used'. Of particular interest for historical archaeology is the presence of four stone built bridge crossings. Apart from Bridge Crossing 1 (S 29 34.135 E 17 50.382) which has almost collapsed, the remaining Bridge Crossings 3 (S 29 34.762 E 17 49.546), and 4 (S 29 35.288 E 17 49.432) are well preserved and in very good condition. Bridge Crossing 2, unfortunately, was not visited due to time constraints. The stone built bridges are quite intricate and have been built using a combination of dry packed shale and sandstone and rough daga (or cement).</p> <p>The locomotive 'Clara' final 'resting place' is at the Nababeep Museum</p> <p>Conclusion: Indications are that the proposed project is viable, but extreme care must be taken to protect the integrity of the historic railway line and particularly the Bridge Crossings. The proposed project does present opportunities in order for this to be achieved.</p> <p>Recommendations: With regard to the proposed construction of a water supply pipeline between Rooiwinkel and Nababeep and the proposal to lay the new pipeline on top of the historic copper railway line (by</p>

BASIC ASSESSMENT REPORT

means of pre-cast concrete plinths), the following recommendations are made:

1. The heritage practitioner supports the proposal with the following provisions:
2. A detailed recording (photographic and technical) of all the Bridge Crossings must be made by a suitably qualified heritage practitioner.
3. A more detailed account of the history of the railway line between Oklep and Nababeep must be done.
4. Bvi Consulting Engineers have indicated their willingness to help to rebuild Bridge Crossing 1, in consultation with a specialist heritage consultant.
5. No ruins, structures or features older than 60 years may be destroyed, altered, or renovated without a permit issued by Heritage Northern Cape.
6. A copy of this report must be submitted to the South African Heritage Resources Agency in Cape Town (Att Ms M. Gallimberti PO Box 4367, Cape Town, 8000), and Northern Cape Heritage (Att Mr J. Sinthumule Private Bag X5004, Kimberley, 8300. Phone 053 807 4710 e-mail jsinthumule@ncpg.gov.za).

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 X	NO
YES	NO X

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and
 - (v) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any Gazette that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that

BASIC ASSESSMENT REPORT

should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application 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 this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

Namakwa District Municipality Department of Environmental and Nature Conservation: Directorate Department of Agriculture Department of Water Affairs SAHRA Department of Mineral & Energy Affairs
--

List of authorities from whom comments have been received:

--

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or 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.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES X	NO
-------	----

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

A Comment was received from Mr PJ Fourie Manager at the Okiep Copper Company. Other...

BASIC ASSESSMENT REPORT

PPP SUMMARY (APPENDIX E)

Public Participation was conducted for this proposed subdivision in accordance with the requirements outlined in Regulation 54 and 55 and 56 of the NEMA EIA Regulations, as well as the Guideline on Public Participation:

As such each subsection of Regulation 54 contained in Chapter 6 of the NEMA EIA Regulations will be addressed separately to thereby demonstrate that all potential Interested and Affected Parties (I&AP's) were notified of the proposed development.

R54 (2) (a) (I)&(II):

R54 (2) (a) (I):

An onsite poster was displayed on the property fence at the proposed site. The posters contained all details as prescribed by R56 (3) (a) & (b) and the size of the onsite poster were 60cm by 42cm as prescribed by section 56 (4) (a).

R54 (2) (a) (II): All property owners and Affected parties for all alternatives has been informed.

R54 (2) b):

R54 (2) (b) (i): A mail drop containing details of the proposed development was sent to the person/s in control of the land, namely Nama Khoi Municipality, Mora Plase (Pty) Ltd. and Mr. O.R. Meijer. The mail drop was sent on 2 June 2011 and informed the landowner of the proposed activity with the relevant contact details to comment or query the project on or before 12 July 2011, a period of more than 40 days.

R54 (2) (b) (II): N/a

R54 (2) (b) (iii): A mail drop containing details of the proposed development was sent to the neighboring property owners of the site. The mail drop was done on 2 June 2011 and informed the public of the proposed activity with the relevant contact details to comment or query the project on or before 12 July 2011, a period of more than 40 days. Refer to Appendix F(I).

R54 (2) (b) (iv): A copy of the mail drop was sent to the mayor and councilor Nama Khoi Municipality, for the wards in which the site is situated, with a 40-day period for comment.

R54 (2) (b) (v): A copy of the mail drop was sent to the Municipal Manager for both the Nama Khoi Municipality and the Namakwa District Municipality, with a 40-day period for comments.

R54 (2) (b) (vi): A copy of the mail drop was sent to the following other organs of state having jurisdiction in respect of any aspect of the activity:

Department Environment and Nature conservation NC (Mr. Wessel Jacobs)
Department Environment and Nature Conservation NC (Ms. Lucille Caarsten)
SAHRA NC (The Provincial Manager)
NC Dept. Agriculture & Land Reform (The head of the Department)
Department of Water Affairs NC (Mr. L.J. Snyders)

R54 (2) (c) (i): An advertisement was displayed in the local newspaper, Die Plattelander, on 3 June 2011. The advertisement contained the same details as the posters and the commenting period is up until 08 July 2011.

R54 (2) (d): The activity would not have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken and as such no advertisement was displayed in a provincial or national newspaper.

R54 (7):

R54 (7) (a): All relevant facts in respect of the application were made available to potential I&AP's.

R54 (7) (b): I&AP's were given more than a 40-day period to comment on the proposed application during the first round of public participation.

R55 (1) (a), (b), (c) and R56(2): A register of Interested and affected parties was opened, maintained and is available to any person requesting access to the register in writing.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, 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. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

Issues that should be considered regarding the closure and rehabilitation of the Okiep Copper Company Mine:

- 1) Current Rehabilitation Plans of the Mine
- 2) Tenements of the Mine
- 3) Possible undermining of areas where the pipeline is planned for.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

The issues mentioned above will not directly impact the development of the pipeline refurbishment. Careful consideration should however be taken in regards to the engineering design and the construction activities not to interfere or impact on previous activities as a result of the Copper Mine at Okiep.

2. 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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) 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.

PIPELINE 1: BULLETRAP TURN-OFF TO KLIPHOOGTE

ALTERNATIVE 1 (PREFERRED ALTERNATIVE AS DISCUSSED THROUGHOUT THIS REPORT - PIPELINE ROUTE, WEST OF THE N7 REPLACING EXISTING PIPELINE)

Direct Impacts: Planning and Design, Construction and Operation

• **Biophysical Impacts: (Biodiversity Assessment – Appendix D4)**

The preferred alternative is to locate the replacement pipeline within an existing old pipeline trench. This will entail the placement and installation of a temporary pipeline (to ensure continual water supply during the construction of the new pipeline), the excavation and removal of the original pipeline, the placement of the new pipeline and rehabilitation of the construction area (as well as the removal and rehabilitation of the temporary pipeline and its route).

In theory this should result in the lowest impact, since the pipeline will be placed within an already disturbed area and service access has already been established along this route.

The duration of the impact is considered to be short term (coupled with the construction period).

Direct impact to vegetation would be moderate-low, due to the fact that this area was previously disturbed in combination with the status of the vegetation itself. NO operational impacts will take place once the pipeline has been constructed.

Mitigation includes the following:

- The implementation of an Environmental Management Program (EMP) during construction and operation.
- The construction areas should be clearly demarcated and should aim for the absolute minimum disturbance footprint.
- Only existing access routes should be used where-ever possible.
- The Contractor must take appropriate and active measures to prevent erosion resulting from construction and operation, as well as storm water control measures.
- Prior to construction, the vegetation and topsoil along the excavation route should be removed and stored separately from the subsoil (to be re-used during rehabilitation after construction). The topsoil and vegetation should be replaced over the disturbed soil to provide a source of seed and a seed bed to encourage re-growth of the species removed during construction. All indications show that the natural vegetation should re-establish itself on the disturbed areas, which will lessen the overall impact significantly.
- Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.

Re: Red data Species:

- A botanical scan of the approved route should be done by a botanist, during which all significant plant species should be identified.

BASIC ASSESSMENT REPORT

- Where encountered important species as well as other viable species such as geophytes can be saved through a search & rescue project before construction of the pipe-line starts.
- Such species can be relocated to unaffected areas in the same habitat nearby or kept in cultivation for re-establishment in the disturbed areas once construction of the pipeline is completed.

With this mitigation the biophysical impact of the proposed development on the receiving environment will be low.

- **River impact:**

Regarding certain sections of the pipeline that needs to cross the River in the development route, special caution is required. No pollution of building rubble or domestic waste during the construction phase is allowed. Precautionary measures should be taken not to damage the banks of the river when constructing the pipeline across or underneath the river. Method statements should be prepared for each individual river crossing, which would require different measures due to different circumstances. The ECO onsite must inspect each method statement prior construction. Inspection should also take place during construction. With the implementation of the above mitigation measures the river impact of the proposed development during construction will be medium-low.

- **Noise impact:**

The pipeline has no noise impact during operation.

Noise impact will thus be limited to normal construction noise. The impact is likely to occur, but the extent is limited and the duration short term. Mitigation includes the intermittent nature of the construction activities, construction only taking place during normal working hours, the remote location of the pipeline and the N7 traffic noise in close proximity to sections of the pipeline route. This will result in the noise impact of the proposed development during construction to be low.

- **Impact on cultural-historical aspects: (Archaeological Assessment – Appendix D2)**

Findings:

No pre-colonial archaeological remains were documented during the Scoping Impact assessment. The ruined remains of a late 19th/early 20th Century veewagterhuis (shepherd's hut) was documented about 75m west of the proposed pipeline route. The remains (S29 29.103 E17 51.303) comprise a few boulders scattered in a loose circular arrangement. Some rusted metal, bits of fence wire, pieces of case bottle glass, and a few fragments of Annular ware, Blue and White porcelain and white (undecorated ceramic) was found scattered about. No other cultural remains were found.

Given the nature of the development being within an existing pipeline trench and the small scale of the proposed development, it is unlikely that archaeological artifacts or remains will be disturbed during the construction phase of the proposed project. However, should any human burials be uncovered or exposed during earthworks or excavations the nature of the impact would be negative. The impact is unlikely to occur, and the extent is limited and the duration short term.

Should any human burials or archaeological materials (fossils, bones, artefacts etc.) be uncovered or exposed during earthworks or excavations, they must immediately be reported to the SAHRA NC. An archaeologist will be required to remove the remains at the expense of the applicant.

With this mitigation in place the impact of the proposed development on cultural-historical aspects will be low-negligible.

- **Visual impact:**

The proposed pipeline route will be within an existing pipeline trench that will be covered after construction by topsoil on order for natural vegetation rehabilitation to take place. Therefore the proposed development will be visible during the construction phase, but will be temporary and short-lived. During the operational phase no impacts will be visible.

Mitigation includes the following:

- The implementation of an Environmental Management Program (EMP) during construction and operation.
- The construction areas should be clearly demarcated and should aim for the absolute minimum disturbance footprint.
- Only existing access routes should be used where-ever possible.
- The Contractor must take appropriate and active measures to prevent erosion resulting from construction and operation, as well as storm water control measures.
- Prior to construction, the vegetation and topsoil along the excavation route should be removed and stored separately from the subsoil (to be re-used during rehabilitation after construction). The topsoil and vegetation should be replaced over the disturbed soil to provide a source of seed and a seed bed to encourage re-growth of the species removed during construction. All indications show that the natural vegetation should re-establish itself on the disturbed areas, which will lessen the overall impact significantly.
- Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.

With the above described mitigation measures, the expected visual impact of the development will be of low significance.

BASIC ASSESSMENT REPORT

Indirect Impacts:

- **Socio-economic impacts:**

The development will have a positive impact on the socio-economics during construction and operation. During construction it will result in short term duration temporary employment opportunities. During operation the pipeline will provide potable water to numerous small towns and farmers in the Namakwa region.

The proposed socio-economic impact of the pipeline refurbishment will thus be of a high positive significance.

- **Cumulative impacts:** There will be no cumulative impacts.

ALTERNATIVE 2 (NEW PIPELINE ROUTE, EAST OF THE N7):

Direct impacts: Planning and Design, Construction and Operation

- **Biophysical Impact: (Biodiversity Assessment – Appendix D4)**

The second alternative investigated was to place the pipeline to the east of the N7 running along a ridge on a higher elevation. Due to this higher elevation the static pressure of the pipeline will be less which should reduce maintenance. However, the terrain do not allow for trenches, which means that the pipeline will have to be placed above ground (on short pillars). No temporary pipeline will have to be installed and no major excavations will be necessary. Additional service roads will however need to be established in portions of the area, and the existing (two-spoor) roads might have to be improved causing additional disturbances to the landscape.

Direct Impact to the vegetation would again be moderate to low. The reason being that no excavation will be needed and the pipeline would be laid on top of the soil (placed on pillars). The physical footprint would in fact be lower than for Alternative 1.

Mitigation includes the following:

- The implementation of an Environmental Management Program (EMP) during construction and operation.
- The construction areas should be clearly demarcated and should aim for the absolute minimum disturbance footprint.
- Only existing access routes should be used where-ever possible.
- The Contractor must take appropriate and active measures to prevent erosion resulting from construction and operation, as well as storm water control measures.
- No vegetation or topsoil should be removed. However, the route should be chosen to minimize the impact on any significant plant species and pillars should be placed to minimize the overall impact of the pipeline route.
- Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.

Re: Red data Species:

- A botanical scan of the approved route should be done by a botanist, during which all significant plant species should be identified.
- Where encountered important species as well as other viable species such as geophytes can be saved through a search & rescue project before construction of the pipe-line starts.
- Such species can be relocated to unaffected areas in the same habitat nearby or kept in cultivation for re-establishment in the disturbed areas once construction of the pipeline is completed.
- The pipeline should further as a first option be open to slight alterations to allow for minimum disturbance to such significant species and then search and rescue.

With this mitigation the biophysical impact of the proposed development on the receiving environment will be low.

- **River impact:**

Regarding certain sections of the pipeline that needs to cross the River in the development route, special caution is required. No pollution of building rubble or domestic waste during the construction phase is allowed. Precautionary measures should be taken not to damage the banks of the river when constructing the pipeline across or underneath the river. Method statements should be prepared for each individual river crossing, which would require different measures due to different circumstances. The ECO onsite must inspect each method statement prior construction. Inspection should also take place during construction. With the implementation of the above mitigation measures the river impact of the proposed development during construction will be medium-low.

- **Noise impact:**

The pipeline has no noise impact during operation. Noise impact will thus be limited to normal construction noise. The impact is likely to occur, but the extent is limited and the duration short term. Mitigation includes the intermittent nature of the construction activities, construction only taking place during normal working hours, the remote location of the pipeline and the N7 traffic noise in close proximity to sections of the pipeline route. This will result in the noise impact of the proposed development during construction to be low.

BASIC ASSESSMENT REPORT

- **Impact on cultural-historical aspects: (Archaeological Assessment – Appendix D2)**

Findings:

No pre-colonial archaeological remains were documented during the Scoping Impact assessment. The ruined remains of a late 19th/early 20th Century veewagterhuis (shepherd's hut) was documented about 75m west of the proposed pipeline route. The remains (S29 29.103 E17 51.303) comprise a few boulders scattered in a loose circular arrangement. Some rusted metal, bits of fence wire, pieces of case bottle glass, and a few fragments of Annular ware, Blue and White porcelain and white (undecorated ceramic) was found scattered about. No other cultural remains were found.

Given the nature of the development being above ground, placed on pillars and the small scale of the proposed development, it is unlikely that archaeological artifacts or remains will be disturbed during the construction phase of the proposed project. Indications are that Alternative 2 will not impact on any significant archaeological remains. While some Stone Age material may be located, these are likely to be mostly dispersed occurrences. Should any human burials or archaeological materials (fossils, bones, artefacts etc.) be uncovered or exposed during earthworks or excavations, they must immediately be reported to the SAHRA NC. An archaeologist will be required to remove the remains at the expense of the applicant.

With this mitigation in place the impact of the proposed development on cultural-historical aspects will be low-acceptable.

- **Visual Impact:**

The proposed pipeline route will be placed above ground on pillars. Therefore the proposed development will be visible during the construction phase, as well as during the operational phase. The pipeline will constitute a very conspicuous new and permanent visual feature of the landscape (which at present is still relatively natural with only the N7 and the power lines impacting upon the landscape). In addition the pipeline will be very conspicuous from the N7 road passing the route to the west.

Mitigation includes the following:

- The implementation of an Environmental Management Program (EMP) during construction and operation.
- The construction areas should be clearly demarcated and should aim for the absolute minimum disturbance footprint.
- Only existing access routes should be used where-ever possible.
- The Contractor must take appropriate and active measures to prevent erosion resulting from construction and operation, as well as storm water control measures.
- No vegetation or topsoil should be removed to limit the overall impact of the pipeline route.
- Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.

With the above described mitigation measures, the expected visual impact of the development will be of medium significance.

Indirect Impacts:

- **Socio-economic Impacts:**

The development will have a positive impact on the socio-economics during construction and operation. During construction it will result in short term duration temporary employment opportunities. During operation the pipeline will provide potable water to numerous small towns and farmers in the Namakwa region.

The proposed socio-economic impact of the pipeline refurbishment will thus be of a high positive significance.

- **Cumulative Impacts:** There will be no cumulative impacts.

PIPELINE 2: OKIEP (ROOIWINKEL) TO NABABEEP (+11KM)

PREFERRED ALTERNATIVE AS DISCUSSED THROUGHOUT THIS REPORT – NEW PIPELINE ROUTE, OVER OLD RAILWAY LINE)

Direct Impacts: Planning and Design, Construction and Operation

- **Biophysical impact:**

The new proposed route (preferred) will be running along an existing road on a lower elevation. The pipeline will be constructed above ground directly on top of the existing disintegrated old railway line. The route is also directly connected to the main line and runs around the mountain is not only shorter but also eliminate the need for two high pressure pump stations as water will gravity feed into the new reservoir. Due to this lower elevation the static pressure of the pipeline will be less which will enable the pipeline to be lay above ground level for easier maintenance in future. No temporary pipeline will have to be installed and no major excavations will be necessary. No additional service roads will be needed due to an existing road along the pipeline route.

BASIC ASSESSMENT REPORT

Direct impact to the vegetation would be low. The reason being that no excavation will be needed and the pipeline would be laid on top of the existing disintegrated old railway line. The physical footprint would be minimal due to existing roads and infrastructure.

Mitigation Includes the following:

- The implementation of an Environmental Management Program (EMP) during construction and operation.
- The construction areas should be clearly demarcated and should aim for the absolute minimum disturbance footprint.
- Only existing access routes should be used where-ever possible.
- The Contractor must take appropriate and active measures to prevent erosion resulting from construction and operation, as well as storm water control measures.
- No vegetation or topsoil should be removed. However, the route should be chosen to minimize the impact on any significant plant species and pillars should be placed to minimize the overall impact of the pipeline route.
- Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.
- A botanical scan of the approved route should be done by a botanist, during which all significant plant species should be identified.
- Where encountered important species as well as other viable species such as geophytes can be saved through a search & rescue project before construction of the pipe-line starts.
- Such species can be relocated to unaffected areas in the same habitat nearby or kept in cultivation for re-establishment in the disturbed areas once construction of the pipeline is completed.

With this mitigation the biophysical impact of the proposed development on the receiving environment will be low.

• **River impact:**

Regarding certain sections of the pipeline that needs to cross the River in the development route, special caution is required. No pollution of building rubble or domestic waste during the construction phase is allowed. Precautionary measures should be taken not to damage the banks of the river when constructing the pipeline across or underneath the river. Method statements should be prepared for each individual river crossing, which would require different measures due to different circumstances. The ECO onsite must inspect each method statement prior construction. Inspection should also take place during construction. With the implementation of the above mitigation measures the river impact of the proposed development during construction will be medium-low.

• **Noise impact:**

The pipeline has no noise impact during operation.

Noise impact will thus be limited to normal construction noise. The impact is likely to occur, but the extent is limited and the duration short term. Mitigation includes the intermittent nature of the construction activities, construction only taking place during normal working hours, the remote location of the pipeline and the N7 traffic noise in close proximity to sections of the pipeline route. This will result in the noise impact of the proposed development during construction to be low.

• **Impact on cultural-historical aspects: (Archaeological Assessment – Appendix D3)**

It is proposed to lay the new water supply pipeline between Rooiwinkel and Nababeep, directly on top of the old copper railway line. No physical alteration of the railway line will take place however, as the pipes will be laid on pre-cast concrete plinths that will be placed on top of the line.

Findings:

No pre-colonial archaeological remains were documented during the Scoping Impact assessment of the proposed pipeline between Rooiwinkel and Nababeep. No archaeological remains were found in the footprint area of the proposed concrete reservoir, which is an old abandoned borrow pit.

While most of the historic copper railway line has fallen into disrepair and ruin, smaller sections of the line are still intact and could be 're-used'. Of particular interest for historical archaeology is the presence of four stone built bridge crossings. Apart from Bridge Crossing 1 (S 29 34.135 E 17 50.382) which has almost collapsed, the remaining Bridge Crossings 3 (S 29 34.762 E 17 49.546), and 4 (S 29 35.288 E 17 49.432) are well preserved and in very good condition. Bridge Crossing 2, unfortunately, was not visited due to time constraints. The stone built bridges are quite intricate and have been built using a combination of dry packed shale and sandstone and rough daga (or cement).

The locomotive 'Clara' final 'resting place' is at the Nababeep Museum

Indications are that the proposed project is viable, but extreme care must be taken to protect the integrity of the historic railway line and particularly the Bridge Crossings. The proposed project does present opportunities in order for this to be achieved.

Mitigation includes the following:

- A detailed recording (photographic and technical) of all the Bridge Crossings must be made by a suitably qualified heritage practitioner.
- A more detailed account of the history of the railway line between Okiep and Nababeep must be done.
- **Bvl Consulting Engineers** have indicated their willingness to help to rebuild Bridge Crossing 1, in consultation

BASIC ASSESSMENT REPORT

- with a specialist heritage consultant.
- No ruins, structures or features older than 60 years may be destroyed, altered, or renovated without a permit issued by Heritage Northern Cape.
- A copy of this report must be submitted to the South African Heritage Resources Agency in Cape Town (Att Ms M. Galimberti PO Box 4367, Cape Town, 8000), and Northern Cape Heritage (Att Mr J. Slnthumule Private Bag X5004, Kimberley, 8300. Phone 053 807 4710 e-mail jslnthumule@ncpg.gov.za).

With this mitigation in place the impact of the proposed development on cultural-historical aspects will be medium.

• **Visual impact:**

The proposed pipeline route will be constructed above ground directly on top of the existing disintegrated old railway line. The proposed development will be visible during the construction phase, as well as during the operational phase. The pipeline will constitute a conspicuous new and permanent visual feature of the landscape (which at present is still relatively natural with only the N7 and the power lines impacting upon the landscape). However due to the placement on top of the existing disintegrated old railway line all additional visual impacts will be limited.

Mitigation includes the following:

- The construction areas should be clearly demarcated and should aim for the absolute minimum disturbance footprint.
- Only existing access routes should be used where-ever possible.
- The Contractor must take appropriate and active measures to prevent erosion resulting from construction and operation, as well as storm water control measures.
- No vegetation or topsoil should be removed to limit the overall impact of the pipeline route.
- Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.
- Special care must be taken not to disturb the current railway line and bridge crossings.
- Only natural products and earthy materials must be used as far as possible to stay in keep of the existing natural aesthetics of the area and railway line.

With the above described mitigation measures, the expected visual impact of the development will be of medium-low significance.

Indirect impacts:

• **Socio-economic impacts:**

The development will have a positive impact on the socio-economics during construction and operation. During construction it will result in short term duration temporary employment opportunities. During operation the pipeline will provide potable water to numerous small towns and farmers in the Namakwa region.

The proposed socio-economic impact of the pipeline refurbishment will thus be of a high positive significance.

- **Cumulative impacts:** There will be no cumulative impacts.

3. 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.

PIPELINE 1: BULLETRAP TURN-OFF TO KLIPHOOGTE

Having evaluated and discussed the various biodiversity aspects associated with the two proposed alternatives it is clear that the major differences as well as the most significant impacts between the two proposed pipeline routes boils down to the temporary crossing of an ecological important river system (Skaap River) in the case of Alternative 1 against the permanent visual impact associated with Alternative 2. Since the underground placement proposed in alternative 1 can be seen as a short term impact and almost all significant impacts associated with the construction phase can be negated the permanent visual impact associated with alternative two weigh the most and has resulted in the least desirable option after the No-Go option.

With the available information to the EAP's disposal it is recommended that Alternative 1 be chosen as the option associated with the least environmental impact other the long-term, provided that all mitigation is adequately enforced.

No-go alternative (compulsory)

Considering the No-Go alternative against the two proposed alternatives shows that the No-Go alternative is not viable and might even result in more disturbances over time. When taken into account that such maintenance work is mostly done without the supervision of an experienced environmental control officer, the cumulative impact over time can be even more significant.

BASIC ASSESSMENT REPORT

ENVIRONMENTAL STATEMENT

If all recommendations and mitigation measures are implemented and adhered to as described by the relevant Specialists and Authorities, the entire impact of the proposed preferred pipeline route activity would be of low-medium significance. The medium impact is due to the archaeological impact that the 11km pipeline route would have on the NababEEP railway line and bridge crossings.

It is therefore recommended that the Alternative 1 for the 6km Bulletrap pipeline route, including the proposed 11km new route on the existing railway line at nababEEP with 4 mega litre reservoir be approved, on condition that all recommendations and mitigation measures are implemented and adhered to as discussed within this report.

SECTION E: RECOMMENDATION PRACTITIONER

OF

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 X	NO
YES X	NO

Is an EMPr attached?

The EMPr must be attached as Appendix F.

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

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

ENVIROAFRICA RECOMMENDATIONS:

BOTH PIPELINE ROUTES:

Environmental Control Officer:

- An Environmental Control Officer (ECO) to be appointed during construction to monitor compliance with the terms as set out in the EMP, and EA.

Construction:

- A Construction Environmental Management Plan (CEMP) must be implemented
- All necessary environmental controls to be discussed with the contractors on site before construction starts.
- The construction area to be marked before construction starts to prevent damage to surrounding natural vegetation.
- All mandatory equipment as described in the CEMP must be in place prior to commencement of any construction.
- Method statements to be provided to ECO/Environmental consultant if any alterations, and/or deviations take place or if ECO requests one
- The pipeline route must be clearly marked and demarcated before construction commences.
- A physical route inspection must be conducted with the Environmental Consultant/ECO and the Contractor to establish the following:
 - Vehicle access routes
 - Method of pipeline trenching
 - Rehabilitation of areas where applicable (especially in regards to the trees – please refer to below botanical recommendations.
 - Storage areas for equipment must be demarcated by ECO before construction of power line starts.
- Method statements on the method of operation for all different sections of the pipeline and power line routes to be handed to the Environmental consultant/ECO to be approved before construction commences. Method statements to be provided to the ECO/Environmental consultant if so requested

River crossings:

- The integrity of the Skaap River system must be protected throughout the construction and operation phase of the pipeline.
- No pollution of building rubble or domestic waste during the construction phase is allowed.
- Precautionary measures should be taken not to damage the banks of the river when constructing the pipeline across or underneath the river.
- Method statements should be prepared for each individual river crossing, which would require different measures due to different circumstances.
- The ECO onsite must inspect each method statement prior construction.
- Inspection should also take place during construction.
- All legal requirements must be adhered to (e.g. General Authorization from the Department of Water Affairs with regards to river crossings).

Access:

- Only existing access roads must be used as far as possible.

Solid Waste:

- All rubble and rubbish should be collected and removed from the site to a suitable registered waste disposal site.

Noise:

- Construction only taking place during normal working hours.

Management of site:

- An environmental audit to be carried out after construction is completed.

Appendix A

Locality Map





1:50,000
Kompfi

Port Nolloth

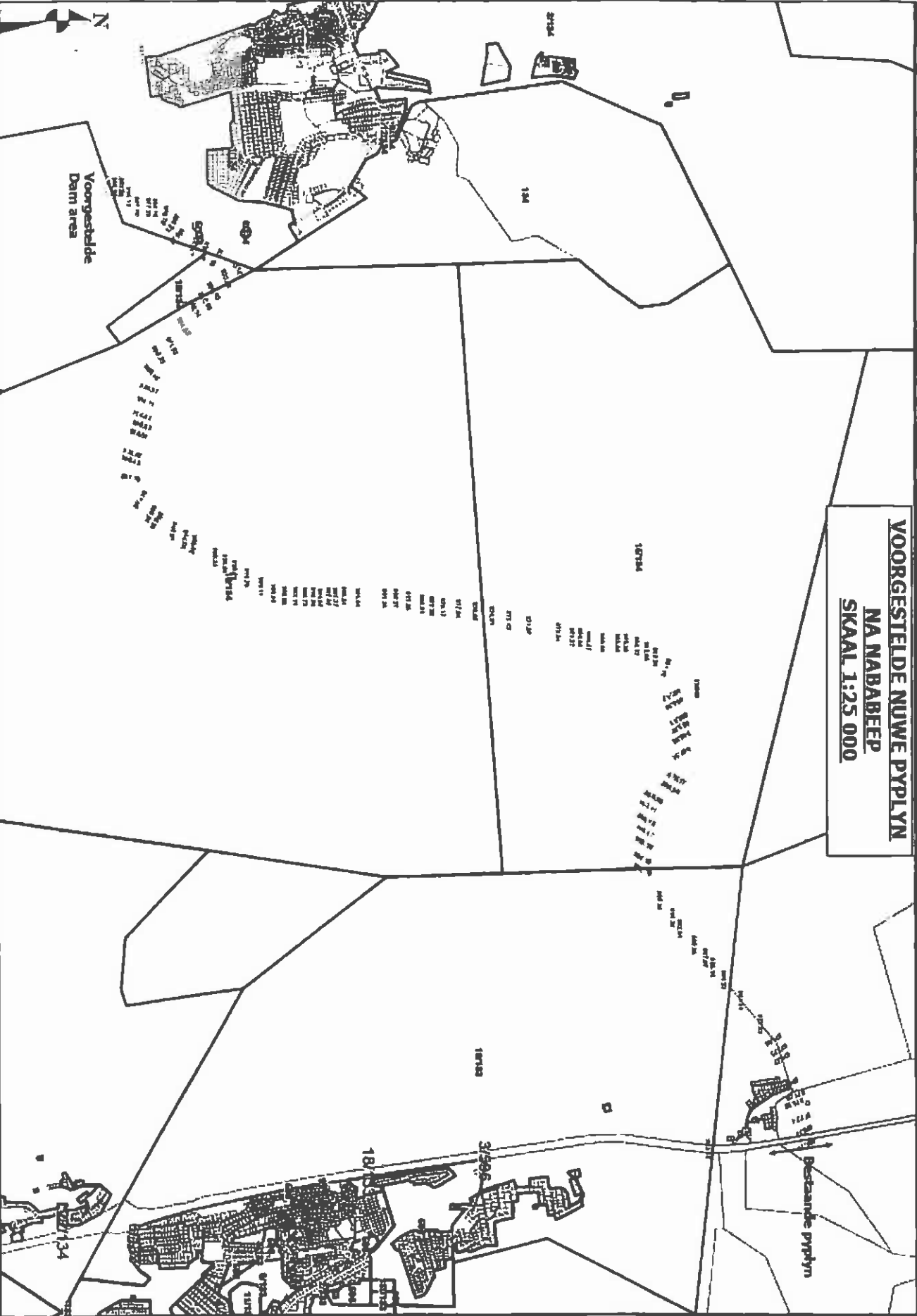
Kleinsee

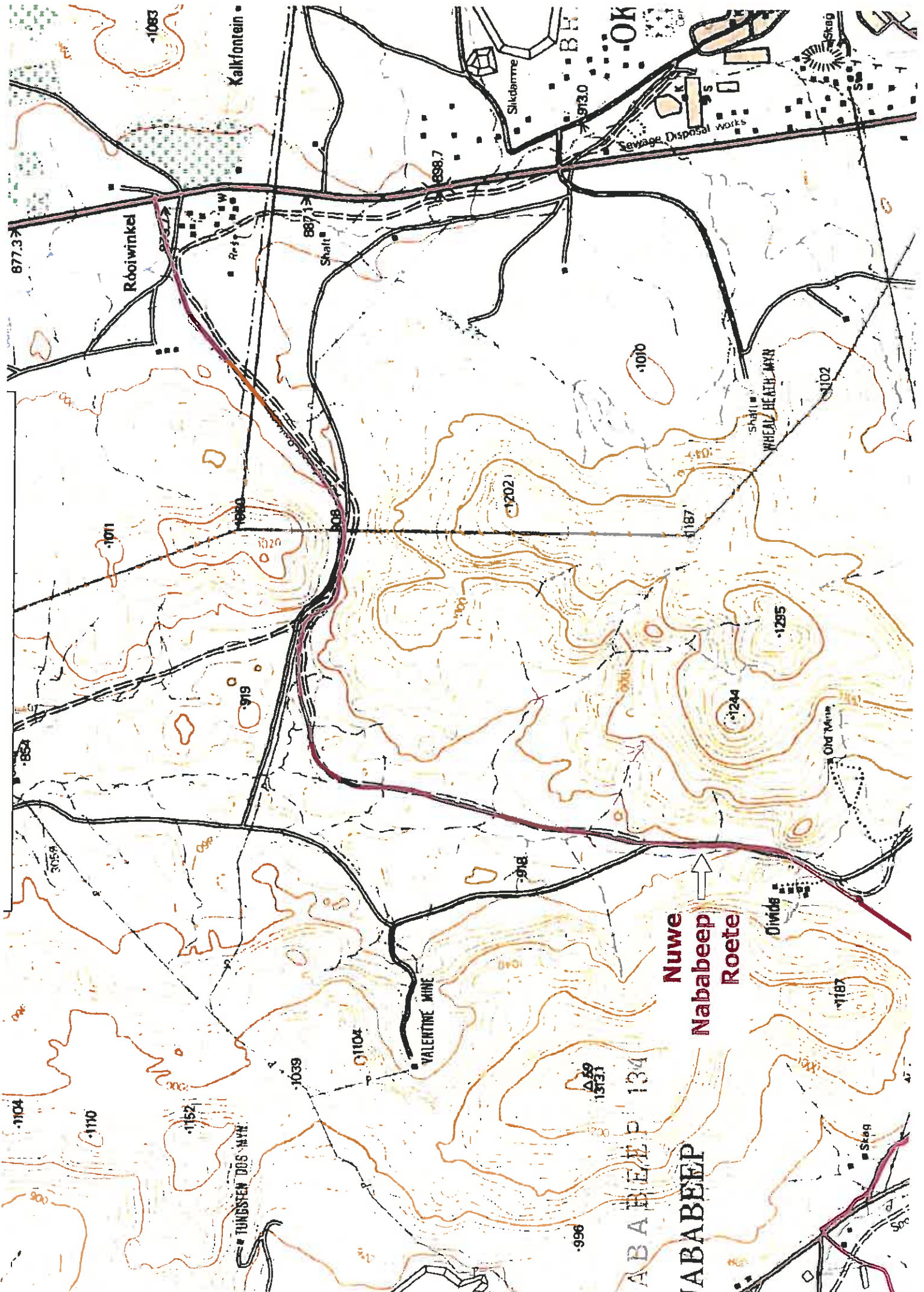
A N

Appendix B

Site plan(s)

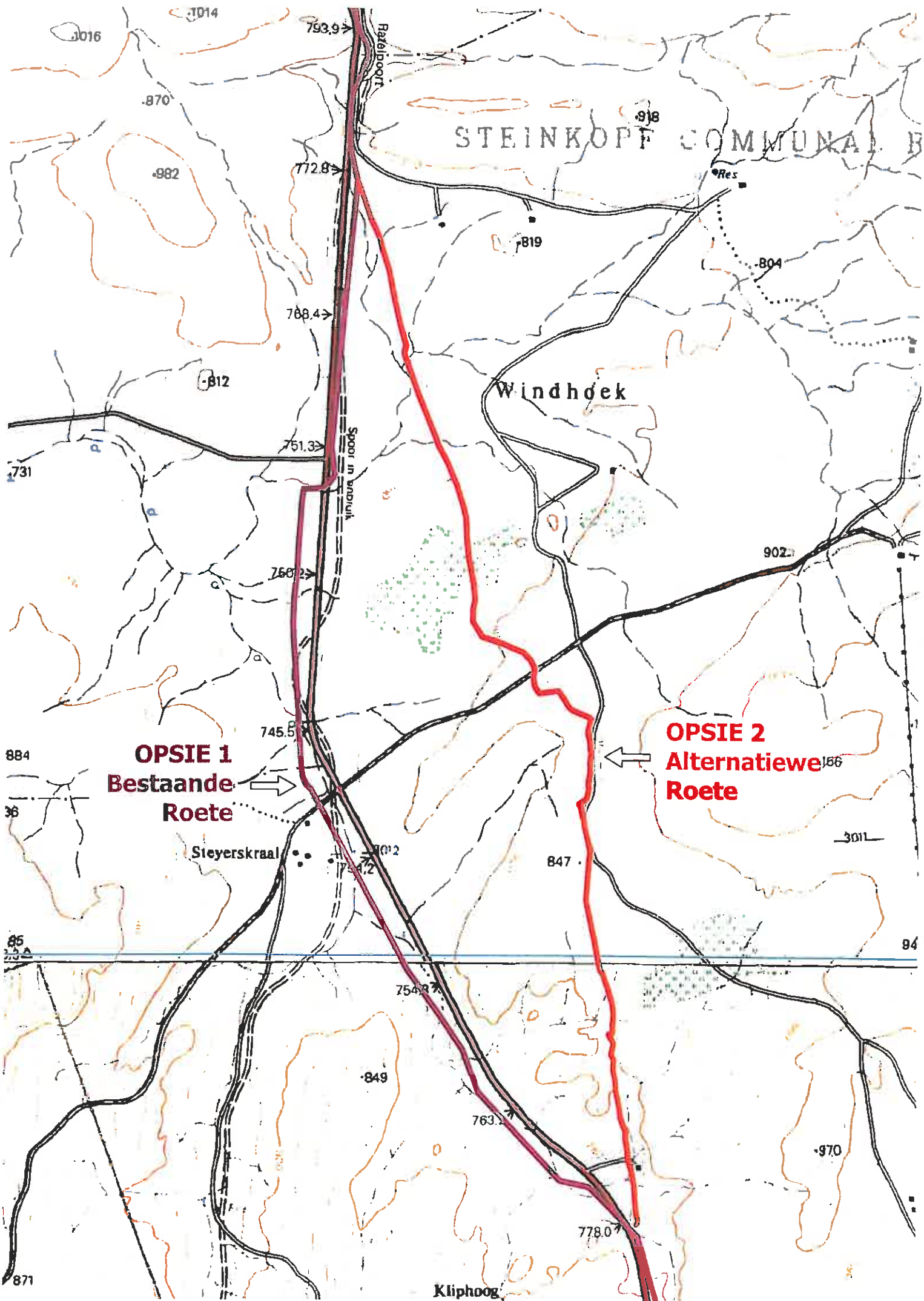
VOORGESTELDE NUWE PYPLYN
NA NABABEEP
SKAAL 1:25 000





Nuwe Nababeep Roete

ABABEEP
JABABEEP



Appendix C

Photographs





Appendix D

Biodiversity Overlay Map



PB Consult
Ecological & Botanical management services

BIODIVERSITY ASSESSMENT

PROPOSED NAMAKWA WATER REFURBISHMENT

A preliminary Biodiversity Assessment (with botanical input) of the proposed Namakwa Water Refurbishment (replacement of a 6km portion of the gravity mains pipeline), near Springbok, taking into consideration the National Spatial Biodiversity Assessment of South Africa.

September 20, 2011



PREPARED BY: PB Consult

PREPARED FOR: ENVIROAFRICA CC

REQUESTED BY: BVI CONSULTING ENGINEERS

©

SUMMARY – MAIN CONCLUSIONS

PREPARED BY:		PREPARED FOR:	
PB Consult 22 Buitekant Street Bredasdorp 7280		EnviroAfrica CC PO Box 5367 Helderberg 7135	
CONTACT PERSON		CONTACT PERSON	
Peet Botes Cell: +(27)82 – 921 5949 Fax: +(27)86 – 415 8595 Email: pbconsult@vodamail.co.za		Mr. Bernard de Wilt Tel: +(27) 21 – 851 1616 Fax: +(27) 86 – 512 0154 Email: bernard@enviroafrica.co.za	
MAIN VEGETATION TYPES	<p>Namaqualand Klipkoppe Shrubland: Described as a dramatic landscape supporting open shrubland up to 1 m tall, dominated by shrubs of dwarf to medium stature and with ericoid or succulent leaves.</p> <p>Namaqualand Blomveld: Sparse dwarf shrubs with succulent or ericoid leaves dominate these shrublands.</p>		
CONSERVATION STATUS	<u>Least Threatened</u> , but described as "Poorly or Hardly Protected" given the fact that only 5.8% and 1.5% respectively of these two vegetation types are formally protected.		
LAND USE AND COVER	Most of the study area is largely natural covered by natural vegetation with the Skaap River and tributaries also present. No intensive agricultural practices (apart from possible grazing) have been observed. The surrounding areas show the same largely natural veld extending in almost all directions.		
RED DATA PLANT SPECIES	<i>Aloe dichotoma</i> var. <i>dichotoma</i> (Kokerboom) is prominently on display on the north and north-western facing mountain slopes within the study area. Other red- data species might also be present, but the proposed activity should not constitute an irreplaceable impact provided that a botanical scan of the final route is done in accordance with the recommendations at the end of this report.		
IMPACT ASSESSMENT	<p>No-Go Alternative: Significance = 31.5%</p> <p>Alternative 1: Significance = 48.5% (No mitigation) Significance = 12.4% (With mitigation)</p> <p>Alternative 2: Significance = 53.2% (No mitigation) Significance = 20% (With mitigation)</p> <p>Where values of ≤15% indicate an insignificant environmental impact and values >15% constitute ever increasing environmental impact.</p>		
RECOMMENDATION	With the available information to the author's disposal it is recommended that Alternative 1 be chosen as the option associated with the least environmental impact, provided that mitigation is adequately addresses.		

CONTENTS

Summary - main conclusions 1

Introduction 1

 Terms of reference 1

 Independence & conditions..... 2

Definitions & Abbreviations 2

 Definitions 2

 Abbreviations..... 2

References 3

Project Description..... 4

 Proposed refurbishment..... 4

 Preferred option for refurbishment 4

 Alternative option for refurbishment..... 5

Description of Environment..... 6

 Location & Layout..... 6

 Topography..... 7

 Climate..... 8

 Soils..... 8

 Landuse and Cover 9

 Vegetation types..... 9

 Namaqualand Klipkoppe Shrubland 10

 Namaqualand blomveld 11

 Red data or Protected plant Species 11

 Mammal and Bird species..... 12

 Rivers and wetlands..... 12

 Invasive alien infestation 12

Methods..... 13

 Site Visit 13

Impact assessment..... 14

Method used 14

Criteria 15

Rationale behind impact evaluation 16

Placement and construction method 16

Direct impacts 17

Indirect impacts 20

Cumulative Impacts 20

Quantification of environmental Impacts 21

The NO-Go Alternative 21

Alternative 1 21

Alternarive 2 22

Recommendations & Impact Minimization 23

Impact minimization 23

INTRODUCTION

Namakwa Water Board is a bulk supplier of water to the Nama Khoi Municipal jurisdiction area. The communities that we serve are: Steinkop, Okiep, Concordia, Nababeep, Bulletrap, Carolusberg, Springbok and Kleinsee with an estimate population of ±50 000. The Namakwa water scheme was constructed during the 1970's and the Namakwa Water Board came into being in 1982. The scheme exist of an extraction point on the Orange River at Henkries mond, purification works at Henkries, a booster pump station at Dorlingwater and round about 130 km's of pipeline to Springbok. The water is pumped from Henkries to Eenrietberg from where it gravitates to Springbok. From Springbok to Kleinsee is another 120 km's of pipeline. As a result age and weathering the pipeline is subject to consistent breakages, resulting in significant water losses which again results in inconsistent water supply, leaving various communities and towns without potable water on an ever increasing frequency. All of the current pipelines have been in use well over its design period and needs to be replaced as a matter of urgency. The main cause for the deterioration of the pipeline was that the mortar lining at various points detached from the inner wall which led to water seeping behind the pipeline causing rust as well as the friction caused by lose pieces of mortar within the pipeline. As a result the upgrading and maintenance of the Namakwa water scheme is regarded as a very high priority. Since no other sources of potable water are locally available it means that the current pipelines need to be in operation while the replacement is done. A phased refurbishment has been proposed. The proposed project comprises the refurbishment of 6 km of the old pipeline, just north of Okiep (the portion between 10 km – 16 km north of Okiep) where the most frequent failures occur (at the lowest point where the pressure is at its highest).

Two alternative routes are proposed. The existing pipeline runs along a river bed which had not only contributed to the demises of the current pipeline but also hamper repair and maintenance on the pipeline. Since both routes is situated in an area still covered with indigenous vegetation (in good state), a biodiversity/botanical study was commissioned to evaluate the environmental impact of the proposed alternatives.

TERMS OF REFERENCE

BVI Consulting Engineers (Pty) Ltd has been appointed to handle the project management and planning for the construction and refurbishment of the proposed project. EnviroAfrica (Pty) Ltd was appointed by BVI Consulting Engineers (Pty) Ltd as the Independent Environmental Assessment Practitioner (EAP) to undertake the Scoping/Environmental Impact Assessment (EIA) Process for the proposed development. PB Consult was appointed by EnviroAfrica to perform a Biodiversity Assessment of the proposed development area on recommendation by the EAP.

PB Consult was appointed within the following terms of reference:

- The study must consider short- to long-term implications of impacts on biodiversity and highlight irreversible impacts or irreplaceable loss of species.

INDIPENDENCE & CONDITIONS

PB Consult is an independent consultant to BVi Consulting Engineers and has no interest in the activity other than fair remuneration for services rendered. Remunerations for services are not linked to approval by decision making authorities and PB Consult have no interest in secondary or downstream development as a result of the authorization of this proposed project. There are no circumstances that compromise the objectivity of this report.

The findings, results, observations and recommendations given in this report are based on the author's best scientific and professional knowledge and available information. PB Consult reserve the right to modify aspects of this report, including the recommendations if new information become available which may have a significant impact on the findings of this report.

DEFINITIONS & ABBREVIATIONS

DEFINITIONS

Environmental Aspect: Any element of any activity, product or services that can interact with the environment.

Environmental Impact: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from any activity, product or services.

No-Go Area(s): Means an area of such (environmental/aesthetical) importance that no person or activity is allowed within a designated boundary surrounding this area.

ABBREVIATIONS

DEA	Department of Environmental Affairs
EAP	Environmental assessment practitioner
EIA	Environmental impact assessment
EMP	Environmental management plan
IUCN	International Union for Conservation of Nature
NSBA	National Spatial Biodiversity Assessment
SKEP	Succulent Karoo Ecosystem Project

REFERENCES

- Acocks, J.P.H. 1953. Veld types of South Africa. *Mem. Bot. Surv. S. Afr.* No. 28: 1-192.
- BVI Consulting Engineers. 2011. Sedibeng Water Board - Motivation for the environmental Impact assessment replacement of infrastructure. Unpublished report prepared for the Sedibeng Water Board. August 2011.
- De Villiers C.C., Driver, A., Brownlie, S., Clark, B., Day, E.G., Euston-Brown, D.I.W., Helme, N.A., Holmes, P.M., Job, N. & Rebelo, A.B. 2005. Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape. Fynbos Forum, c/o Botanical Society of South Africa: Conservation Unit, Kirstenbosch, Cape Town.
- Government Gazette No 32689, 6 November 2009. The Draft National List of Threatened Ecosystems. Notice 1477 of 2009.
- Low, A.B. & Rebelo, A.(T.)G. (eds) 1996. *Vegetation of South Africa, Lesotho and Swaziland*. Dept of Environmental Affairs and Tourism, Pretoria.
- Mucina, L. & Rutherford, M.C. (eds.) 2006. *The vegetation of South Africa, Lesotho and Swaziland*. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- SANBI. 2006. South African National Botanical Institute: Biodiversity GIS Home. <http://bgis.sanbi.org> (as updated)
- SANBI, 2007. South African National Botanical Institute: Red Data Lists. Interim Red Data List of South African Plant Taxa. October 2007.
- SANBI & DEAT. 2009. Threatened Ecosystems in South Africa: Descriptions and Maps. DRAFT for Comment. South African National Biodiversity Institute, Pretoria, South Africa
- Van der Merwe, H., Van Rooyen, M.W. & Van Rooyen, N. 2008a. Vegetation of the Hantam-Tanqua-Roggeveld subregion, South Africa. Part 1: Fynbos Biome related vegetation. *Koedoe* Vol. 50(1): 61-76
- Van der Merwe, H., Van Rooyen, M.W. & Van Rooyen, N. 2008b. Vegetation of the Hantam-Tanqua-Roggeveld subregion, South Africa. Part 2: Succulent Karoo Biome related vegetation. *Koedoe* Vol. 50(1): 160-183.

PROJECT DESCRIPTION

Water is being abstracted from the Orange River at a point near Goodhouse. The raw water abstracted is delivered to the purification and treatment works at Henkries and after treatment, the potable water is distributed via pipelines to the towns of Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee. The total population in the area supplied with potable water is approximately 55 000 people.

The current network consists of an extracting facility at the Orange River, a primary flocculation facility at Henkriesmond, a purification plant at Henkries and 4 pumping stations. The network also consists of a number of concrete reservoirs of which the main distribution reservoirs are Eenriet near Steinkopf and Vaalhoek in Okiep. The approximately 200km of distribution pipes have an average age is 38 years. The pipeline varies in size from 520 mm steel to 150 mm asbestos pipeline.

Urgent infrastructure replacements and repairs should be carried out to insure continues supply. Currently supply is interrupted on a frequent basis leaving large portions of the population without potable water. As Springbok is the main town in the region it have a hospital prison various old age homes and schools with hostel this situation is compounded by the interrupted supply of bulk water services (BVI, August 2011).

PROPOSED REFURBISHMENT

All current pipeline needs to be replace as a matter of urgency due to the pipeline have been used well over its design period and due to the condition of the pipeline. As no other sources of potable water are locally available the current pipelines need to be in operation while the replacement is done. As a result the propose replacement of pipelines will be done in phases to insure the continuation of services. This report is applicable to the replacement of 6 km of pipeline just north of Okiep located on the Concordia Commonage (which covers both sides of the N7) and coincides with the portion of the pipeline subject to the most frequent fallures (at the lowest point where the pressure is at its highest). It is also known as the Gravity Mains: Bulletrap turn-off to Kliphogte (BVI, August 2011).

Two alternative methods and pipeline locations are proposed both of which has been evaluated within this report.

PREFERRED OPTION FOR REFURBISHMENT

The pipeline will be replaced from where the most frequent pipeline failures occurs is at the lowest point where the pressure is at its highest. The planned replacement will start to the north of Bulletrap take-off. The current pipeline will be removed and a new pipeline will be installed within the same trench (Blue route In Figure 2 & 3). This will be done to limt the impact on the area surrounding the pipeline as this area is already disturbed.

The new pipeline will be of similar material and size to insure that the gravitational feed of the current pipeline is kept. The pipeline will be at least 1 meter under ground level and at least 1 meter under the river bed where crossings of rivers or streams might be encountered. The only visible part of the pipeline will be the current air vents and scoure valves that were erected when the pipeline was originally installed. The feasibility of replacing the old pipeline in the same trench will not only limit the cost of construction but will also insure the no new area is been disturbed (BVi, August 2011).

The supply of water to the communities during the construction phase will be insured by a temporary pipeline is installed within the servitude of the current pipeline.

ALTERNATIVE OPTION FOR REFURBISHMENT

As an alternative a new route has also been investigated. The proposed new pipeline route will run along the N7 Cape Town Namibia route on the opposite side of the road (east). The planned alternative route will be running along a ridge on a higher elevation (Red route in Figure 2 & 3). The old pipeline runs along a river bed which had not only contributed to the demises of the current pipeline but also hamper repair and maintenance on the pipeline.

Due to this higher elevation the static pressure of the pipeline will be less which will allow the pipeline to be lay above ground level for easier maintenance in future. This has to done as the terrain do not allow for trenches.

Figure 1: Google overview showing the approximate location of the two alternatives



DESCRIPTION OF ENVIRONMENT

The aim of this description is to put the study area in perspective with regards to all probable significant biodiversity features which might be encountered within the study area. The study area has been taken as the two proposed routes and its immediate surroundings. During the desktop study significant biodiversity features associated with the larger surroundings was also identified (as far as possible), which was then also taken into account. The desktop study also informs as to the biodiversity status of such features as classified in the National Spatial Biodiversity Assessment (2004) as well as in the more recent updated Draft Threatened Ecosystems of South Africa (GG No. 32689, 2009 & SANBI & DEAT, 2009)

LOCATION & LAYOUT

The refurbishment pertains only to a 6 km portion of the Namakwa Water Scheme pipeline (just north of Okiep) located on the Concordia Commonage which covers both sides of the N7 and coincides with the portion of the pipeline subject to the most frequent failures (at the lowest point where the pressure is at its highest). The town of Okiep is situated just north of Springbok in the Hantam Local Municipality (Refer to Figure 1 – 3). The following waypoints (WGS 84 format) can be used as reference:

- Gravity Start: S29 27 14.0 E17 50 23.0
- Gravity End: S29 31 01.0 E17 51 34.0

Figure 2: Overview of the Namakwa Water Scheme, indicating the location of the proposed refurbishment

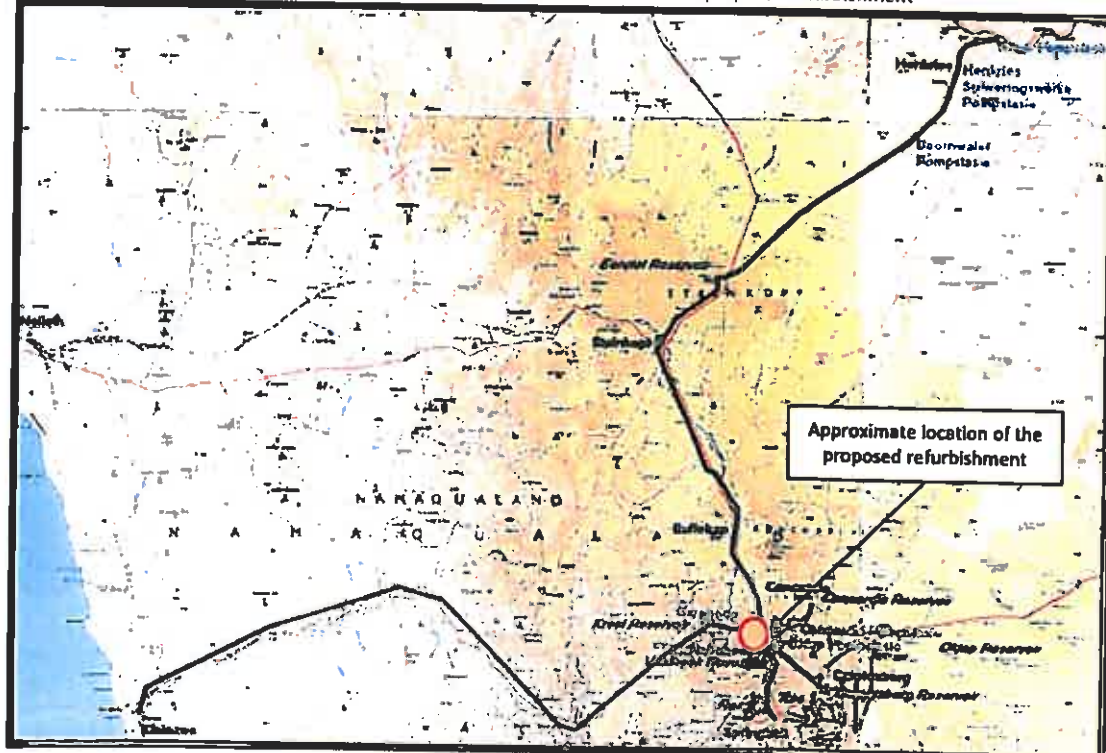


Figure 3: Google overview of the approximate location of the original pipeline (blue) and the proposed alternative route (red)

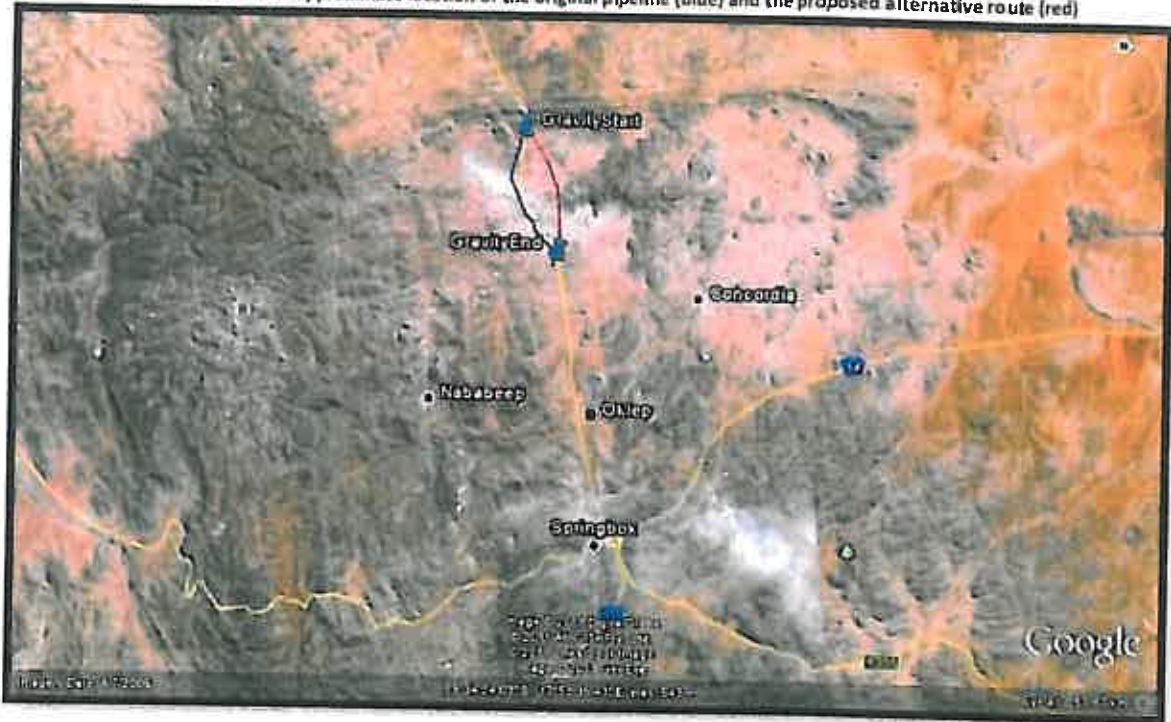


Figure 4: Google overview of the approximate location of the original route (blue) and the secondary alternative (red)



TOPOGRAPHY

The study area follows the N7 through a small valley or “poort” in-between the Rietberg to the east and Ratelpoort to the west. The topography in this area slopes gently towards the centre of this valley (a bit

steeper on the eastern side). The elevation on site varies between 650m (in the valley bottom) to about 900 m along the slopes. A number of drainage lines (tributaries) are present on site, all of which drains into the Skaap River at the valley bottom.

CLIMATE

All regions with a rainfall of less than 400 mm per year are regarded as arid. This area normally receives about 106 mm of rain per year (the climate is therefore regarded as arid to very arid) and because it receives most of its rainfall during winter it has a Mediterranean climate. Figure 5 shows the average rainfall values for Springbok per month. It receives the lowest rainfall in January and the highest May to June. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Springbok range from 16.5°C in July to 28.3°C in February. The region is the coldest during July when the mercury drops to 3.8°C on average during the night. Figure 6 gives the average monthly hours of sunshine over the year (www.weather-and-climate.com)

Figure 5: Average monthly precipitation over the year (www.weather-and-climate.com)

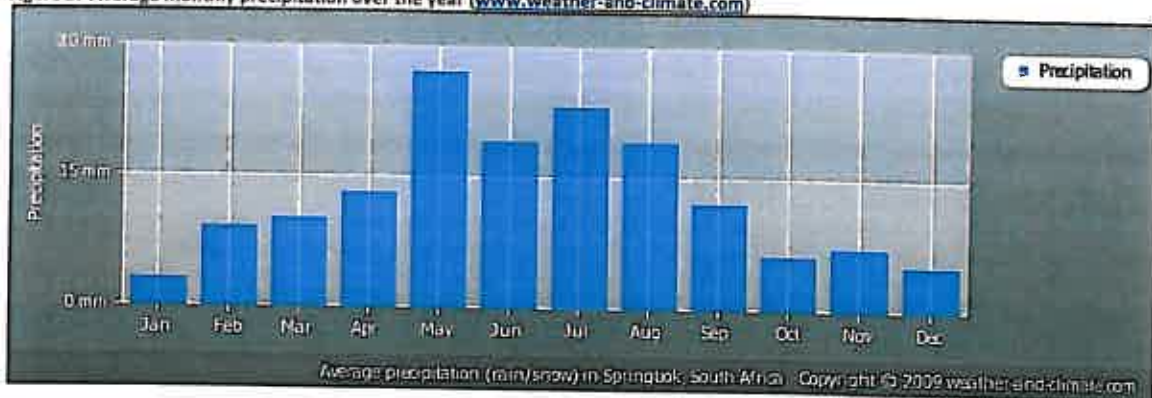
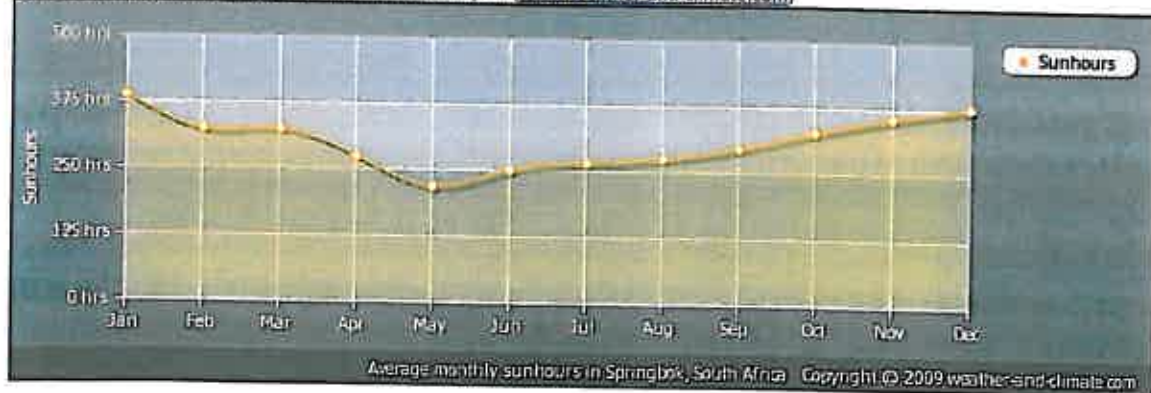


Figure 6: Average monthly hours of sunshine over the year (www.weather-and-climate.com)

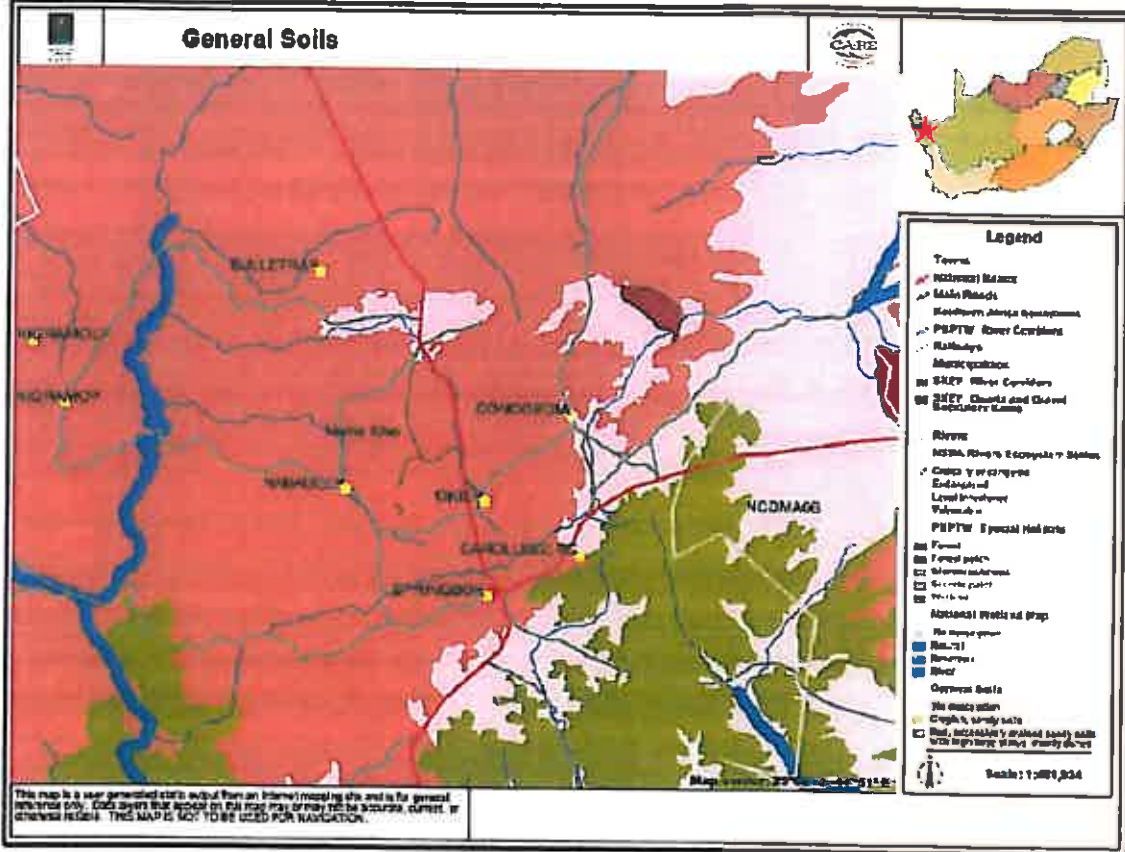


SOILS

Soils are described as soils with minimal development, usually shallow, on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part or most of the landscape. In some areas it

may have restricted soil depth, excessive drainage, high erodibility, low natural fertility. May be water-intake areas, but generally with restricted land use options (refer to Figure 7).

Figure 7: General soils expected in the study area



LANDUSE AND COVER

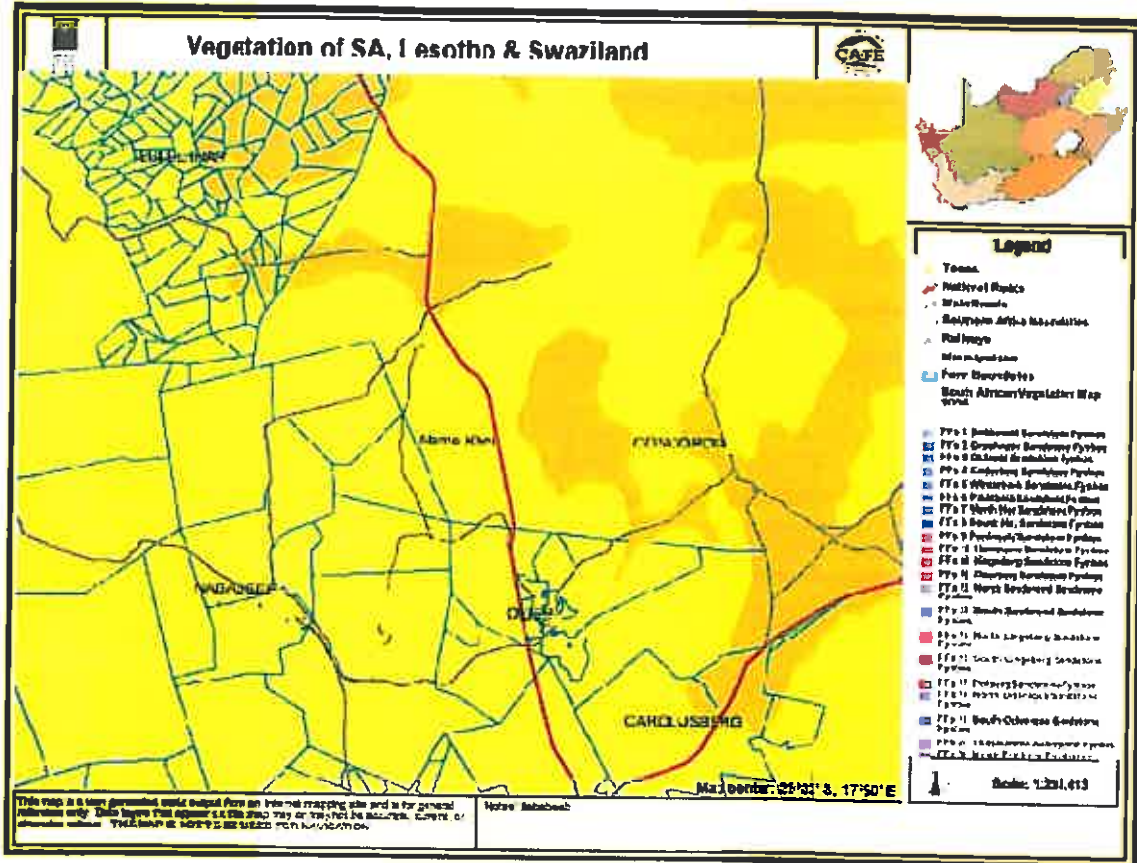
The Google image of the area, confirmed by the site visit, shows that the area is still almost completely natural (apart from the N7 which bisects the study area from north to south, smaller 2-spour tracks found in the area and the Power lines running almost parallel to the N7). No other infrastructure or land-use has been observed. Overall most of the study area is largely natural covered by natural vegetation with the Skaap River and tributaries also present. No intensive agricultural practices (apart from possible grazing) have been observed. The surrounding areas show the same largely natural veld extending in almost all directions.

VEGETATION TYPES

In accordance with the 2006 Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) two broad vegetation types are expected in the study area, namely Namaqualand Klipkoppe Shrubland (Yellow in Figure 8) and Namaqualand Blomveld (Green in Figure 8). Although both these vegetation types were classified as “Least Threatened” during the 2004 National Spatial Biodiversity Assessment, they are also considered to be “Poorly or Hardly Protected” given the fact that only 5.8% and 1.5% respectively of these two

vegetation types are formally protected. Both vegetation types are this in need of further formal protection (conservation). Fortunately, more than 95% of both these vegetation types are still found in a relative natural state. With regards to development this would imply that development options are possible although options for conservation should be considered wherever natural vegetation with good connectivity is still found.

Figure 8: Vegetation map of SA, Lesotho and Swaziland (2006)



NAMAQUALAND KLIPKOPPE SHRUBLAND

Namaqualand Klipkoppe Shrubland is described as a dramatic landscape of huge granite and gneiss domes, smooth glacia and disintegrating boulder koppies supporting open shrubland up to 1 m tall, dominated by shrubs of dwarf to medium stature and with ericoid or succulent leaves. A few scattered pachycaul Kokerboom trees (*Aloe dichotoma* var. *dichotoma*) are found mostly on north-facing slopes. Flat or gentle sloping rock



sheets (the dominant feature of this unit) support dwarf or prostrate succulents in shallow pockets with soil or in cracks. Fringe vegetation at the bottom of steep rock sheets (collecting run-off water) could house 1-3 m tall shrubs with non-succulent leaves and canopy cover reaching 40-100% (Mucina & Rutherford, 2006).

Endemic taxon associated with this veld type includes (Mucina & Rutherford, 2006) - Succulent Shrubs: *Ottosonderia monticola*, *Tylecodon nigricaulis*. Low Shrubs: *Lotononis benthamiana*, *L. longiflora*, *L. quinata*, *Wiborgia incurvata*. Herbs: *Tripteris spathulata*, *Zaluzianskya collina*. Geophytic Herbs: *Ornlthogalum leupoortense*, *O. Louisa*, *Xysmalobium pearsonii*. Succulent Herbs: *Quagua bayeriana*, *Q pallens*, *Stapeliopsis khamiesbergensis*.

NAMAQUALAND BLOMVELD

Namaqualand Blommeveld is found in valleys and flat areas between granitic rocky hills of the Namaqualand Escarpment. Usually on level to slightly undulating sedimentary surfaces between rocky granitic hills and mountains, such as wide plains and broad valleys with dry channels of intermittent water courses. Sparse dwarf shrubs with succulent or ericoid leaves dominate these shrublands. Geophytes and ephemeral herbs and in places also low, spreading, leaf-succulents show spectacular flower displays in wet years (Mucina & Rutherford, 2006).



Endemic taxon associated with this veld type includes (Mucina & Rutherford, 2006) – Herbs: *Lessertia capitata*, *Lotononis arenicola*. Succulent Herbs: *Dorotheanthus bellidiformis* subsp. *hestermalensis*. *D. rourkei*.

RED DATA OR PROTECTED PLANT SPECIES

Aloe dichotoma var. *dichotoma* (Kokerboom) is prominently on display on the north and north-western facing mountain slopes within the study area. Quite a number of these trees has been observed along the area proposed for alternative pipe route (must be protected during construction). The possibility exists that more red data species might be encountered within the study area (especially with regards to annual and geophytes plants). However, since the impact will be very localized and associated with existing disturbed areas, the changes of irreparable or irreversible loss is considered very low.

The following protected tree species in terms of the National Forest Act of 1998 (Act 84 of 1998) have a geographical distribution that may overlap with the study area.

SPECIES NAME	COMMON NAME	TREE NO.	DISTRIBUTION
<i>Acacia erioloba</i>	Camel Thorn Kameeldoring	168	In dry woodlands next to water courses, in arid areas with underground water and on deep Kalahari sand
<i>Boscia albitrunca</i>	Shepherds-tree Witgat/Matople	130	Occurs in semi-desert and bushveld, often on termitaria, but is common on sandy to loamy soils and calcrete soils.

MAMMAL AND BIRD SPECIES

Mammal and bird species was not regarded as the proposed activity should have very little permanent impact on these species. It is known that the Namaqua Dune Mole Rat (*Bathyergus janetta*), a species of rodent, is found in this area. Its natural habitats are subtropical or tropical dry shrubland, caves, and sandy shores. The IUCN assessment states that : Although the extent of occurrence is less than 20,000 km², and the potential impact of diamond mining remains to be quantified, at present there is no reason to believe that the species is declining, and its presence in areas entirely restricted to public access (and with extremely high protection) suggest it should be Least Concern.

RIVERS AND WETLANDS

Rivers maintain unique biotic resources and provide critical water supplies to people. South Africa's limited supplies of fresh water and irreplaceable biodiversity are very vulnerable to human mismanagement. Multiple environmental stressors, such as agricultural runoff, pollution and invasive species, threaten rivers that serve the world's population. River corridors are important channels for plant and animal species movement, because they link different valleys and mountain ranges. They are also important as a source of water for human use. Vegetation on riverbanks needs to be maintained in order for rivers themselves to remain healthy, thus the focus is not just on rivers themselves but on riverine corridors.

The non-perennial Skaap River runs along the bottom of the valley, with drainage channels and tributaries crisscrossing the study area. During the 2004 National Spatial Biodiversity Assessment, the Skaap River system has been classified as an endangered river system, which places a special emphasis on the management and protection of this river system.

INVASIVE ALIEN INFESTATION

Most probably because of the aridity of the area, invasive alien rates are generally very low for most of this area. Problem areas are usually associated with river systems and other wetland areas.

Very few invasive alien trees have been observed within the study area (mostly associated with the river systems).

METHODS

Biological diversity, or biodiversity, refers to the variety of life on Earth. As defined by the United Nations Convention on Biological Diversity, it includes diversity of ecosystems, species and genes, and the ecological processes that support them. Natural diversity in ecosystems provides essential economic benefits and services to human society—such as food, clothing, shelter, fuel and medicines—as well as ecological, recreational, cultural and aesthetic values, and thus plays an important role in sustainable development. Biodiversity is under threat in many areas of the world. Concern about global biodiversity loss has emerged as a prominent and widespread public issue.

The objective of this study was to evaluate the biological diversity associated with the study area in order to identify significant environmental features which should be avoided during development activities and or to evaluate short and long term impact and possible mitigation actions in context of the proposed development.

As such the report aim to evaluate the biological diversity of the area using the Ecosystem Guidelines for Environmental Assessment (De Villiers *et. al.*, 2005), with emphasis on:

- Significant ecosystems
 - Threatened or protected ecosystems
 - Special habitats
 - Corridors and or conservancy networks
- Significant species
 - Threatened or endangered species
 - Protected species

SITE VISIT

The survey was conducted as a site visit on the 2nd of June 2011 coupled with subsequent desktop studies. The site visit comprises visiting both the original pipeline route (also the proffered option for the upgrade, Blue in Figure 2 & 3) as well as the alternative route (red in Figure 2 & 3). During the site visit and subsequent desktop studies, a fairly good understanding of the environment was achieved. The timing of the site visit was also reasonable in that essentially all perennial plants were identifiable and although the possibility remains that a few rare species may have been missed, especially in terms of spring annuals and bulbs, the author is confident that a fairly good understanding of the biodiversity status in the area was obtained.

The survey was conducted by walking through the property and examining and photographing any area of interest. Confidence in the findings is high.

IMPACT ASSESSMENT

The "No-Go alternative" and the two alternative routes would have been assessed. The alternative routes are described in the previous sections of this report. Since Springbok and the surrounding towns is absolutely dependant on the pipeline for potable water the "No-Go alternative" is of particular significance in this instance.

METHOD USED

During May 2001, Van Schoor published a formula for prioritizing and quantifying potential environmental impacts. This formula has been successfully used in various applications for determining the significance of environmental aspects and their possible impacts, especially in environmental management systems (e.g. ISO 14001 EMS's). By adapting this formula slightly it can also be used successfully to compare/evaluate various environmental scenario's/options with each other using a scoring system of 0-100%, where any value of 15% or less indicate an insignificant environmental impact while any value above 15% constitute ever increasing environmental impact.

Using Van Schoor's formula (adapted for construction with specific regards to environmental constraints and sensitivity) and the information gathered during the site evaluation the possible negative environmental impact of the activity was evaluated.

Underneath follow a short description of Van Schoor's formula. In the formula the following entities and values are used in order to quantify environmental impact.

$$S = [(fd + int + sev + ext + loc) \times (leg + gcp + pol + ia + str) \times P] \text{ (as adapted for construction activities)}$$

Where

S = Significance value

fd = frequency and duration of the impact

int = Intensity of the impact

sev = severity of the impact

ext = extent of the impact

loc = sensitivity of locality

leg = compliance with legal requirements

gcp = conformance to good environmental practices

pol = covered by company policy/method statement

ia = impact on interested and affected parties

str = strategy to solve issue

P = probability of occurrence of impact

CRITERIA

The following numerical criteria for the above-mentioned parameters are used in the formula.

<i>fd</i> = frequency and duration of the impact					
low frequency ; low duration	1	medium frequency; low duration	1.5	high frequency ; low duration	2
low frequency; medium duration	1.5	medium frequency ; medium duration	2	high frequency ; medium duration	2.5
low frequency ; high duration	2	medium frequency ; high duration	2.5	high frequency ; high duration	3

<i>int</i> = Intensity of the impact					
low probability of species loss; low physical disturbance	1	medium probability of species loss; low physical disturbance	1.5	high probability of species loss; low physical disturbance	2
low probability of species loss; medium physical disturbance	1.5	medium probability of species loss; medium physical disturbance	2	high probability of species loss; medium physical disturbance	2.5
low probability of species loss; high physical disturbance	2	medium probability of species loss; high physical disturbance	2.5	high probability of species loss; high physical disturbance	3

<i>sev</i> = severity of the impact	
changes immediately reversible	1
changes medium/long-term reversible	2
changes not reversible	3

<i>ext</i> = extent of the impact	
locally (on-site)	1
regionally (or natural/critical habitat affected)	2
globally (e.g. critical habitat or species loss)	3

<i>loc</i> = sensitivity of location	
not sensitive	1
moderate (e.g. natural habitat)	2
sensitive (e.g. critical habitat or species)	3

<i>leg</i> = compliance with legal requirements	
compliance	0
non-compliance	1

<i>gcp</i> = good conservation practices	
conformance	0
non-conformance	1

<i>pol</i> = covered by company policy	
covered in policy	0
not covered/no policy	1

<i>ia</i> = impact on interested and affected parties	
not affected	1
partially affected	2
totally affected	3

<i>str</i> = strategy to solve issue	
strategy in place	0
strategy to address issue partially	0.5
no strategy present	1

<i>P</i> = probability of occurrence of impact	
not possible (0% chance)	0
not likely, but possible (1 - 25% chance)	0.25
likely (26 - 50% chance)	0.50
very likely (51 - 75% chance)	0.75
certain (75 - 100% chance)	0.95

RATIONALE BEHIND IMPACT EVALUATION

It is a fact that most of the existing Namakwa pipeline needs to be replaced as a matter of urgency due to the due to the condition of the pipeline and the fact that it has been used well over its design period. As no other sources of potable water are locally available the current pipelines need to be in operation. This report is applicable to the replacement of 6 km of pipeline just north of Oklep located on the Concordia Commonage (which covers both sides of the N7) and coincides with the portion of the pipeline subject to the most frequent failures (at the lowest point where the pressure is at its highest). It is also known as the Gravity Mains: Bulletrap turn-off to Kliphoogte (BVI, August 2011).

PLACEMENT AND CONSTRUCTION METHOD

It is very important to note that the "No-Go Alternative" will not result in a *status quo* or no impact, since this portion of the pipeline has already been identified as the portion subject to the most frequent failures. As a result the continual disturbance over time (when taking the cumulative effect into consideration) may have a more significant impact than any of the proposed alternatives. Each failure will result in excavations, vehicle access and possibly even temporary pipeline routes. Eventually the pipeline will have to be replaced.

Alternative 1: The preferred alternative is to locate the replacement pipeline within the old pipeline trench. This will entail the placement and installation of a temporary pipeline (to ensure continual water supply during the construction of the new pipeline), the excavation and removal of the original pipeline, the placement of the new pipeline and rehabilitation of the construction area (as well as the removal and rehabilitation of the temporary pipeline and its route). In theory this should result in the lowest impact, since the pipeline will be placed within an already disturbed area and service access has already been established along this route. The duration of the impact is considered to be short term (coupled with the construction period). With mitigation, almost all significant impacts could be negated. Was it not for the fact that this route also includes crossing the Skaap River and its tributaries it should have been a clear-cut first choice.

Alternative 2: The second alternative investigated was to place the pipeline to the east of the N7 running along a ridge on a higher elevation. Due to this higher elevation the static pressure of the pipeline will be less which should reduce maintenance. However, the terrain do not allow for trenches, which means that the pipeline will have to be placed above ground (on short pillars). No temporary pipeline will have to be installed and no major excavations will be necessary. Unfortunately, the pipeline will constitute a very conspicuous new and permanent visual feature of the landscape (which at present is still relatively natural with only the N7 and the power lines impacting upon the landscape). In addition the pipeline will be very conspicuous from the N7.

DIRECT IMPACTS

As the name suggest, direct impacts refers to those impacts with a direct impact on biodiversity features and in this case was considered for the four potentially most significant associated impacts which are:

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

LOSS OF VEGETATION AND ASSOCIATED HABITAT

Two broad vegetation types are expected in the study area, namely Namaqualand Klipkoppe Shrubland and Namaqualand Blomveld (Refer to Vegetation types). Both these vegetation types were classified as "Least Threatened" during the 2004 National Spatial Biodiversity Assessment, but are also considered to be "Poorly or Hardly Protected". Fortunately, more than 95% of both these vegetation types are still found in a relative natural state. The vegetation along both alternatives is still in almost pristine condition with only the occasional track spoiling small portions of the natural features.

The "No-Go Alternative": Continual disturbance over time (when taking the cumulative effect into consideration) may have a more significant impact than any of the proposed alternatives. Each failure will result in excavations, vehicle access and possibly even temporary pipeline routes. Eventually the pipeline will have to be replaced.

Alternative 1: Direct impact to vegetation would be moderate to low, due to the fact that this area was previously disturbed in combination with the status of the vegetation itself. Furthermore, the duration of the impact is considered to be temporary since the construction period will be relative short. With mitigation, almost all significant impacts could be negated. Was it not for the fact that this route also includes crossing the Skaap River and its tributaries it should have been a clear-cut first choice.

Alternative 2: Direct impact to the vegetation would again be moderate to low. The reason being that no excavation will be needed and the pipeline would be laid on top of the soil (placed on pillars). The physical footprint would in fact be much lower than for Alternative 1. However, additional service roads will have to be established in portions of the area, and the existing (two-spool) roads might have to be improved.

Mitigation: There are numerous possibilities for mitigation measures to lessen the direct impact of the pipeline construction along both routes, but especially for alternative 1. The construction areas (for both alternatives) should be clearly demarcated and should aim for the absolute minimum disturbance footprint. Only existing access routes should be used where-ever possible.

Prior to construction for Alternative 1, the vegetation and topsoil along the excavation route should be removed and stored separately from the subsoil (to be re-used during rehabilitation after construction). The topsoil and vegetation should be replaced over the disturbed soil to provide a source of seed and a seed bed to encourage re-growth of the species removed during construction. All indications show that the natural vegetation should re-establish itself on the disturbed areas, which will lessen the overall impact significantly. Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas.

For Alternative 2, no vegetation or topsoil should be removed. However, the route should be chosen to minimize the impact on any significant plant species and pillars should be placed to minimize the overall impact of the pipeline route.

LOSS OF ECOLOGICAL PROCESSES

Ecological processes in the study area operate over a wide extent. Since a pipe-line is a linear structure it is expected to have a very limited lateral impact on ecological processes (in most cases). Since the N7 also runs along the same North-South direction as the pipeline, the road itself has already impacted ecological processes. The pipeline is not expected to add significantly to the impact.

Alternative 1: Impact to ecological processes is expected to be low to very low, and restricted to the short construction period (open trench period). Once construction is completed and rehabilitation effected, the impact should be almost negligible.

Alternative 2: Impact to ecological processes is expected to be low-medium, but it will form a 6 km permanent physical barrier preventing normal movement for animals of a certain height (most buck species).

Mitigation: Apart from rehabilitation after construction no further mitigation is possible.

LOSS OF LOCAL BIODIVERSITY AND THREATENED SPECIES

Both *Acacia erioloba* (Camel Thorn) and *Boscia albitrunca* (Witgat Tree) can be expected along the lower lying areas in and around the Skaap River area. *Aloe dichotoma* var. *dichotoma* (Kokerboom) is prominently on display on the north and north-western facing mountain slopes within the study area. Quite a number of these trees has been observed along the area proposed for alternative pipe route (must be protected during construction). The possibility exists that more red data species might be encountered within the study area (especially with regards to annual and geophytes plants). However, since the impact will be very localized and associated with existing disturbed areas, the changes of irreparable or irreversible loss is considered very low.

Alternative 1: Since excavation is needed there will be a possible impact on loss of biodiversity and threatened species. This will be negated to a certain extent by placing the pipeline within the original trench line and due

to the relative local effect of the excavation. As such the impact is expected to be medium to low, but the impact could be significantly negated through good mitigation.

Alternative 2: Since minimal or no excavations is needed, the impact to biodiversity and threatened species is much reduced and considered to be low.

Mitigation: A botanical scan of the approved route should be done by a botanist, during which all significant plant species should be identified. Where encountered important species as well as other viable species such as geophytes can be saved through a search & rescue project before construction of the pipe-line starts. Such species can be relocated to unaffected areas in the same habitat nearby or kept in cultivation for re-establishment in the disturbed areas once construction of the pipeline is completed. In the case of Alternative 2, the pipeline should as a first option be open to slight alterations to allow for minimum disturbance to such significant species and then search and rescue.

LOSS OF ECOSYSTEM CONNECTIVITY

Ecological gradient often operate from the mountains to the lower lying areas and *vice versa*. In the study area this gradient also supports the Skaap River ecosystem (including its tributaries). The Skaap River ecosystem has been classified as an endangered ecosystem during the 2004 National Spatial Biodiversity Assessment. The construction of the pipeline along the route proposed for Alternative 1 can have a significant impact on ecosystem connectivity with regards to river flow. However, with the necessary mitigation the impact could be negated, especially since the major part of the impact will be associated with the short term construction phase.

Alternative 1: Impact to ecosystem connectivity is expected to be medium, and restricted to the short construction period (open trench period). However, with the correct mitigation the impact can be much reduced and almost negligible.

Alternative 2: Impact to ecological processes is expected to be low-medium, but it will form a 6 km permanent physical barrier preventing normal movement for animals of a certain height (most buck species).

Mitigation: There are numerous possibilities for mitigation measures to lessen the direct impact of the pipeline construction along both routes, but especially for alternative 1. The construction areas (for both alternatives) should be clearly demarcated and should aim for the absolute minimum disturbance footprint. Only existing access routes should be used where-ever possible.

Prior to construction for Alternative 1, the vegetation the vegetation and topsoil along the excavation route should be removed and stored separately from the subsoil (to be re-used during rehabilitation after construction). The topsoil and vegetation should be replaced over the disturbed soil to provide a source of

seed and a seed bed to encourage re-growth of the species removed during construction. All indications show that the natural vegetation should re-establish itself on the disturbed areas, which will lessen the overall impact significantly. Once the pipeline has been constructed all further movement must be confined to the access tracks to allow the vegetation to re-establish over the excavated areas. All areas should be re-shaped to represent its original shape. Especial care must be taken to ensure normal river flow (where applicable) and to prevent erosion.

For Alternative 2, no vegetation or topsoil should be removed. However, the route should be chosen to minimize the impact on any significant plant species and pillars should be placed to minimize the overall impact of the pipeline route.

INDIRECT IMPACTS

Indirect impacts are impacts that are not a direct result of the main activity (construction of the pipeline), but are impacts still associated or resulting from the main activity (e.g. access routes).

Alternative 1: No indirect impacts have been identified. Access routes are already established since this is also the current pipeline route.

Alternative 2: Although tracks are established along most of the proposed route, additional tracks (roads) will have to be established once the route has been finalized. It is also not sure that the current tracks will be suitable or follow the correct line in all cases.

Mitigation: Existing tracks or routes should be used where-ever possible. New routes should only be considered if all alternatives have been investigated. Routes should also be placed to minimize the visual impact thereof.

CUMULATIVE IMPACTS

Both vegetation types expected in the study area has a conservation rating of Least Threatened, which imply that at present this vegetation types are not under immediate threat. In order to comprehend the cumulative impact one has to understand to what extend the proposed activity will contribute to the cumulative loss of this vegetation type and other biodiversity features on a regional basis. Fortunately, more than 95% of both these vegetation types are still found in a relative natural state. The question

Alternative 1: The impact is expected to be low to very low, associated mostly with the short construction phase.

Alternative 2: The impact is expected to be low to very low, associated mostly with the short construction phase.

Mitigation: All the mitigations discussed in the previous sections are applicable (with regards to the applicable route chosen).

QUANTIFICATION OF ENVIRONMENTAL IMPACTS

Using the Van Schoor formula the impacts can be quantified as follows.

THE NO-GO ALTERNATIVE

It is very important to note that the "No-Go Alternative" will not result in a *status quo* or no impact, since this portion of the pipeline has already been identified as the portion subject to the most frequent failures. As a result the continual disturbance over time (when taking the cumulative effect into consideration) may have a more significant impact than any of the proposed alternatives. Each failure will result in excavations, vehicle access and possibly even temporary pipeline routes. Eventually the pipeline will have to be replaced.

$$S = [(fd + int + sev + ext + loc) \times (leg + gcp + pol + la + str) \times P] \text{ (as adapted)}$$

$$S = [(1 + 1 + 2 + 1 + 2) \times (1 + 1 + 1 + 2 + 1) \times 0.75] = 31.5 \%$$

ALTERNATIVE 1

The preferred alternative is to locate the replacement pipeline within the old pipeline trench. This will entail the placement and installation of a temporary pipeline (to ensure continual water supply during the construction of the new pipeline), the excavation and removal of the original pipeline, the placement of the new pipeline and rehabilitation of the construction area (as well as the removal and rehabilitation of the temporary pipeline and its route). The duration of the impact is considered to be short term (coupled with the construction period). However, the proposed route includes crossing the ecological sensitive Skaap River and its tributaries on more than one occasion.

Without mitigation: (River crossings and major excavations)

$$S = [(fd + int + sev + ext + loc) \times (leg + gcp + pol + la + str) \times P] \text{ (as adapted)}$$

$$S = [(1 + 1.5 + 2 + 2 + 2) \times (1 + 1 + 1 + 2 + 1) \times 0.95] = 48.5 \%$$

With mitigation (almost all significant impacts could be negated)

$$S = [(fd + int + sev + ext + loc) \times (leg + gcp + pol + la + str) \times P] \text{ (as adapted)}$$

$$S = [(1 + 1.5 + 1 + 1 + 2) \times (0 + 0 + 0 + 2 + 0) \times 0.95] = 12.4 \%$$

ALTERNARIVE 2

Alternative 2: The second alternative investigated was to place the pipeline to the east of the N7 running along a ridge on a higher elevation. Due to this higher elevation the static pressure of the pipeline will be less which should reduce maintenance. However, the terrain do not allow for trenches, which means that the pipeline will have to be placed above ground (on short pillars). No temporary pipeline will have to be installed and no major excavations will be necessary. Unfortunately, the pipeline will constitute a very conspicuous new and permanent visual feature of the landscape (which at present is still relatively natural with only the N7 and the power lines impacting upon the landscape). In addition the pipeline will be very conspicuous from the N7.

Without any mitigation (visual impact prominent)

$$S = [(fd + int + sev + ext + loc) \times (leg + gcp + pol + ia + str) \times P] \text{ (as adapted)}$$

$$S = [(1 + 1 + 2 + 2 + 2) \times (1 + 1 + 1 + 3 + 1) \times 0.95] = \boxed{53.2\%}$$

With mitigation (visual impact much negated but still permanent)

$$S = [(fd + int + sev + ext + loc) \times (leg + gcp + pol + ia + str) \times P] \text{ (as adapted)}$$

$$S = [(1 + 1 + 2 + 1 + 2) \times (0 + 0 + 0 + 3 + 0) \times 0.95] = \boxed{20\%}$$

RECOMMENDATIONS & IMPACT MINIMIZATION

Considering the No-Go alternatives against the two proposed alternatives shows that the No-Go alternative is not viable and might even result in more disturbances over time. When taken into account that such maintenance work is mostly done without the supervision of an experienced environmental control officer, the cumulative impact over time can be even more significant.

Having evaluated and discussed the various biodiversity aspects associated with the two proposed alternatives it is clear that the major differences as well as the most significant impacts between the two proposed pipeline routes boils down to the temporary crossing of an ecologically important river system (Skaap River) in the case of Alternative 1 against the permanent visual impact associated with Alternative 2. Since the underground placement proposed in alternative 1 can be seen as a short term impact and almost all significant impacts associated with the construction phase can be negated the permanent visual impact associated with alternative two weighs the most and has resulted in the least desirable option after the No-Go option.

With the available information to the author's disposal it is recommended that Alternative 1 be chosen as the option associated with the least environmental impact, provided that mitigation is adequately addressed.

IMPACT MINIMIZATION

- The final route must be scanned by a suitably experienced botanist in order to identify any significant plant species (e.g. rare & endangered species and geophytes).
- The final route must be demarcated (with the aim at minimal width/smallest footprint).
- Before any excavation is allowed all significant plant species identified during the botanical scan must be rescued in a search and rescue operation supervised by a suitably qualified botanist.
- Only existing access routes should be used wherever possible.
- All topsoil (the top 20 cm) should be removed and stored separately to be re-used during the rehabilitation after construction (the purpose being to re-use as much of the seed and bulb stock within the topsoil layer for re-establishing these species in the disturbed areas).
- The integrity of the Skaap River system must be protected throughout the construction and operation phase of the pipeline.
- Adequate measures must be implemented to ensure against erosion.
- All alien vegetation should be removed from the property, as is legally required.
- All rubble and rubbish should be collected and removed from the site to a suitable registered waste disposal site.
- All legal requirements must be adhered to (e.g. General Authorization from the Department of Water Affairs with regards to river crossings).

Appendix E

Permit(s) / license(s) from any other organ of state including service letters from the municipality

Appendix F

Public participation information

APPENDIX F:

PUBLIC PARTICIPATION:

- i. Copy of potential interested and affected parties informed during 1st round of public participation**
- ii. Copy of registered interested and affected parties**
- iii. Comments and response report**
- iv. Comments received during first round of public participation**
- v. Comments received during second round of public participation**
- vi. Proof of newspaper advertisement**
- vii. Proof of poster**
- viii. Copy of maildrop/invitations to comment/notice**

APPENDIX F (i): 2011

Copy of potential of interested and affected parties informed during 1st round of public participation

EnviroAfrica

Environmental Planning and Impact Assessment Consultants
 Omgewingsbeplanning en Impakbeoordeling Konsultante

I&AP List for:

Advert Placed:

No.	Title	Initials/Name	Surname	Affiliation	Postal Address
Property Owner:					

Municipal Ward Councillor:

1 The Mayor & Councillors Nama Khoi Municipality P.O.Box 17

Municipality with jurisdiction in area:

2 The municipal manager Nama Khoi Municipality P.O.Box 17
 3 The municipal manager Namakwa District Municipality P O Box 5

Ratepayers Organisation:

State organisations:

4	Mr	Wessel	Jacobs	Dept. Environment and nature conservation- Northern Cape	Private Bag X6102
5	The	Provincial	Manager	SAHRA-Ncape	PO Box 1930
6	The	Head of	Department	NC Dept. Agriculture & Land reform	162 George Street
7	Mr	Lj	Snyders	Dept of Water Affairs- Northern Cape	Private Bag X6101
8	Ms	Lucille	Caarsten	Dept. Environment and Nature Conservation	Private Bag X16

*Okiep
 Ministry of Water & Forestry*

Namakwa Water

DENC Ref: NC/BA/NAM/NAB3/2011 NCP/EIA/0000063/2011

Date:

Town/City	Code	Telephone	Fax	E-mail	Date Sent
-----------	------	-----------	-----	--------	-----------

1 Springbok 8240 027 7188100 027 7121635 springbok@namakhoi.org.za

2 Springbok 8240 027 7188100 027 7121635 springbok@namakhoi.org.za

3 Springbok 8240 027 720 8000 027 712 8040 info@namakwa-dm.gov.za

4 Kimberley 8300 0538074825 0538321065 wjacobs@half.ncape.gov.za

5 Kimberley 8300 053-8312537 053-8331435 ksofeleng@nc.sahra.org.za

6 Kimberley 8300 053-8389100 053-8324328 enquiries@agrinc.gov.za

7 Kimberley 8300 053 831 4534 snydersl@dwarf.gov.za

8Springbok 8240 027 7188800

EnviroAfrica

Environmental Planning and Impact Assessment Consultants
 Omgewingsbeplanning en Impakbeoordeling Konsultants

I&AP List for: Namakwa Water

DENC ref:

NC/BA/NAM/NAMUN-AB/3/2011 NCP/EIA/000006/2011

Date:

Advert Placed:

Registered

No.	Title	Initials/Name	Surname	Foire	Affiliation	Postal Address	Town/City	Code	Telephone	Fax	E-mail	Date Sent
1	Mr			Fourie	Manager: O'keef Company (PTY) Ltd	PO BOX 17	Nababeep	8265	027 713 8341	027 713 8341	fourie@o'keefactive.co.za	

State organisations

5.	Mr	Wessel	Jacobs		Dept. Environment and nature conservation- Northern Cape	Private Bag X6102	Kimberley	8300	0538074825	053821035	wjacobs@half.ncaps.gov.za	
6	The	Provincial	Manager		SAHRA-N'cape	PO Box 1830	Kimberley	8300	053-8312537	053-8331435	ksoleng@nc.sahra.org.za	
7	The	Head of	Department		NC Dept. Agriculture & Land reform	162 George Street	Kimberley	8300	053-8389100	053-8374328	enquiries@agrinc.gov.za	
8	Mr	LJ	Snyders		Dept of Water Affairs- Northern Cape	Private Bag X6101	Kimberley	8300		053 831 4534	snyders@dwaf.gov.za	
9	Ms	Lucille	Caustien		Dept. Environment and Nature Conservation	Private Bag X16	Springbok	8240	027 7188800			

APPENDIX F (ii): 2011

Copy of registered interested and affected parties

REGISTRATION & RESPONSE FORM FOR INTERESTED PARTIES

NAMAKWA WATER : REFURBISHMENT

(Concordia commonage)

Name: O'OKIEP COPPER COMPANY (PTY) LTD
Affiliation: Manager: A.J. Fourie
Contact postal address: P.O. Box 17
NABABEEP 8265
Telephone no: 027 713 8341 / 8842 / 8499
Fax no: +27 (0) 27 713 8341 / 8499
E-mail address: fouriej@netactive.co.za

Preferred method of communication:

POST

FAX

E-MAIL

I support the Application

I do not support the Application

Please provide reasons for the above. If you only wish to raise issues or concerns regarding the potential social, economic or biophysical impacts of the proposed project? Please state below. You are then automatically a Registered I&AP. (Please see definition below)

O'okiep Copper Company has closed down on mining operations but is in the rehabilitation and closure process. The following are issues that need to be considered:

1. Current rehabilitation plans of O'okiep Copper Co.
2. Tenements of O'okiep Copper Co.
3. Possible undermining of areas where the pipeline is planned for.

Please complete the form and send to reach us by no later than 12 July 2011.

P.O. Box 5367 HELDERBERG 7135 or fax it to 086-512 0154 or e-mail to admin@enviroafrica.co.za

*Registered Interested and Affected parties (I&APs) in terms of Regulation 55 GN No. R543 of 18 June 2010 includes all persons:

- Who have submitted written comments;
- Attended public meetings; and
- Who have requested in writing, for their names to be placed on the register.
- all organs of state which have jurisdiction in respect of the activity

Only registered I&APs will be notified in terms of regulation 55 GN No. R543 of 18 June 2010 of;

- The outcome of an application, the reasons for the decision and that an appeal may be lodged; and
- The applicants intention to appeal the decision of the competent authority, together with an indication of where and for what period the appeal submission will be available for inspection.

APPENDIX F (iii): 2011

Comments and response report:

APPENDIX F (iv): 2011

**Comments received during first round of
public participation**

APPENDIX F (v): 2011

Comments on DBAR

APPENDIX F (vi):2011

Proof of newspaper advertisement

KAMIESBERG MUNISIPALITEIT / MUNICIPALITY**HERSONERING : RESTANT PLAAS NO 650, AFDELING
NAMAQUALAND**

Kennis geskied hiermee ingevolge die Noord-Kaapse Wet op Beplanning en Ontwikkeling, 1998 (Wet 7 van 1998), dat die Raad 'n aansoek ontvang het vir 'n hersonering van 'n gedeelte van bogenoemde eiendom na Oordsone I ten einde ten einde bestaande en addisionele toeriste akkommodasie fasiliteite vanaf die eiendom te bedryf.

'n Volledige aansoek, ingedien deur Planscape Stads- en Streekbeplanners ten behoeve van Capra Atlantic Pty Ltd, is tydens kantoor ure beskikbaar vir publieke kommentaar by Kamiesberg Munisipaliteit te Garies. Navrae kan gerig word aan Me A de Villiers by tel: (027) 6528000. Skriftelike kommentaar of beswaar met betrekking tot die aansoek, tesame met relevante redes, moet so gou doenlik, maar nie later as 24 Junie 2011 ingedien word by onderstaande kontak besonderhede.

REZONING: FARM NO 650, DIVISION NAMAQUALAND

Notice is hereby given in terms of the Northern Cape Planning and Development Act (Act 7 of 1998) that Council received an application for the rezoning of a portion of above mentioned property to Resort zone I in order to accommodate existing and additional tourism accommodation facilities on the land.

Details of the proposal, submitted by Planscape Town and Regional Planners on behalf of Capra Atlantic Pty Ltd, are available for public comment at the offices of Kamiesberg Municipality in Garies, during office hours. Enquiries can be made to Ms A de Villiers at (027) 6528000. Comments or objections with relevant reasons must be lodged in writing, as soon as possible, but before 24 June 2011, at the following address:

Planscape Town and Regional Planners, PO Box 557, Moorreesburg, 7310.
Tel: 022 4334408, Fax: 0866972069

Municipal Manager
03/06/2011

**BATEBESLAGLEGGING
VEILING**

Die ondergemelde items word verkoop op
**DINSDAG, 21 JUNIE 2011 BY DIE POLISIE
MOTORHAWE, INDUSTRIELE GEBIED, SPRINGBOK
om 10H00.**

Toyota Tazz SAP 13/150/2010 Reg nr BZN 364 NC
Opel Astra SAP 13/271/2009 Reg nr CJ 29292

**TERME: Voetstoots en gewaarborgde tjek/kontant
by verkoping. BTW Eksklusief.**

GEDATEER te SPRINGBOK op 1 JUNIE 2011.

**G.J. LE R. ROSSOUW
BALJU VIR SPRINGBOK
POSBUS 54
SPRINGBOK
8240
TEL: 027 712 1346**

SEDIBENG WATER RAAD

ENVIROAFRICA BK

PUBLIC DEELNAME PROSES

DENC REF NO: NC/BA/NAM/NAM/NAB3/2011 NCP/EIA/0000063/2011
NOTICE No. 0315

**NAMAKWA WATER : OPKNAPPING
(Concordia Dorpsgronde)**

Hiermee word kennis gegee van 'n publike deelname proses in terme van die NEMA (National Environmental Management Wet No. 107 van 1998). Dit het betrekking op die aansoek vir omgewingsgoedkeuring vir die volgende aktiwiteite:

Relevante Kennis:	Aktiwiteitsno. (s) (in terme van die toegepaste kennis- gewing):
National Environmental Management Act, 1998 (Act No. 107 of 1998) R544	9, 18, 37, 56
National Environmental Management Act, 1998 (Act No. 107 of 1998) R 546	2, 12, 13, 26

Die voorgestelde ontwikkeling sluit die bogenoemde aktiwiteite gelys in terme van NEMA (National Environmental Management Act). EnviroAfrica bk is deur Sedibeng Water Raad aangestel, om 'n Basiese Assesering Verslag van die voorgestelde projek te doen. 'n Aansoekvorm is ingehandig by die Departement van Omgewing en Natuurbewaring (DENC).

Projek beskrywing en Ligging

Die pyplynnetwerk wat water voorsien aan Steinkopf, Bulletrap, Nakabeep, Okiep, Carolusberg, Concordia, De Beers se myn en Springbok se pype is oud en verval. Dringende opknapping van die pyplynnetwerk is dus nodig. Die aansoek is vir die vervanging van 'n 6km porsie swaartekrag hoofleiding (gravity mains) pyplyn en die vervanging van 11km se pype vanaf die optelpunt pyp wat na Nababeep gaan.

Beskrywing van alternatiewe:

Alternatiewe moontlikhede van die voorgestelde pyproete en die opsie om nie voort te gaan nie, sal met die bestekopname verslag ondersoek word.

Publike Deelname:

EnviroAfrica nooi u of u organisasie uit om skriftelik te registreer as 'n belangstellende en geaffekteerde party en om enige sake, probleme en geleenthede wat op die projek betrekking het, uit te lig. Enige navrae en geldentifiseerde sake moet EnviroAfrica se kantore by die onderstaande adres voor of op 12 Julie 2011 bereik.

Meer inligting-Konsultant: EnviroAfrica (NAMAKWA WATER); P.O. Box 5367, HELDERBERG, 7135

EnviroAfrica

APPENDIX F (vii):2011

Proof of poster

PROOF OF POSTERS PLACED ALONG THE BULLETRAP AND NABABEEB PORTIONS OF THE PIPELINE

Photo 1: A2 Poster at the Bulletrap turn-off (adjacent to the parking area).

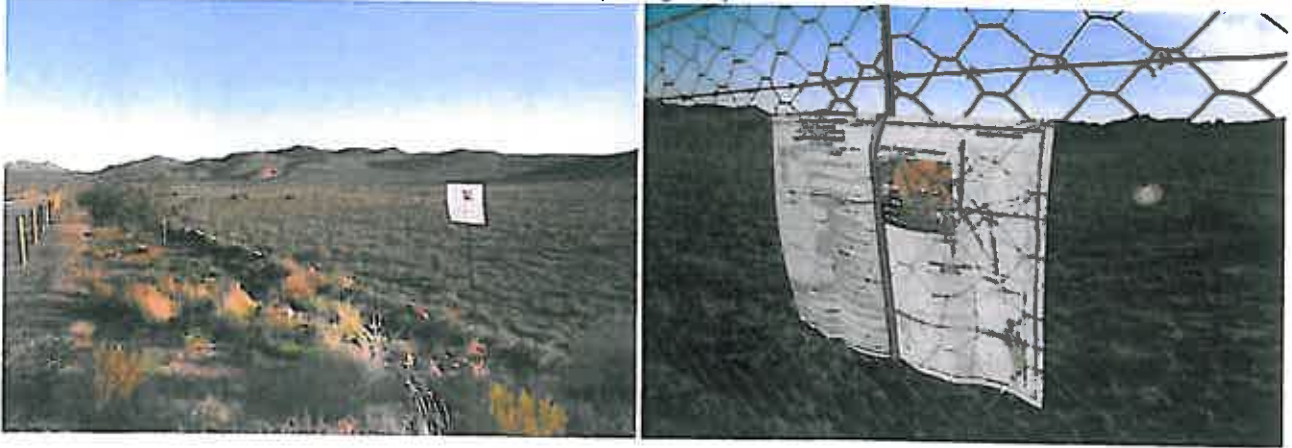


Photo 2: A2 Poster at the gate leading to the Bulletrap Commonage



Photo 3: A2 Poster placed at Rooiwinkel town (Between Bulletrap and Springbok)

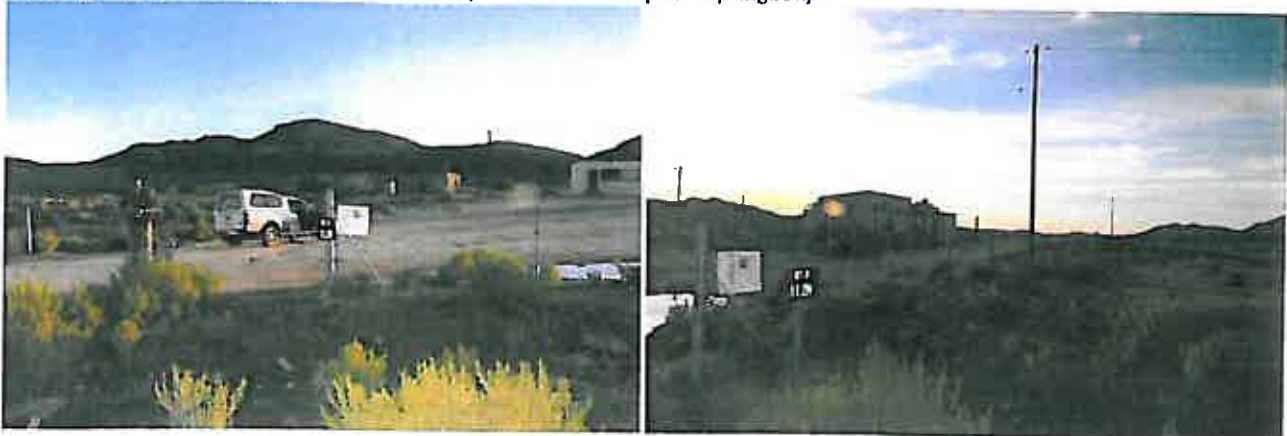
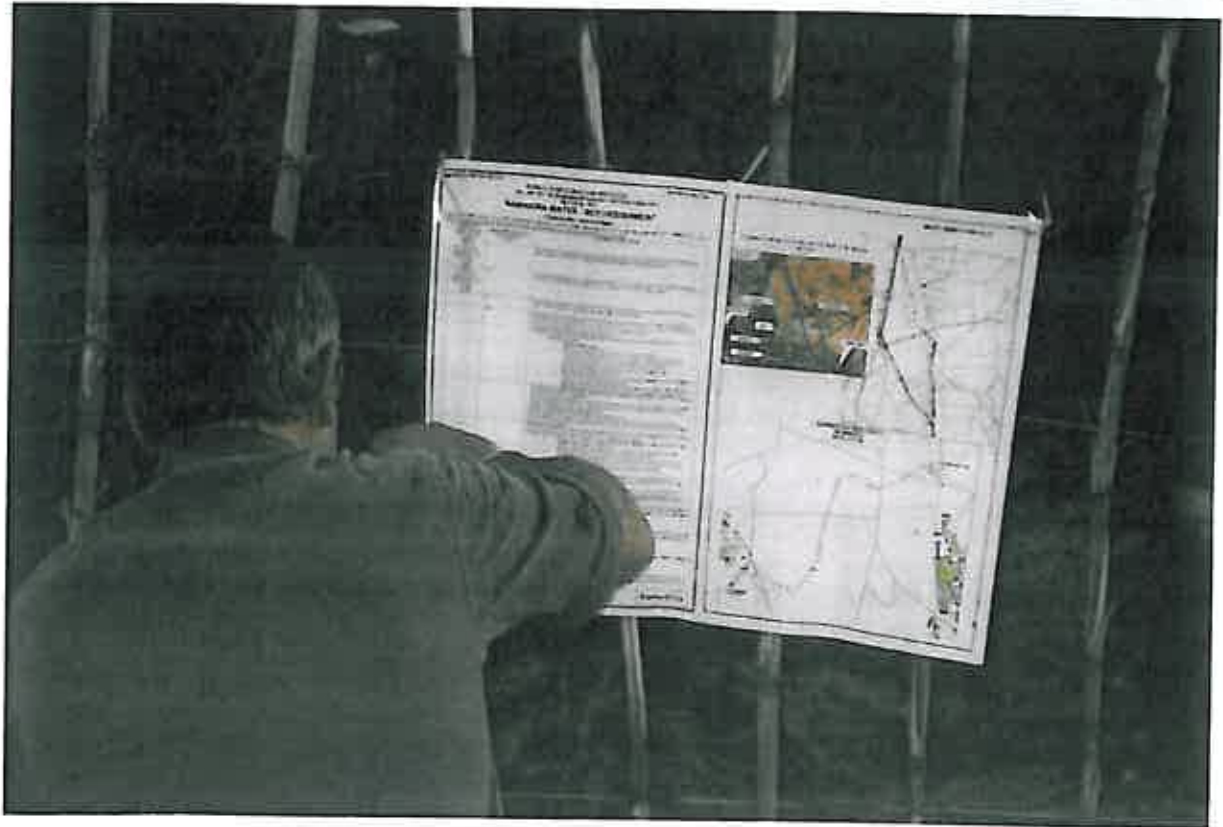


Photo 4: A2 Poster on the fence next to the entrance to NababEEP Town

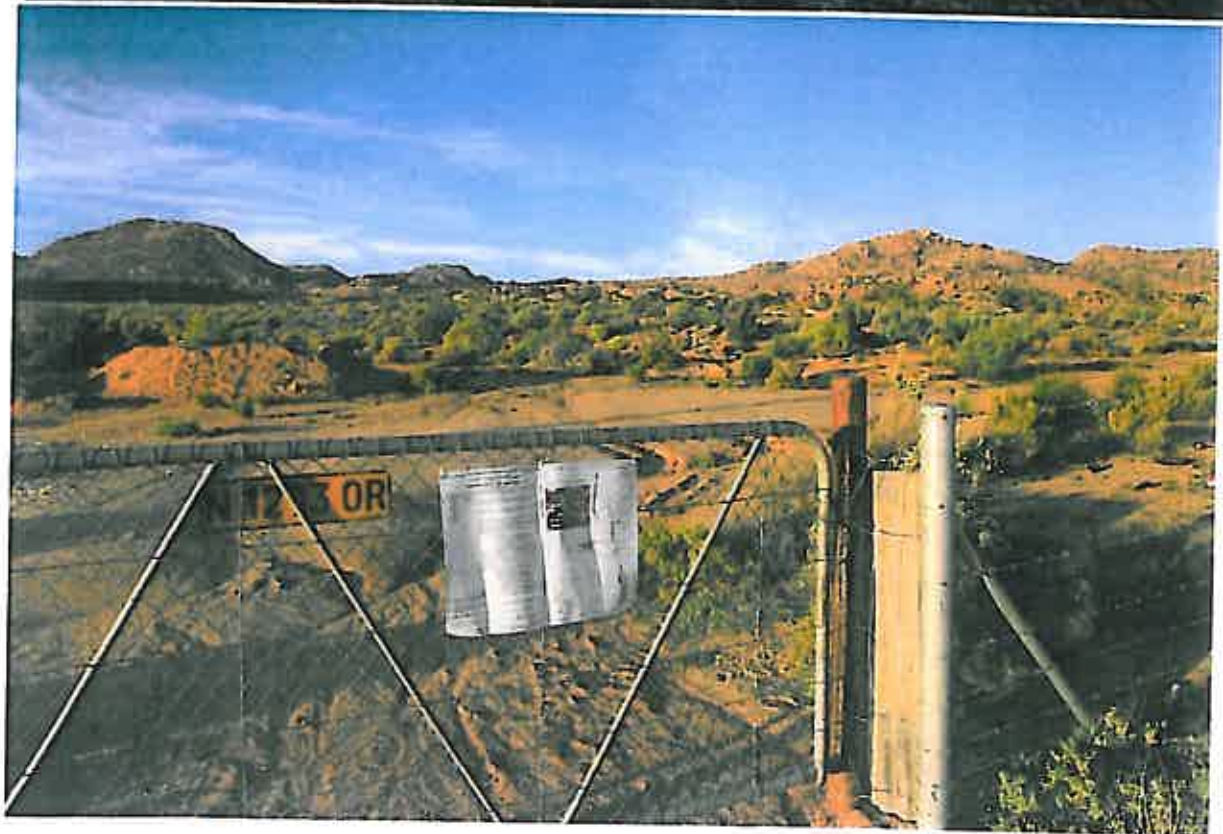


Photo 5: A2 Poster on the notice board of the Foodzone (main local supermarket) at Nababeep





Poster photos



APPENDIX F (viii):2011

**Copy of mail drop/invitations to
comment/notice**



EnviroAfrica

Environmental Planning and Impact Assessment Consultants
Omgewingsbeplanning en Impakbeoordeling Konsultante

PUBLIC PARTICIPATION PROCESS:

June 2011

OUR REF NO:0315 DENC REF NO: NC/BA/NAM/NAM/NAB3/2011 NCP/EIA/0000063/2011

**THIS APPLICATION IS FOR THE PROPOSED NAMAKWA WATER: REFURBISHMENT
(Concordia commonage)**

Dear I&AP,

EnviroAfrica, as a firm of independent environmental consultants, has been appointed by Sedibeng Water Board, to undertake the environmental investigation relevant to the proposed development, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"); for the application for environmental authorisation to undertake the following activities:

Regulation No. R. 544 (June 2010) Listing Notice 1: Activity numbers: 9, 18, 37 and 56
Regulation No. R. 546 (June 2010) Listing Notice 3: Activity numbers: 2,12,13 and 26

EnviroAfrica cc has been appointed to undertake the **Basic Assessment (BAR)** for the proposed project. An application form was submitted to DENC, the Department of Environment and Nature Conservation which is the designated Competent Authority in the Northern Cape.

In terms of the Regulations of the National Environmental Management Act (Act No. 107 of 1998), (R543 (55(1))), you as an interested party, are invited to register and to identify any environmental issues, concerns, impacts and/or opportunities, which you feel may be relevant to the project. All your comments will be addressed in the report that will be submitted to DENC for decision-making.

EnviroAfrica invites you or your organisation to register (in writing) as Interested and Affected Parties (I&APs) and to identify any issues, concerns or opportunities relating to this project. Any queries and identified issues must reach the EnviroAfrica office (in writing) at the below address on or before **12 July 2011**.

You are also requested to pass this information to any person you feel should be notified.

Yours sincerely

Surina Brink
EnviroAfrica cc

Attached please find: Comment Form, Copy of Advert/poster – indicating location.

PUBLIC PARTICIPATION PROCESS
DENC REF NO: NC/BA/NAM/NAM/NAB3/2011 NCP/EIA/0000063/2011
NOTICE No. 0315

NAMAKWA WATER : REFURBISHMENT
(Concordia commonage)

Notice is hereby given of a public participation process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998); for the application for environmental authorisation to undertake the following activities:

Indicate the number and date of the relevant notice:	Activity No (s) (In terms of the relevant or notice) :	Description of the activity:
National Environmental Management Act, 1998 (Act No. 107 of 1998) R544	9	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water (i) with an internal diameter of 0,36 metres or more; or
National Environmental Management Act, 1998 (Act No. 107 of 1998) R 546	18	The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation or removal or moving of soil, sand, shells, shell grit, pebbles or rock from a water course
	37	The expansion of facilities or infrastructure for the bulk transportation of water, sewage or storm water the facility or infrastructure is expanded by more than 1000 metres in length; or
	56	Phased activities for all activities listed in this Schedule, which commenced on or after the effective date of this Schedule, where any one phase of the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold; excluding the following activities listed in this Schedule:
	2	Construction of reservoirs for bulk water supply with a capacity of more than 250 cubic metres a. In the Northern Cape: i) outside urban areas in (aa) national protected area expansion strategy focus areas (bb) sensitive areas identified in an environmental management framework as contemplated in chapter 5 of the Act and adopted by the competent authority (cc) site or areas identified in terms of an international Convention; (dd) CBA as identified in systematic authority or on bioregional plans (ee) core areas in biosphere reserves (ff) are within 10 kilometres from any protected area identified in terms of NEMPAA or from the core area if a biosphere reserve (gg) areas seawards of the developmental setback line or within 1 kilometre from the high-water mark of the sea if no such developmental setback line is determined
	12	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (a) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; (b) Within critical biodiversity areas identified in bioregional plans; (c) Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on even in urban areas.
	13	The clearance of an area of 1 hectare or more vegetation where 75% or more of vegetation cover constitutes indigenous vegetation, except where such removal of vegetation required for: In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape and Western Cape: (i) Outside urban areas, the following: (aa) A protected area identified in terms of NEMPA, excluding conservancies (bb) National Protected Area Expansion Strategy Focus areas (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority (dd) Site or areas identified in terms of an international Convention (ee) Core areas in biosphere reserve (ff) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometre from any protected area identified in terms of NEMPAA or from the core area of a biosphere reserve (gg) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such developmental setback line is determined
	26	Phased activities for all activities listed in this Schedule, All the areas as identified for the specific activities listed in this schedule

The proposed development includes the above activities listed in terms of the NEMA EIA Regulations. EnviroAfrica cc has been appointed by Sedibeng Water Board, to undertake the BASIC ASSESSMENT for the proposed project. An Application Form was submitted to the Department of Environmental and Nature Conservation (DENC)

Project Description & Location

The pipeline network that provides water to Steinkopf, Bulletrap, Nakabeep, Oklap, Carolusberg, Concordia, De Beers' mine and Springbok is very old. Urgent refurbishment of the pipeline is therefore needed. The application is for the replacement of 6km gravity mains pipeline and the replacement of 11km takeoff pipeline to Nababeep.

Description of Alternatives:

Alternative options for the of the pipe route and the option of not proceeding with the proposed development are considered within the Basic Assessment Report.

Public Participation:

EnviroAfrica invites you or your organisation to register (in writing) as Interested and Affected Parties (I&APs) and to identify any issues, concerns or opportunities relating to this project. Any queries and identified issues must reach the EnviroAfrica office (in writing) at the below address on or before 12 July 2011.

More information - Consultant: EnviroAfrica (NAMAKWA WATER); P.O. Box 5367, HELDERBERG, 7135
Fax: 086 512 0154 / Tel 021 8511616 / E-mail: admin@enviroafrica.co.za

EnviroAfrica

REGISTRATION & RESPONSE FORM FOR INTERESTED PARTIES
NAMAKWA WATER : REFURBISHMENT
(Concordia commonage)

Name: _____
Affiliation: _____
Contact postal address: _____
Telephone no: _____
Fax no: _____
E-mail address: _____

Preferred method of communication: POST FAX E-MAIL

I support the Application I do not support the Application

Please provide reasons for the above. If you only wish to raise issues or concerns regarding the potential social, economic or biophysical impacts of the proposed project? Please state below. You are then automatically a Registered I&AP. (Please see definition below)

Please complete the form and send to reach us by no later than **12 July 2011**.
P.O. Box 5367 HELDERBERG 7135 or fax it to 086-512 0154 or e-mail to admin@enviroafrica.co.za

*Registered Interested and Affected parties (I&APs) in terms of Regulation 55 GN No. R543 of 18 June 2010 includes all persons:

- Who have submitted written comments;
- Attended public meetings; and
- Who have requested in writing, for their names to be placed on the register.

all organs of state which have jurisdiction in respect of the activity

Only registered I&APs will be notified in terms of regulation 55 GN No. R543 of 18 June 2010 of;

- The outcome of an application, the reasons for the decision and that an appeal may be lodged; and
- The applicants intention to appeal the decision of the competent authority, together with an indication of where and for what period the appeal submission will be available for inspection.

Appendix G

Specialist reports (/s)

Agency for Cultural Resource Management

Specialists in Archaeological Studies and Heritage Resource Management

No. 5 Stuart Road Rondebosch, 7700 Phone/Fax 021- 685 7589

E-mail: acrm@wcaccess.co.za Cellular: 082 321 0172

24 October 2011

Att: Mr Bernard de Wit
EnviroAfrica cc
PO Box 5367
Helderberg, 7135

Dear Mr de Wit,

ARCHAEOLOGICAL SCOPING THE PROPOSED CONSTRUCTION OF A NEW WATER PIPELINE BETWEEN ROOIWINKEL AND NABABEEP, NORTHERN CAPE

1. Introduction

EnviroAfrica, on behalf of Bvi Consulting Engineers, requested that the Agency for Cultural Resource Management conduct an Archaeological Scoping assessment for the proposed construction of (a new) water supply pipeline between Rooiwinkel (near Okiep) and NababEEP (Nama Khoi Municipality) in the Namaqualand region of the Northern Cape Province (Figure 1).

The pipeline between Okiep, Rooiwinkel and NababEEP is part of a larger, extensive distribution network of pipelines that distributes water from the Orange River, and supplies potable water to numerous small towns in the region, including Steinkopf, Bulletrap, NababEEP, Okiep, Carolousberg, Concordia and Springbok. The approximately 200 kms of steel and asbestos pipes have an average age of about 38 years, and most of the distribution pipes are currently in need of urgent repair and replacement as a result of frequent breakages and leakages.

The existing water supply pipeline between Okiep and NababEEP was installed in 1973 and its condition has deteriorated rapidly since 1992. The proposed project entails the replacement of the aging pipeline between Rooiwinkel and NababEEP (Figure 2). The distance of the pipeline is about 11 kms. In addition, a new concrete reservoir will be built near NababEEP that will supply the town with potable water.

The water supply pipeline is located alongside the historic copper railway line between Rooiwinkel and NababEEP. In the early 1850s copper was discovered at Okiep near Springbok and was initially shipped from Hondeklip Bay to Cape Town. Later, in 1855, the Cape Copper Company built a jetty at Port Nolloth and transported their copper ore from Okiep to Port Nolloth initially by mule trucks, but in 1869 the Cape Copper Company began construction on a railway line and in 1894 the first locomotive 'Clara' was used to transport the ore to the coast. The railway line between Okiep and NababEEP was built as part of this network of railway lines used to transport the ore to the coast.

The railway line between Okiep and Nababeep was discontinued in the 1940s and the railway lines removed sometime in the 1950s and used in the construction of Eskom powerlines in region (Mr Christian Stefan Bvi Consulting Engineers pers. comm.). In that time the railway line has fallen into disrepair.

On behalf of the Nama Khoi Municipality, Bvi Consulting Engineers are proposing to lay the new water supply pipeline between Rooiwinkel and Nababeep, directly on top of the old copper railway line. No physical alteration of the railway line will take place however, as the pipes will be laid on pre-cast concrete plinths that will be placed on top of the line.

2. Approach to the study

The proposed 11 km pipeline route between Rooiwinkel and Nababeep was assessed on foot and by means of a 4 x 4 vehicle.

The assessment took place on 04 August, 2011.

Photographs of the old railway line and the proposed pipeline route are illustrated in Figures 3-11.

The ± 200 m² footprint area of the proposed concrete reservoir is illustrated in Figure 10.

3. Findings

No pre-colonial archaeological remains were documented during the Scoping Impact assessment of the proposed pipeline between Rooiwinkel and Nababeep.

No archaeological remains were found in the footprint area of the proposed concrete reservoir, which is an old abandoned borrow pit.

While most of the historic copper railway line has fallen into disrepair and ruin (refer to Figures 3-6), smaller sections of the line are still intact and could be 're-used'. Of particular interest for historical archaeology is the presence of four stone built bridge crossings. Apart from Bridge Crossing 1 (S 29 34.135 E 17 50.382) which has almost collapsed (refer to Figures 12-14), the remaining Bridge Crossings 3 (S 29 34.762 E 17 49.546), and 4 (S 29 35.288 E 17 49.432 on map datum wgs 84) are well preserved and in very good condition (refer to Figures 15-19). Bridge Crossing 2, unfortunately, was not visited due to time constraints. The stone built bridges are quite intricate and have been built using a combination of dry packed shale and sandstone and rough daga (or cement).

The locomotive 'Clara' final 'resting place' is at the Nababeep Museum (refer to Figures 20-22).

4. Heritage legislation

The applicant is reminded that the National Heritage Resources Act (Act No. 25 of 1999) protects a variety of heritage resources including archaeological, palaeontological, and historical material (including ruins) more than 100 years old (Section 35) and non-ruined structures older than 60 years (Section 34). Landscapes with cultural significance are also protected.

It is an offence to damage, destroy or alter any historical features (including ruins and non-ruined structures) without a permit issued by the Provincial Heritage Resources Authority of the Northern Cape¹

5. Conclusion

Indications are that the proposed project is viable, but extreme care must be taken to protect the integrity of the historic Bridge Crossings.

The proposed project does present opportunities in order for this to be achieved.

6. Recommendations

With regard to the proposed construction of a water supply pipeline between Rooiwinkel and Nababeep and the proposal to lay the new pipeline on top of the historic copper railway line (by means of pre-cast concrete plinths), the following recommendations are made:

1. The heritage practitioner supports the proposal with the following proviso.
 - 1.1 A detailed recording (photographic and technical) of all the Bridge Crossings must be made by a suitably qualified heritage practitioner.
 - 1.2 A more detailed account of the history of the railway line between Okiep and Nababeep must be done.
 - 1.3 Bvi Consulting Engineers have indicated their willingness to help to rebuild Bridge Crossing 1, in consultation with a specialist heritage consultant.
 - 1.4 No ruins, structures or features older than 60 years may be destroyed, altered, or renovated without a permit issued by Heritage Northern Cape.
 - 1.5 A copy of this report must be submitted to the South African Heritage Resources Agency in Cape Town (Att Ms M. Galimberti PO Box 4367, Cape Town, 8000), and Northern Cape Heritage (Att Mr J. Sinthumule Private Bag X5004, Kimberley, 8300. Phone 053 807 4710 e-mail jsinthumule@ncpg.gov.za).

Yours sincerely



Jonathan Kaplan

¹ Contact Mr Joas Sinthumule jsinthumule@ncpg.gov.za

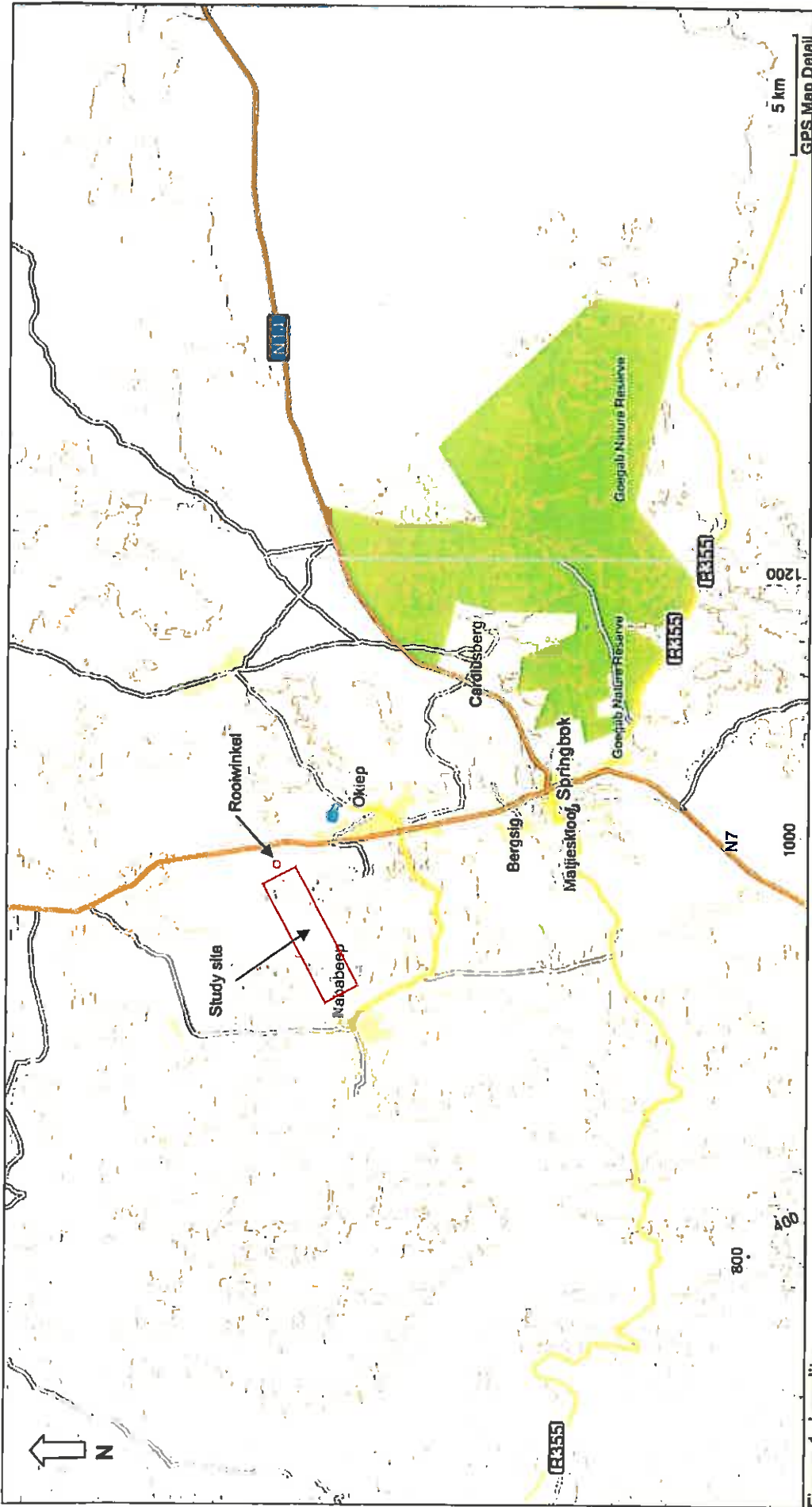


Figure 1. Locality map

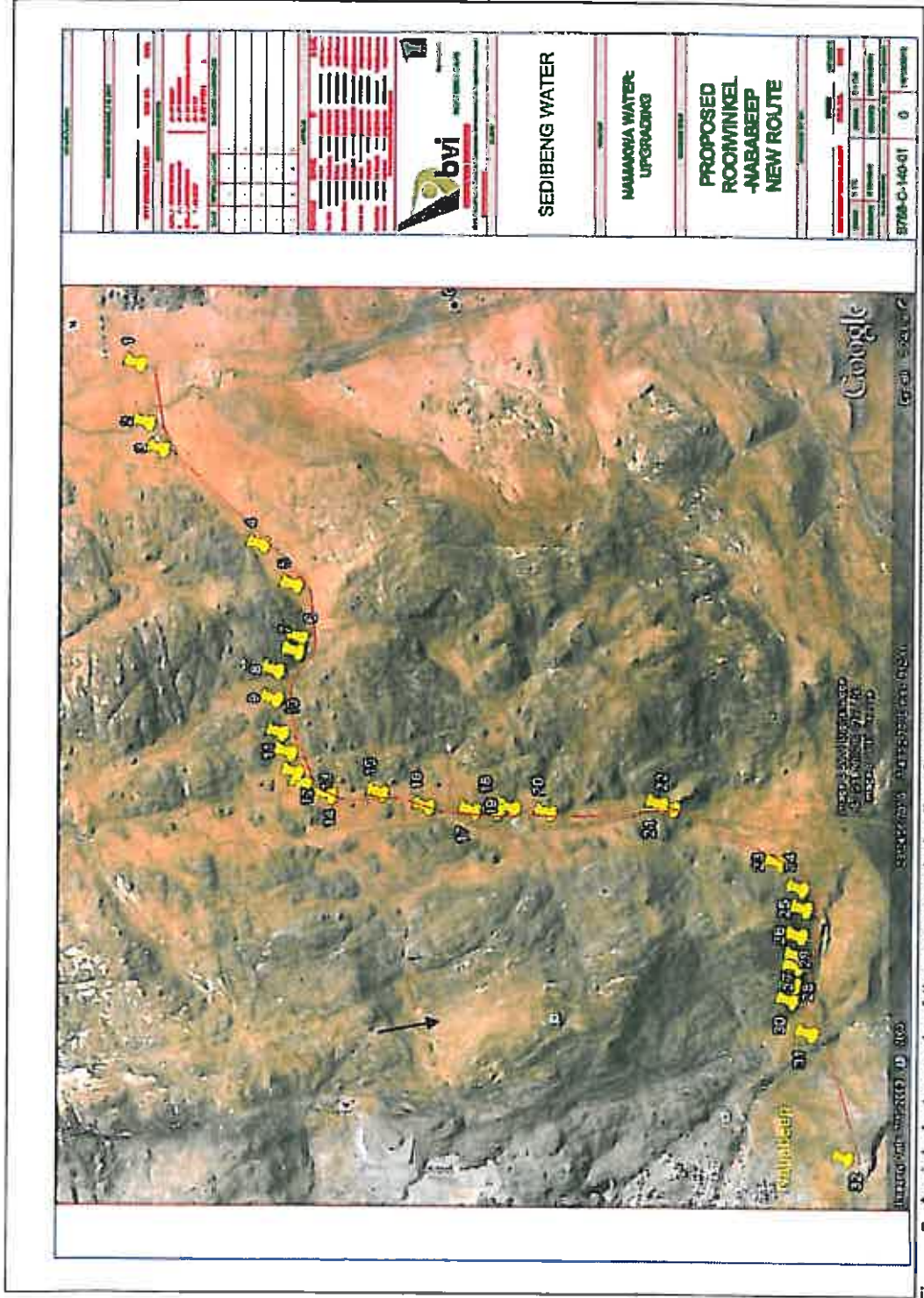


Figure 2. Aerial photograph of the proposed pipeline from Rooiwinkel to NababEEP



Figure 3. Remains of the railway line at Rooiwinkel



Figure 6. View of the railway line (alongside the road)



Figure 4. Remains of the railway line near Rooiwinkel



Figure 7. View of the proposed pipeline route facing west



Figure 5. View of the railway line facing west



Figure 8. View of the proposed pipeline route facing west



Figure 9. View of the proposed pipeline outside Nababeep



Figure 10. Footprint area of the proposed reservoir



Figure 11. View of the proposed pipeline route from the reservoir to Nababeep in the background



Figure 12. Bridge Crossing 1



Figure 13. Bridge Crossing 1



Figure 14. Bridge Crossing 1 (collapsed)



Figure 15. Bridge Crossing 3.



Figure 18. Bridge Crossing 4.



Figure 16. Bridge Crossing 3.



Figure 19. Bridge Crossing 4



Figure 17. Bridge Crossing 3.



Figure 20. 'Clara' – Nababeep Museum



Figure 21. 'Clara' – Nababeep Museum



Figure 22. 'Clara' – Nababeep Museum

Agency for Cultural Resource Management

Specialists in Archaeological Studies and Heritage Resource Management

No. 5 Stuart Road Rondebosch, 7700 Phone/Fax 021- 685 7589

E-mail: acrm@wcaccess.co.za Cellular: 082 321 0172

21 October 2011

Att: Mr Bernard de Wit
EnviroAfrica cc
PO Box 5367
Helderberg
7135

Dear Mr de Wit,

ARCHAEOLOGICAL SCOPING THE PROPOSED CONSTRUCTION OF A NEW WATER PIPELINE BETWEEN BULLETRAP AND OKIEP, NORTHERN CAPE

1. Introduction

EnviroAfrica, on behalf of Bvi Consulting Engineers, requested that the Agency for Cultural Resource Management conduct an Archaeological Scoping assessment for the proposed construction of (a new) water supply pipeline between Bulletrap and Okiep (Nama Khoi Municipality) in the Namaqualand region of the Northern Cape Province (Figure 1).

The proposed project entails, either, the replacement of a section of the existing, but aging pipeline on the western side of the N7 (Alternative 1), or alternatively, the construction of a new 6 km long pipeline east of the N7 between the two Northern Cape towns (Alternative 2). The existing pipeline is the main potable water supply pipeline from the Orange River that supplies numerous small towns in the region, including Steinkopf, Bulletrap, Nababeep, Okiep, Carolousberg, Concordia and Springbok.

Both alternatives were assessed during a 3 hour long site inspection that took place on 04 August, 2011.

2. The proposed pipeline

2.1 Alternative 1

Alternative 1 entails the digging up and replacement of the existing water pipeline, from near the turnoff at Bulletrap alongside (i.e. west of) the N7, till a point about 6 kms south toward Okiep (refer to Figure 2).

2.2. Alternative 2

Alternative 2 entails the construction of a new, 6 km long gravity pipeline from near the turnoff at Bulletrap till a point about 6 kms south, where the new pipeline will connect with the existing pipeline alongside the N7 (refer to Figure 2). The new pipeline will be

constructed on the eastern side of the N7. It is this section of the pipeline that was assessed in more detail.

According to Mr Christian Stefan of Bvi Consulting Engineers (pers. comm.) who accompanied the archaeologist in the field, a, 10 m wide servitude will be registered and the pipeline will be excavated to a depth of about 1.6 m. For the first 1-3 kms, the proposed new route will be located in front of and behind several kopjes, in mainly agricultural (marginal grazing) lands. Thereafter the pipeline will follow an existing Eskom servitude.

3. Approach to the study

The proposed 6 km pipeline (Alternative 2) route was assessed on foot and by means of a 4 x 4 vehicle.

Photographs of the receiving environment are illustrated in Figures 3-9.

4. Findings

No pre-colonial archaeological remains were documented during the Scoping Impact assessment.

The ruined remains of a late 19th/early 20th Century veewagterhuis (shepherd's hut) was documented about 75 west of the proposed pipeline route. The remains (S29 29.103 E17 51.303 on map datum wgs 84) comprise a few boulders scattered in a loose circular arrangement. Some rusted metal, Blue and White porcelain and white (undecorated ceramic) was found close by (Figure 10). No other material cultural remains were found.

5. Conclusion

While Alternative 1 (replacement of the existing pipeline west of the N7) is the preferred route, Alternative 2, which follows the alignment of the existing Eskom servitude, is also suitable. Indications are that Alternative 2 will not impact on any significant archaeological remains. While some Stone Age material may be located, these are likely to be mostly dispersed occurrences.

6. Recommendations

An AIA of the proposed route is not required.

Yours sincerely



Jonathan Kaplan

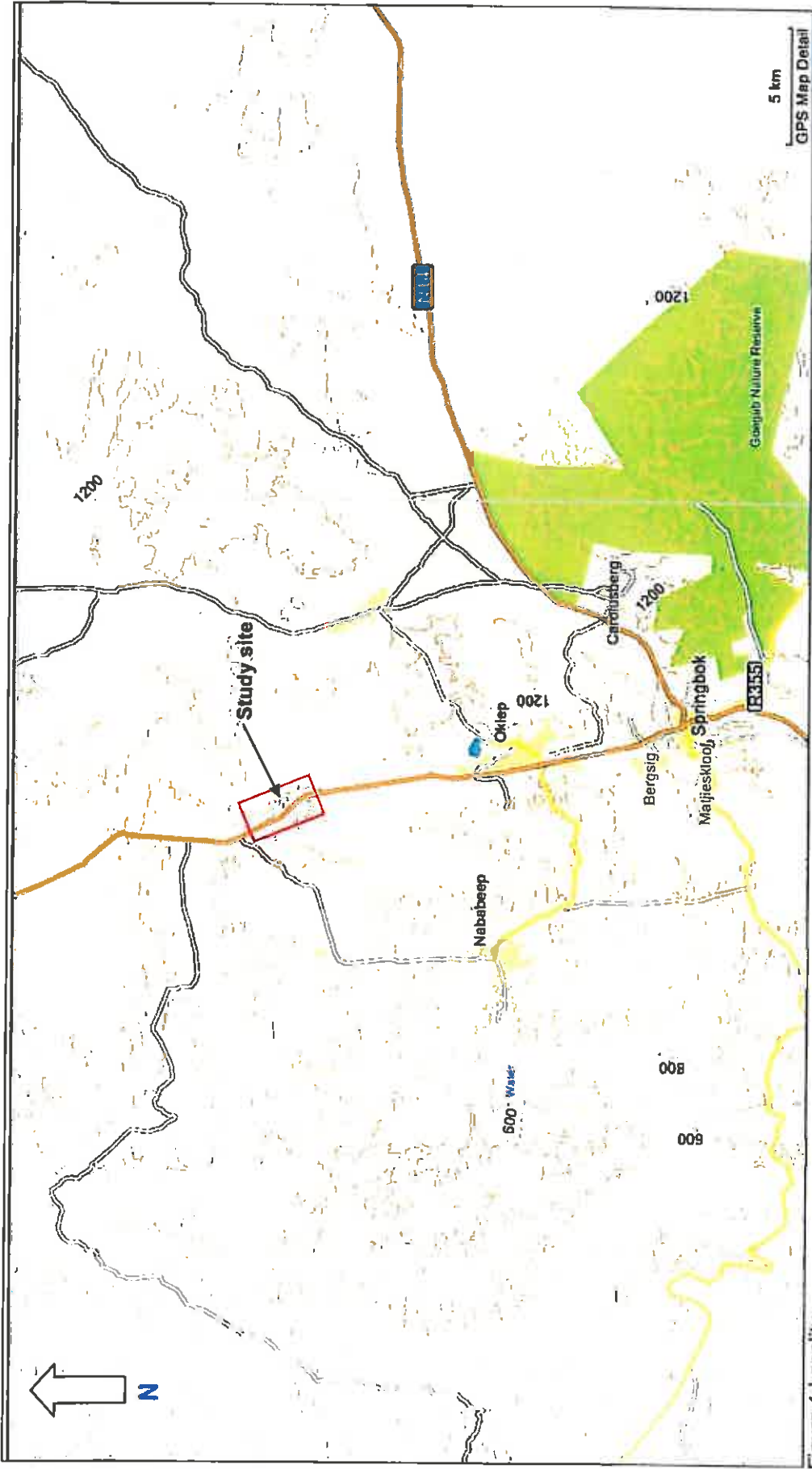


Figure 1 Locality map

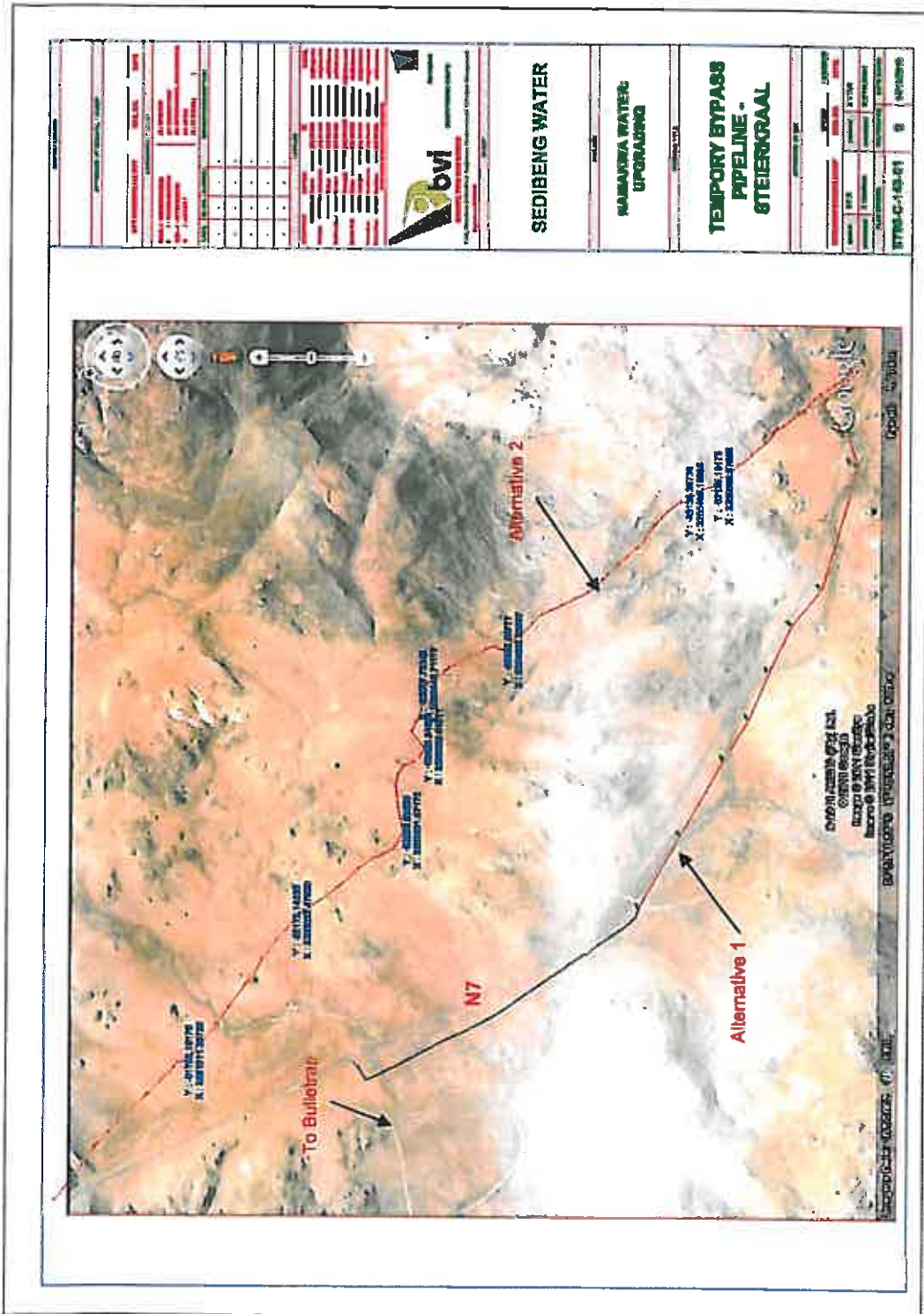


Figure 2. Aerial photograph illustrating the proposed pipeline route

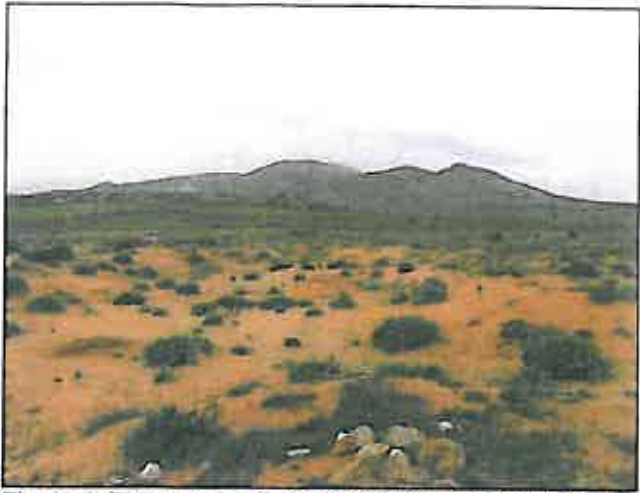


Figure 3. The proposed pipeline route from the N7 facing east

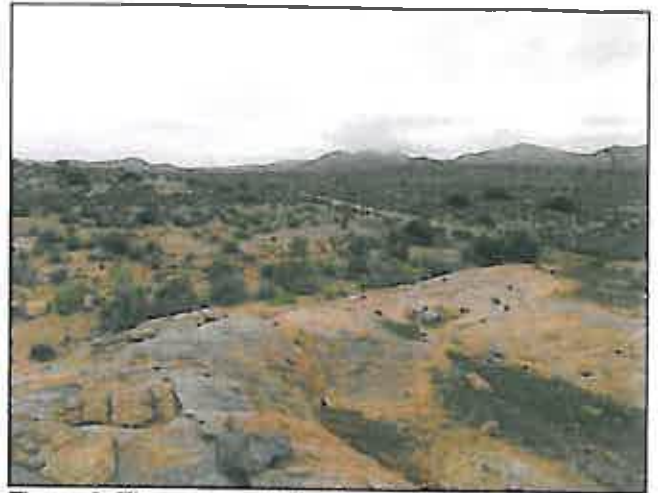


Figure 6. The proposed pipeline facing south. Note the Eskom servitude to the right of the plate



Figure 4. The proposed pipeline route facing north



Figure 7. The proposed pipeline route facing north



Figure 5. The proposed pipeline route facing south east. Note the quarry in the foreground

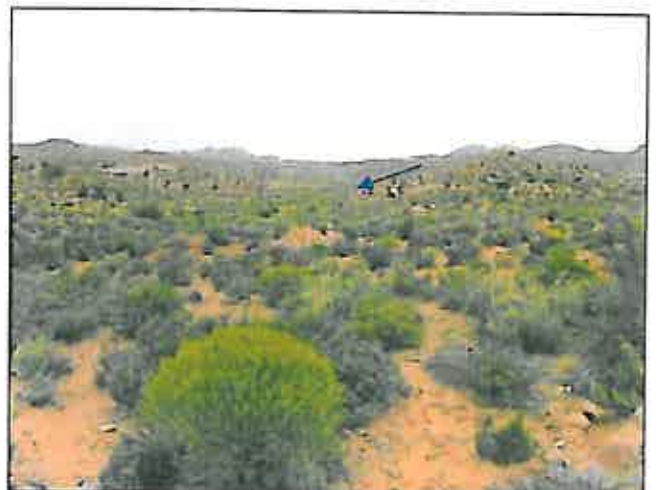


Figure 8. The proposed pipeline route facing north. Arrow indicates the N7 and the 'end' of the route



Figure 9. Connecting pipeline alongside the N7



Figure 11. Remains of the Shepherd's hut



**Sedibeng
WATER**

Sustaining the Source and Flow of Life Forever

SEDIBENG WATER BOARD

**MOTIVATION FOR THE ENVIRONMENTAL IMPACT
ASSESSMENT REPLACEMENT OF INFRASTRUCTURE**

AUGUST 2011

**Compiled:
BVi Consulting Engineers
17A Keerom Str
Springbok
8240
Tel : 0277129990**



BACKGROUND

Namakwa Water was a Water Board established in terms of the Water Services Act, Act 108 of 1997. The primary purpose of Namakwa Water Board was the provision of sustainable potable water services to the towns of Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee in the Namaqualand region of the Northern Cape. The water service area is a water scarce area that is characterized by small towns spread over a vast area. The Water Service Authority (WSA) in the area is the Nama Khoi Municipality.

Sedibeng Water took over the responsibilities and service area of the Namakwa Water Board on 4 April 2011.

Water is being abstracted from the Orange River at a point near Goodhouse. The raw water abstracted is delivered to the purification and treatment works at Henkries and after treatment, the potable water is distributed via pipelines to the towns of Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee. The total population in the area supplied with potable water is approximately 55 000 people.

INFRASTRUCTURE

The current network consists of an extracting facility at the Orange River, a primary flocculation facility at Henkriesmond, a purification plant at Henkries and 4 pumping stations. The network also consists of a number of concrete reservoirs of which the main distribution reservoirs are Eenriet near Steinkopf and Vaalhoek in Okiep. The approximately 200km of distribution pipes have an average age is 38 years. The pipeline varies in size from 520 mm steel to 150 mm asbestos pipeline.

The distribution network is operated by 31 high volume pumps, of which the capacity of some is up to 71 liters per second. These pumps have to be manually operated and monitor 24 hours continuously.

Urgent infrastructure replacements and repairs should be carried out. To insure continues supply. Currently supply is interrupted on a frequent basis leaving the population of 48000 without potable water. As Springbok is the main town in the region it have a hospital prison various old age homes and schools with hostel this situation is compounded by the interrupted supply of bulk water services.

PIPELINE

The pipeline consist of a rising mains were water is pump from the extraction point up to a central reservoir. The second part of the pipeline is gravity feed mains which feed into 2 central distribution reservoirs from were water is distributed to various towns.

The Rising mains consist of a 40 km 419mm steel pipeline with mortar lining and an operating pressure of up to 40 bar. This pipeline was installed in 1973 and its condition deteriorated to such an extend that since 1992 and after parts of the pipeline (20km in total) has to be replace. The main cause for the deterioration of the pipeline was that the mortar lining at various points detached from the inner wall which led to water seeping behind the pipeline causing rust as well as the friction caused by lose pieces of mortar within the pipeline. Pipeline failures regularly occurred at point were the pressure is at its highest which is between the purification plant at Henkries and the booster pump station at Doringwater.

The gravity feed mains consist of a 67km 520mm steel pipeline with mortar lining and had originally a operating pressure of up to excess of to 40bar. The pipeline feed from the main 11 mega liter reservoir at Eenriet and have take off points at Steinkopf, Bulletrap and Okiep after which it feeds into the main storage reservoir at Vaalhoek in Okiep.

This pipeline was installed in 1973 and its condition deteriorated to such an extent that at various points frequent pipeline failures occurs. The main cause for the deterioration of the pipeline was that the mortar lining at various points detached from the inner wall which led to water seeping behind the pipeline causing rust as well as the friction caused by lose pieces of mortar within the pipeline.

The distribution pipelines from Okiep supplies water to Nababeep, Rooiwinkel, Concordia, and Carolusberg. The pipeline between Okiep and Nababeep also supplies water to Rooiwinkel. This pipeline consists of a 250mm asbestos pipeline and a 200mm steel pipeline with vitaulic couplings. This pipeline is in excess of 40 years old and frequent pipeline failures occurred. As this pipeline also feeds the Kleinzee township the pipeline carries approximately one third of the total water supply of the Namakwa Water Board. The pipeline is approximately 11 km long over mountainous terrein and water have to be pump from halfway up at the Garagoup pump station.

Water is pumped to Concordia with a 250mm asbestos pipeline of approximately 17km. As this pipeline is also in excess of 40 years old frequent pipeline failures occur on this line. The Municipality had to build an additional reservoir to insure water for this township.

Okiep pumps water to Carolusberg via a 200mm steel pipeline in used more than 40 years of approximately 11km over mountainous terrain. Frequent pipeline failures occur on the pipeline and maintenance is hampered by the terrain.

PROPOSED REFURBISHMENT

All current pipeline needs to be replaced as a matter of urgency due to the pipeline have been used well over its design period and due to the condition of the pipeline. However as no other sources of potable water are locally available the current pipelines need to be in operation while the replacement is done.

The proposed replacement of pipelines will be done in phases to insure the continuation of services.

GRAVITY MAINS : Bulletrap turn-off to Kliphoogete

The pipeline will be replaced from where the most frequent pipeline failures occur is at the lowest point where the pressure is at its highest. The planned replacement will start to the north of Bulletrap take-off.

The current pipeline will be removed and a new pipeline will be installed within the same trench. This will be done to limit the impact on the area surrounding the pipeline as this area is already disturbed.

The new pipeline will be of similar material and size to insure that the gravitational feed of the current pipeline is kept. The pipeline will be at least 1 meter underground level and at least 1 meter under the river bed where crossings of rivers or streams might be encountered. The only visible part of the pipeline will be the current air vents and scour valves that were erected when the pipeline was originally installed.

The supply of water to the communities during the construction phase will be insured by a temporary pipeline installed within the servitude of the current pipeline.

FEASIBLE AND REASONABLE ALTERNATIVES

The feasibility of replacing the old pipeline in the same trench will not only limit the cost of construction but will also insure that no new area is disturbed.

As an alternative a new route has also been investigated. The new pipeline route will run along the N7 Cape Town Namibia route on the opposite side of the road (east). The planned alternative route will be running along a ridge on a higher elevation. The old pipeline runs along a river bed which had not only contributed to the demises of the current pipeline but also hamper repair and maintenance on the pipeline.

Due to this higher elevation the static pressure of the pipeline will be less which will allow the pipeline to be lay above ground level for easier maintenance in future. This have to done as the terrain do not allow for trenches.

- *The property on which proposed activity to be undertake* – The property is know as the Concordia Commonage with Surveyor General ref.no. C053000000001340015. This property is located on both sides of the N7 route between Cape Town and Namibia and is approximately 17km north of the town Springbok in the Nama Khoi Municipal area.
- *The type of activity to be undertaken* – The activity will be the digging up and the removal of the current pipeline as well as the installation of a new pipeline of similar size and material into the trench. The trench will be covered with the same material. The terrain will be repair to the same state as before the replacement of the pipeline.
- *The design or layout of the activity* – The layout of the construction activity is attached in the locality plan.
- *The technology to be used in the activity* – Excavation will be done by medium size motorized excavators and by hand. Bulldozers will be used to clear up the terrain after construction.
- *The operational aspects of the activity* – The construction will entail the opening of trenched for a length of approximately 500m. The new pipeline will be place into the trench and welded to the preceding length. Once a length have been installed it will be pressure tested and then cover by soil and compacted.
- *The option of not implementing the activity* – Various studies have been undertook for alternative sources of potable water for the Nama Khoi Municipality. The latest study was conducted by the Department of Water Affairs Kimberley 2011 that lead to the conclusion that water from the Orange river is the only source of sufficient and sustainable quantity. This sources has been utilized since 1973 when the purification works was build at Henkries for the sole purpose of the supply of potable water to the area. However as the infrastructure has reach the end as its useful live it have to be replace now.

OKIEP NABABEEP NEW PIPELINE

The towns of NababEEP and Kleinzee as well as the mining and other take-off point along the 80km route to Kleinzee receives its water from the reservoir and pump station in Okiep. The water is pumped along 11km 200mm steel and a 250mm asbestos pipeline with is part above ground and part underground. As water has to reach the Little Crest reservoir at an altitude of 1041m above sea level an additional pump station at Garagoup is needed. If this reservoir can be eliminated and a additional take off point can be created along the gravity mains pipeline at Rooiwinkel the pipeline can not only be shorten to 7km but the two pump station can also be eliminated.

A new reservoir will need to be constructed at NababEEP and the pipeline will need to be rerouted along the old railway line. The pipeline diameter will also have to be increased to 300mm. However this will enable the removal of the asbestos and steel pipe line that is currently in use.

FEASIBLE AND REASONABLE ALTERNATIVES

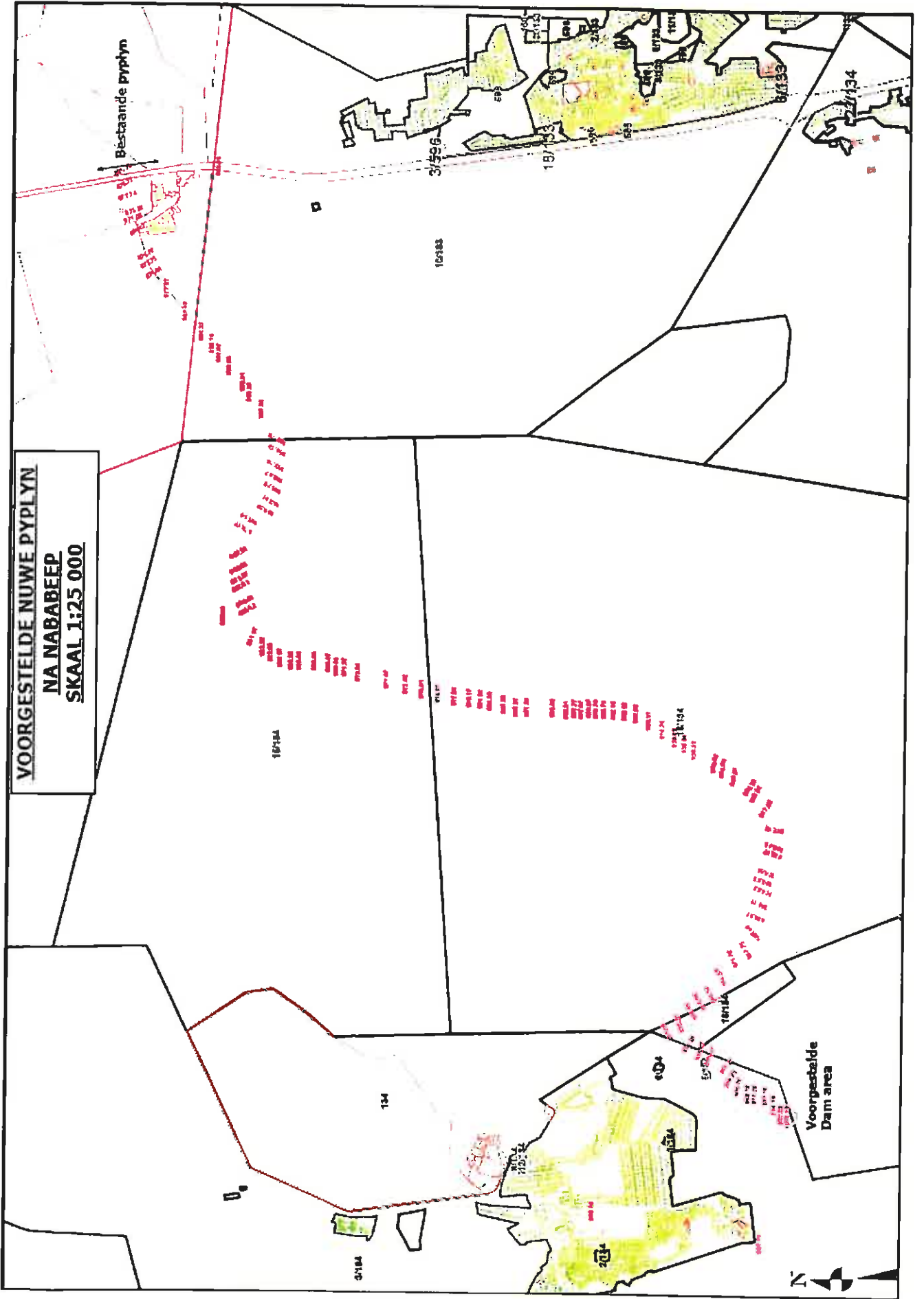
The feasibility of replacing the old pipeline on a new route not only limit the capital cost of construction but will also operational cost. The current pipeline runs from the pump station in over a mountain to the town of NababEEP. As the new route is directly connected to the main line and runs around the mountain is is not only shorter but also eliminate the need for two high pressure pump stations as water will gravity feed into the new reservoir.

As a alternative the current route has also been investigated. The current route will run is not accessible and new roads will have to be build along the pipeline over the mountain. The planned alternative route will be running along a existing road on a lower elevation.

Due to this lower elevation the static pressure of the pipeline will be less which will enable the pipeline to be lay above ground level for easier maintenance in future.

- *The property on which proposed activity to be undertake* – The properties that will be affected is the Concordia Commonage with Surveyor General ref.no. C053000200000210000.
The privately owned poperties of Moira Farms with Surveyor General ref.no. C05300000000013400015 & C05300000000013400016
The privately owned poperties of Mr.O.R. Meijer with Surveyor General ref.no. C05300000000013400003

**VOORGESTELDE NUWE PYPLYN
NA NABABEEP
SKAAL 1:25 000**



NWB



NAMAKWA WATER BOARD

**MOTIVATION FOR THE REPLACEMENT OF
INFRASTRUCTURE**

MARCH 2011

**Compiled:
BVI Consulting Engineers
17A Keerom Str
Springbok
8240
Tel : 0277129990**



BACKGROUND FOR FUNDING NEEDS

March 2011

BACKGROUND

Namakwa Water was a Water Board established in terms of the Water Services Act, Act 108 of 1997. The primary purpose of Namakwa Water Board was the provision of sustainable potable water services to the towns of Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee in the Namaqualand region of the Northern Cape. The water service area is a water scarce area that is characterized by small towns spread over a vast area. The Water Service Authority (WSA) in the area is the Nama Khol Municipality.

Water is being abstracted from the Orange River at a point near Goodhouse. The raw water abstracted is delivered to the purification and treatment works at Henkries and after treatment, the potable water is distributed via pipelines to the towns of Steinkopf, Bulletrap, Nababeep, Okiep, Carolusberg, Concordia, Springbok and the De Beers Mining operation and settlement of Kleinsee. The total population in the area supplied with potable water is approximately 55 000 people.

The Namakwa Water Boards asset and area of responsibility has been transferred to the Sedibeng Water Board on 3 March 2011

INFRASTRUCTURE

The current network consists of an extracting facility at the Orange River, a primary flocculation facility at Henkriesmond, a purification plant at Henkries and 4 pumping stations. The network also consists of a number of concrete reservoirs of which the main distribution reservoirs are Eenriet near Steinkopf and Vaalhoek in Okiep. The approximately 200km of distribution pipes have an average age is 38 years. The pipeline varies in size from 520 mm steel to 150 mm asbestos pipeline.

The distribution network is operated by 31 high volume pumps, of which the capacity of some is up to 71 liters per second. These pumps have to be manually operated and monitor 24 hours continuously.

Urgent infrastructure replacements and repairs should be carried out. To insure continuous supply. Currently supply is interrupted on a frequent basis leaving the population of 48000 without potable water. As Springbok is the main town in the region it has a hospital prison various old age homes and schools with hostel this situation is compounded by the interrupted supply of bulk water services.

PIPELINE

The pipeline consist of a rising mains were water is pump from the extraction point up to a central reservoir. The second part of the pipeline is gravity feed mains which feed into 2 central distribution reservoirs from were water is distributed to various towns.

The Rising mains consist of a 40 km 419mm steel pipeline with mortar lining and an operating pressure of up to 40 bar. This pipeline was installed in 1973 and its condition deteriorated to such an extend that since 1992 and after parts of the pipeline (20km in total) has to be replace. The main cause for the deterioration of the pipeline was that the mortar lining at various points detached from the inner wall which led to water seeping behind the pipeline causing rust as well as the friction caused by lose pieces of mortar within the pipeline. Pipeline failures regularly occurred at point were the pressure is at its highest which is between the purification plant at Henkries and the booster pump station at Doringwater.

The gravity feed mains consist of a 67km 520mm steel pipeline with mortar lining and had originally a operating pressure of up to excess of to 40bar. The pipeline feed from the main 11 mega liter reservoir at Eenriet and have take off points at Steinkopf, Bulletrap and Okiep after which it feeds into the main storage reservoir at Vaalhoek in Okiep.

This pipeline was installed in 1973 and its condition deteriorated to such an extent that at various points frequent pipeline failures occurs. The main cause for the deterioration of the pipeline was that the mortar lining at various points detached from the inner wall which led to water seeping behind the pipeline causing rust as well as the friction caused by lose pieces of mortar within the pipeline.

The distribution pipelines from Okiep supplies water to Nababeep, Rooiwinkel, Concordia, and Carolusberg. The pipeline between Okiep and Nababeep also supplies water to Rooiwinkel. This pipeline consists of a 250mm asbestos pipeline and a 200mm steel

pipeline with vitaulic couplings. This pipeline is in excess of 40 years old and frequent pipeline failures occurred. As this pipeline also feeds the Kleinzee township the pipeline carries approximately one thlrd of the total water supply of the Namakwa Water Board. The pipeline is approximately 11 km long over mountainous terrein and water have to be pump from halfway up at the Garagoup pump station.

Water is pump to Concordia with a 250mm asbestos pipeline of approximately 17km. As this pipeline is also in excess of 40 years old frequent pipeline failures occurs on this line. The Municipality had to build an additional reservoir to insure water for this township.

Okiep pumps water to Carolusberg via a 200mm steel pipeline in used more than 40 years of approximately 11km over mountainous terrain. Frequent pipeline fallures occur on the pipeline and maintenance is hampering by the terrein.

PROPOSED REFURBISHMENT

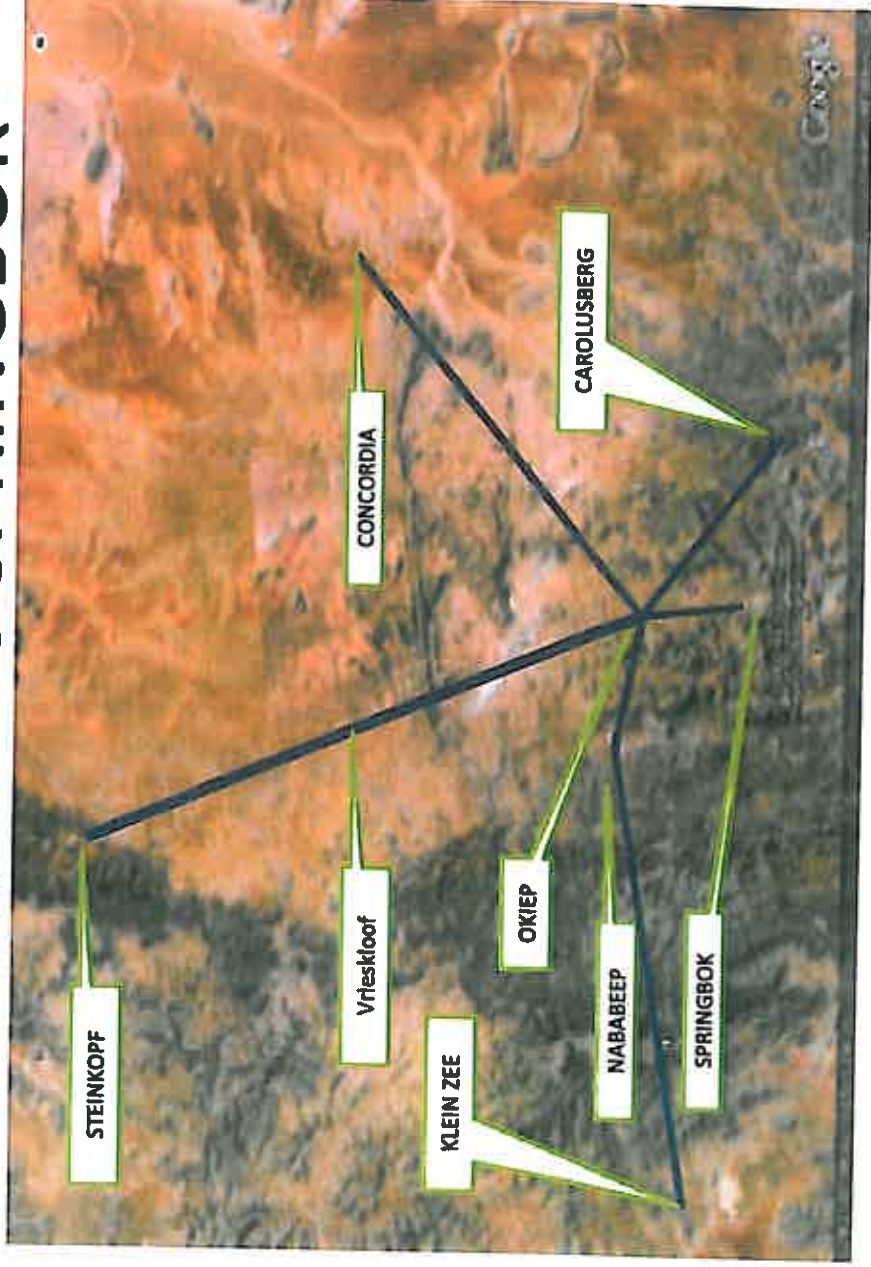
All current pipeline needs to be replace as a matter of urgency due to the pipellne have been used well over its design periode and due to the condition of the pipeline. However as no other sources of potable water are locally available the current pipelines need to be in operation while the replacement is done.

* The propose replacement of pipelines will be done in phases to insure the continuation of services.

① GRAVITY MAINS — 520 mm

The pipeline will be replaced from where the most frequent pipeline failures occurs is at the lowest point where the pressure is at its highest. The planned replacement will start to the north of Bulletrap take-off. The pipeline has to be laid away from the current pipeline to prevent damage to the current pipeline in the construction phase. The new pipeline route needs also to be change as the old pipeline runs along a river bed which had not only contributed to the demises of the current pipeline but also hamper repair and maintenance on the pipeline.

MAIN SUPPLY LINES STEINKOPF to SPRINGBOK



Eenrlet to Oklep

Urgent replacement required of ±26km critical section between Vrieskloof and Oklep the sement lining inside the pipeline has due to its age and operational stresses disintegrated and is mitigating pipeline failures.

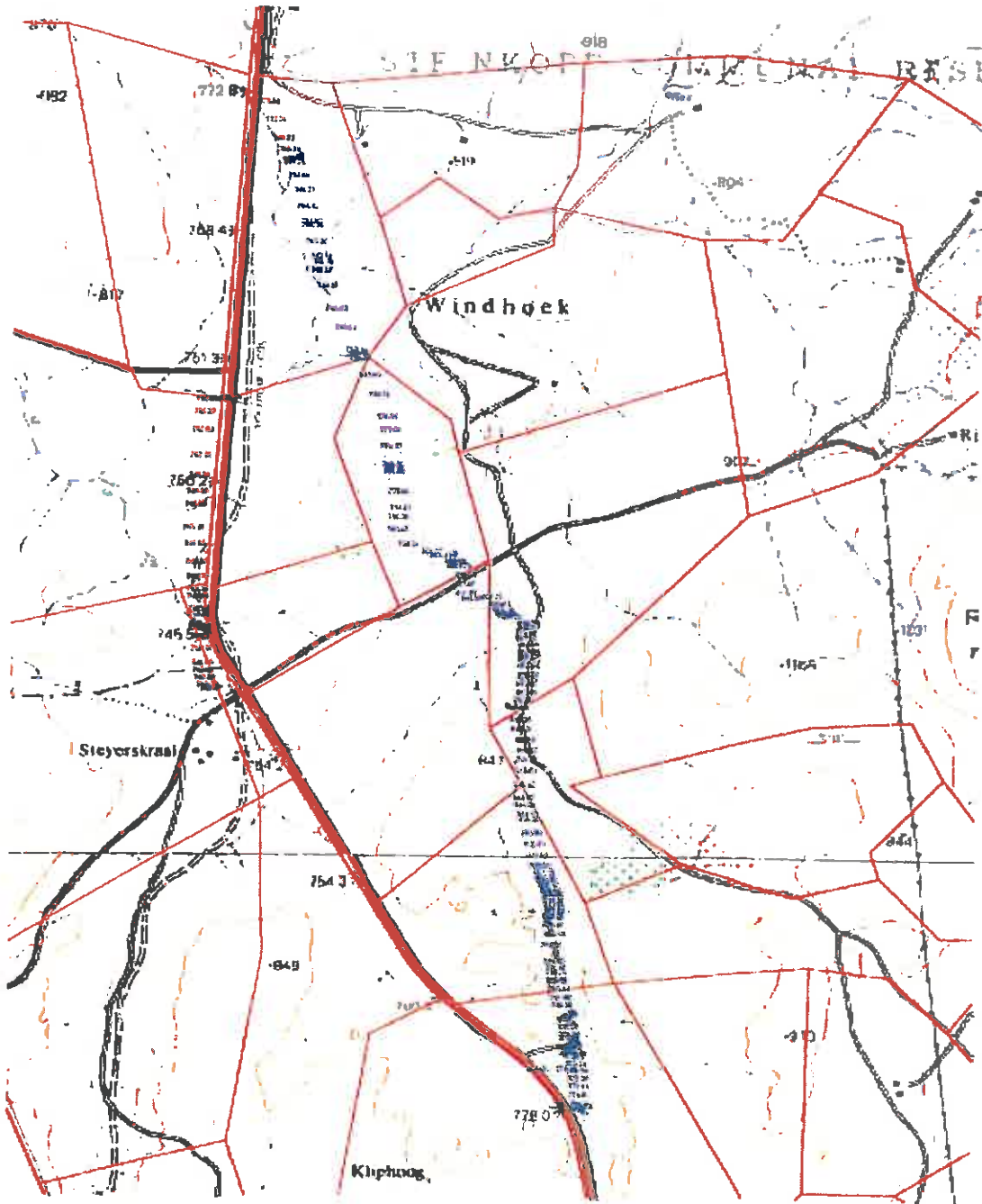


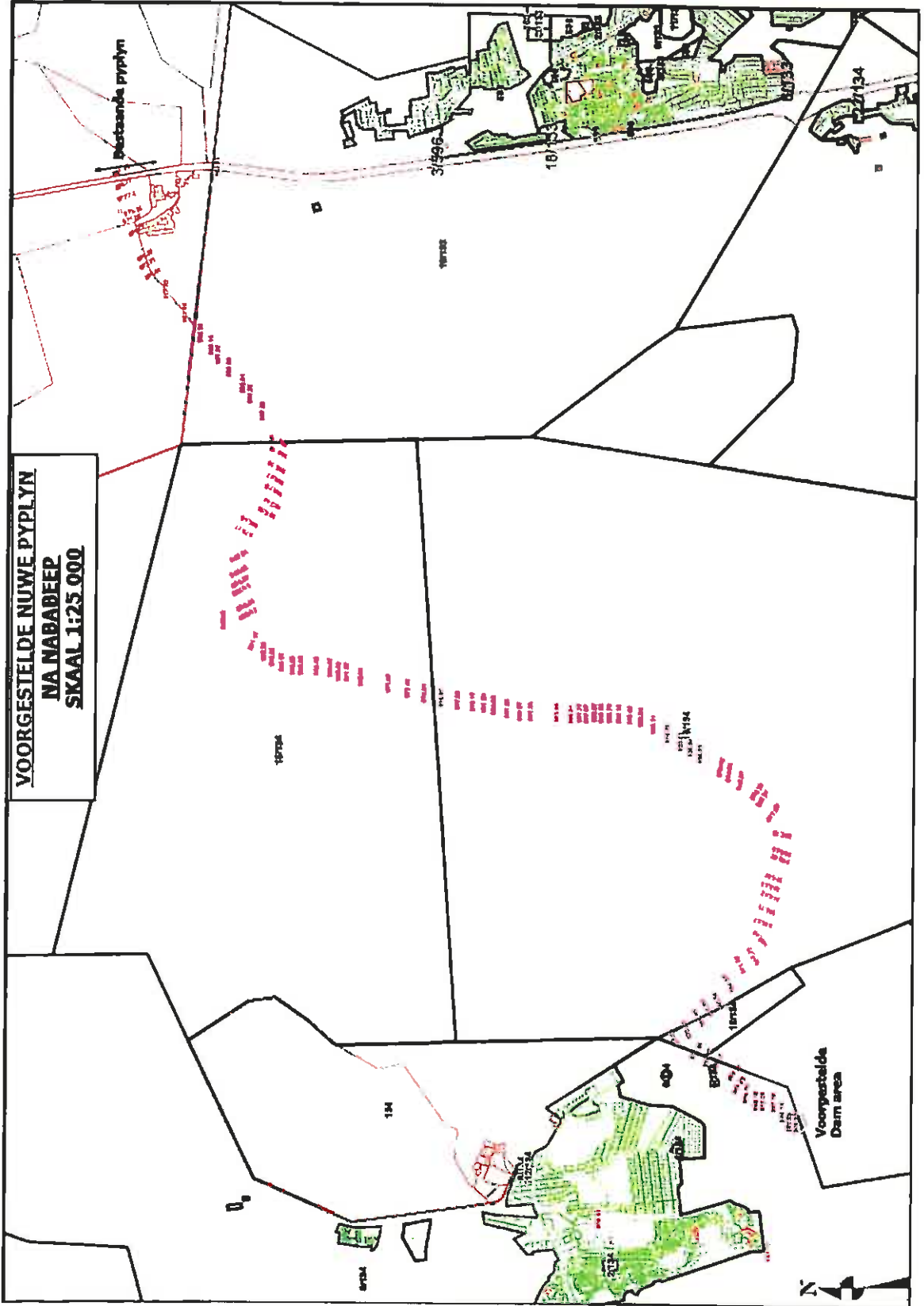
Oklep to Nababeep and Oklep to Concordia

Pipelines were installed by OCC Mining Company and transferred to Water Board in 2004. Large parts of pipeline needs to be replace



GRAVITY MAINS FUTURE ROUTE





**VOORGESTELDE NUWE PYPLYN
NA NABADEEP
SKAAL 1:25 000**

NAMAKWA WATER

CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PLAN

for the

**CONSTRUCTION AND MANAGEMENT OF ACTIVITIES
RELATING TO THE PROTECTION OF THE NATURAL
ENVIRONMENT DURING THE CONSTRUCTION OF THE**

**PROPOSED REFURBISHMENT OF BULK WATER
SUPPLY PIPELINE & ASSOCIATED
INFRASTRUCTURE**

This EMP is a condition of the EIA Regulations (2010 as amended)

And is to be presented to contractors at the On Site Start-Up Meeting

Compiled by
EnviroAfrica cc

December 2011

TABLE OF CONTENTS

1. INTRODUCTION.....	3
2. COMMENCEMENT OF WORKS	3
3. ENVIRONMENTAL CONDITIONS OF APPROVAL:	3
4. ISSUES OF CONCERN:.....	4
5. SITE SPECIFIC ARRANGEMENTS & CONSTRUCTION PROCEDURES:	4
6. STARTUP MEETING:	4
7. METHOD STATEMENT:	6
8. PENALTIES	7
9. RESPONSIBILITY OF OWNER/DEVELOPER/APPLICANT	7
10. THE SITE ENGINEER	8
11. THE CONTRACTOR	8
12. SITE PERSONNEL: ENVIRONMENTAL AWARENESS TRAINING.....	9
13. Environmental Control Officer (ECO)	9
14. CHANGES TO MANAGEMENT PLAN	11
15. RECORD KEEPING.....	11
16. ENVIRONMENTAL COMPLETION STATEMENT	11
17. ENVIRONMENTAL AUDIT REPORT	12
18. MANAGEMENT SPECIFICATIONS (PROGRAMME).....	12
Fauna and Flora	12
Protection And Rescue Of Fauna And Flora	12
Clearing of Vegetation	13
Protection of Archaeological & paleontological remains.....	13
Appropriate use of Machinery	13
Demarcating and fencing	14
"NO-GO" Areas	15
Storm water, Erosion & Sedimentation Control.....	15
Fuel, Tar Compounds and Oil	15
Hazardous Substances	16
Concrete works.....	16
Blasting / drilling	17
Fires and smoking.....	17
Emergency Procedures	18
Dust	18
Solid Waste Management	18
Toilets & Ablution Facilities	19
Stockpiling.....	19
Preparation of Building Material.....	19
Discharge of construction water	20
Treating of Pipelines.....	20
Contractors Temporary Camping site & Eating Areas	21
19. Traffic, Access Routes & Haul Roads.....	21
Site Clean Up and Rehabilitation	21
Land Management	21
Socio-Cultural Issues.....	22
Additional Associated Installations	22
20. TERMS AND ABBREVIATIONS:	24
21. APPENDICES:.....	28
APPENDIX 1: START-UP REPORT	29
APPENDIX 2: PENALTIES FOR NON-COMPLIANCE	30
APPENDIX 3: DECLARATION OF UNDERSTANDING	33
APPENDIX 4: INFORMATION ON METHOD STATEMENTS	35
APPENDIX 5: EXAMPLE OF METHOD STATEMENT	36
APPENDIX 6: CONTACTOR/S REPRESENTATIVE: ENVIRONMENTAL CHECKLIST	39
APPENDIX 7: BASIC RULES OF CONDUCT	41
APPENDIX 8: ECO REPORT/CHECKLIST	45
APPENDIX 9: ORIGINAL RECORD OF DECISION.	51
APPENDIX 10: DRAWING/S	52
APPENDIX 11: RECOMMENDATIONS AS PER BAR	53
APPENDIX 12: ANY OTHER RELEVANT DOCUMENTS	54

CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PLAN (CEMP) FOR THE MANAGEMENT OF ACTIVITIES RELATING TO THE PROTECTION OF THE NATURAL ENVIRONMENT DURING THE CONSTRUCTION PHASE OF THE NAMAKWA WATER PIPELINE

1. INTRODUCTION

This CEMP forms part of the conditions of the NEMA, EIA Regulations 2010 (as amended).

The **NAMAKWA WATER PIPELINE** CEMP binds all contractors, sub-contractors and other persons working on the site to adhere to the terms and conditions of the CEMP throughout the construction of the **NAMAKWA WATER PIPELINE**

Any other Site Specific additional activities decided and agreed upon at the On Site Start-Up Meeting must be included in to form part of the CEMP.

2. COMMENCEMENT OF WORKS

The site project contractors must timorously receive a copy of the site CEMP and any other further additional information that pertains to site conditions/amendments or deviations from original site plan.

A copy of the CEMP must be on site at all times and available for presentation to any authority requesting to see such document.

No work on site may take place until:

- CEMP has been approved by the relevant authority
- One week's written notice to DEA&DP before construction starts.
- On-Site Start-Up Meeting has been held.
- Site and No-Go areas has been demarcated.
- Contractors are in possession of the CEMP and other relevant documentation.
- And signed the Declaration Of Understanding
- All mandatory site equipment is in place

NB: Work refers to: Camp Establishment, Earthmoving activities and any pre-luminary construction activities.

3. ENVIRONMENTAL CONDITIONS OF APPROVAL:

- Environmental Authorization (EA) Conditions of Approval.
- BAR Recommendations.
- Local Authority Conditions of Approval.

4. ISSUES OF CONCERN:

Issues of concern that were identified during the Basic Assessment Report (BAR) process, and addressed in the Environmental Authorization must be read and addressed as part of this CEMP.

Any pre-determined environmental issues and respective activities must be addressed during the On Site Start-Up Meeting and reflect in the On-Site Start-Up Report.

The Site Specific recommendations as per the original BAR and conditions of the Environmental Authorization (EA) are to be included and reflect in the On-Site Start-Up Report.

They are but not restricted to;

- Power supply
- Access route
- Demarcation
- Waste management
- Mandatory site equipment
- Ablution & Toilet Facilities
- Refuse Management
- Fire Fighting Equipment
- Concrete works & batching proposals.
- Ground Erosion Control.
- Fire Reaction Plan

5. SITE SPECIFIC ARRANGEMENTS & CONSTRUCTION PROCEDURES:

ON-SITE START-UP MEETING REPORT to be to be attached as Appendix 1 to the **NAMAKWA WATER PIPELINE CEMP**. The Start-Up Meeting Report to include all site-specific issues and arrangements as discussed and agreed on at site start-up meeting.

The On-Site Start-Up Meeting additional information pertains to specific site construction agreements that was discussed on site by all the relevant parties and agreed on must be included in the On Site Start-Up Meeting Report. (The arrangements and agreements must fall within the conditions as set out in the **Namakwa Water Pipeline** environmental authorization)

6. STARTUP MEETING:

The mandatory on-site start-up meeting that is conducted preferably **14 days but not less than 5 working days** prior to commencement of any site/camp establishment, earthworks and/or construction activities and will relate to additional discussed information that must be complied with during the entire construction phase.

At the on-site start-up meeting the following issues must be addressed:

- The Construction EMP & other relevant site documents.
- Project to be discussed and all uncertainties are cleared.
- Method statement/s to be discussed.
- Power line installation access routes.
- Road and construction area to be demarcated
- Materials stockpile and lay down areas to be demarcated
- Method of stockpiling to be discussed
- Fire fighting procedures
- Mandatory fire fighting equipment & fire preventative measures.
- Solid waste removal intentions.
- Placement, type and service of toilets to be agreed on.
- Placement and type of rubbish bins and removal of rubbish to be agreed on.
- Labour overnight camp to be demarcated and services agreed on.

The following people must attend the pre-start-up meeting:

- The Applicant.
- Main contractor's representative.
- Site supervisor/foreman
- Environmental consultant (EC)
- Environmental Control officer (ECO)

An on-site start-up meeting report will be drawn up by the EC / ECO after the start-up meeting the report must be circulated to all attendees of the OSSM for response and acceptance of the contents. No response is deemed to be an acceptance of the contents of the report. (**Appendix 1**)

The main contractor must provide (i) a list of all sub-contractors and their scope of work for the contract and (ii) a time schedule of works.

The On-site Start-up Meeting report will also form part of this Environmental Management Plan. If any discrepancies between the start-up checklist and the EMP arise then the EMP will take precedence until clarification on the discrepancy is clarified (if any discrepancy).

Between the EMP and Environmental Authorization then the EA will take precedence until clarification on the discrepancy is clarified.

NB: IT IS THE RESPONSIBILITY OF THE MAIN CONTRACTORS TO ENSURE THAT ALL HIS SUB- CONTRACTORS THAT WORK ON THE SITE DURING AND AFTER THE CIVILS CONTRACTOR ARE INFORMED OF THE ENVIRONMENTAL CONDITIONS PERTAINING TO THE SITE.

NB!! NO WORK WILL START UNTIL THE ABOVE IS IN PLACE AND AGREED ON.

7. METHOD STATEMENT:

Method statements from the contractor will be required for specific sensitive actions on request of the authorities, the applicant or ECO. A method statement forms the base line information on which sensitive area work takes place and is a "live document" in that modifications are negotiated between the Contractor and ECO/APPLICANT, as circumstances unfold. All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP main document.

These documents must be available to the authorities for inspection or on request.

A method statement describes the scope of the intended work in a step-by-step description in order for the ECO and The applicant to understand the contractor's intentions. This will enable them to assist in devising any mitigation measures, which would minimize environmental impact during these tasks.

The Contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the ECO and APPLICANT have approved the method statement.

Method statements need to be compiled by the contractor for approval by applicant and the ECO. The contractor must submit written method statements to the applicant for the purposes of the environmental specification, a "Method Statement" is defined as a written submission by the contractor to the applicant setting out the plant, materials, labor and method the contractor proposes using to carry out an activity, in such detail that the applicant and the ECO is able to assess whether the contractor's proposal is in accordance with the specifications and/ or will produce results in accordance with specifications.

The contents of the Method statement cannot be changed or altered.

The method statement must cover applicable details with regard to:

- Construction procedures,
- Materials and equipment to be used,
- Getting the equipment to and from site,
- How the equipment/ material will be moved while on site,
- How and where material will be stored,
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
- Timing and location of activities,
- Compliance/ non-compliance with the Specifications, and
- Any other information deemed necessary by the Applicant and ECO.

The Contractor must abide by these approved method statements, and an activity covered by a method statement must not commence until the Applicant and the ECO has approved of such method. In such cases, the method statement must be submitted

to the ECO not less than 7 working days prior to the intended date of commencement of the activity.

Explanation of method statements and a pro forma method statement sheet that must be completed by the Contractor for each activity requiring a method is attached as **appendix 4 & appendix 5**.

8. PENALTIES

The Applicant (on recommendation by the ECO) reserves the right at all times for the duration of this agreement to impose restrictions and associate penalties on the contractor with respect to the specific nature, timing and extent of construction activities on environmentally sensitive sites.

In instances of non-compliance with the EMP by the contractor (or any of their employees) or sub-contractor/s (or any of their employees) that move on or off the site, the ECO must issue a written warning indicating the non-conformance to the contractor.

The Applicant in consultation with the Environmental Consultant/ECO must determine the amount of the penalty applicable in accordance with the Penalties for Non-Compliance Schedule of Tariffs (**Appendix 2**).

Such penalty amount must be reduced in writing and presented to the contractor within seven (7) days of the written warning.

The Applicant may recover penalties by deducting the fine from the offending contractor.

In serious cases, at the discretion of The Applicant and the Environmental Consultant/ECO, any multiple offences can be added together.

The ECO (after consultation with Environmental Consultant/The Applicant) may also *stop the works or part thereof until the situation is resolved; no extension of time is claimable by the contractor*.

These penalties do not preclude any prosecution under any law or regulation.

This set of procedures must be understood by all relevant onsite project managers / project managers and site workers.

See **appendix 2** for the Applicant Penalties for Non- Compliance

9. RESPONSIBILITY OF OWNER/DEVELOPER/APPLICANT

The applicant will be responsible for ensuring compliance with the conditions contained in the EA by any person acting on his behalf, including but not limited to an agent, servant, employee or any person rendering a service to the applicant in respect of the activity, including but not limited to contractors and consultants.

The Owner is responsible for appointing the ECO, Site Engineer and Contractor for the duration of the construction contract and for ensuring that the Site Engineer and Contractor fulfil their obligations in terms of this CEMP.

The owner and or his representative must notify DEADP and any other relevant authority, in writing, within 24 hours thereof if any condition of this authorisation is not adhere to.

10. THE SITE ENGINEER

The Site Engineer is responsible for ensuring that the construction contract is implemented in terms of the construction site EMP.

The Site Engineer and the ECO are expected to develop a close working relationship and to stay in contact with each other. The Site Engineer issues site instructions to the Contractor and all requests and communications between the ECO and Contractor are via the Site Engineer.

The only exception to this is where the ECO needs to issue a "stop works" order on the Contractor or the Site Engineer if serious environmental harm is about to happen or is happening as a result of construction activity. This "stop-order" must be confirmed by the ECO as soon as practically possible to all affected construction personnel.

When the ECO is not on site, the Site Engineer will be responsible for the Construction Phase EMP. Any problems that might lead to damage to the environment must immediately be brought to the attention of the ECO, the Site Engineer (or his representative) refer to the "ENVIRONMENTAL CHECKLIST" (see Appendix 6).

11. THE CONTRACTOR

The Contractor must ensure that all of its sub-contractors, employees, suppliers, agents, etc., are fully aware of the environmental issues detailed in the site CEMP. The Contractor must liaise closely with the Site Engineer and the ECO and must ensure that the works on site are

Conducted in an environmentally sensitive manner and in accordance with the requirements of the CEMP, at all times.

Main bulk service providers such as Telkom and Eskom must be advised of the construction activities as well as the requirements of this EMP and the Contractor must be responsible for their activities conducted within their work areas.

ALL CONTRACTORS MUST SIGN THE "DECLARATION OF UNDERSTANDING" (Appendix 3) IN THIS CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN BEFORE CONSTRUCTION COMMENCES

All contractors working on site must have proper and competent contractor supervision during their time of contract.

If more than one contractor work on the site simultaneously then the responsibility lies on each contractor to adhere to the conditions of the EMP and related documents.

This is for the duration of the contract.

The supervisors must work closely with the ECO and discuss the daily programme with the ECO. Any problems that might lead to damage to the environment must be discussed with the ECO.

12. SITE PERSONNEL: ENVIRONMENTAL AWARENESS TRAINING

All operational personnel must undergo an on-site environmental awareness course together with any specific environmental training they may require to carry out their duties.

All contractor teams involved in work on the development are to be briefed on their obligations towards environmental controls and methodologies in terms of this EMP prior to work commencing. The briefing will usually take the form of an onsite talk and demonstration by the ECO. The education / awareness programme must be aimed at all levels of management within the contractor team (See appendix 7)

13. Environmental Control Officer (ECO)

Frequency of site visits:

An ECO must be appointed for the duration of the construction phase (as required by the EA). The ECO must:

- Conduct a start-up meeting before construction commences
- ECO to visit the site on a regular basis while construction is in progress (frequency determined by the EA), but will be at least twice monthly (and preferably weekly during the start-up phase of the project).
- ECO to monitor the development on a monthly basis until development is completed
- Conduct a closing down visit ASAP after completion of the Development
- Conduct an Environmental compliance audit within 6 months after completion of the civil contract.

Requirements of the Environmental Control Officer: [ECO]

A recognised environmental practitioner with a sound knowledge of the environment and a diploma or degree in environmental management.

An independent person with 5 or more years experience in the environmental issues related to construction site management and monitoring and who are able to ensure EMP compliance during the construction phase of the project.

ECO must understand and implement the Construction Phase Environmental Management Plan (CEMP).

Monitoring responsibilities of the ECO:

- Is to ensure that the mitigation/rehabilitation measures and recommendations referred to in the record of Decision are implemented and to ensure compliance with the provisions of the CEMP
- Must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of the EA is not adhere to.
- Is responsible for the environmental issues involved with the construction phase of the project;
- Co-ordinating any aspect of site activity that may have an effect on the environment;
- Must work in close conjunction with the Applicant/Site representative, contractors and sub-contractors;
- Must demarcate the necessary areas for storage of materials, ablutions, eating areas of contract workers, etc.;
- Must identify 'No go' areas and areas sensitive to erosion and have these areas demarcated. Environmental awareness of the workers is essential. This must be in the form of an onsite talk and must be conducted at an appropriate technical level;
- The ECO will keep a SITE VISIT dairy. The purpose of these entries is to record. Record keeping in the form of a checklist and/or diary entries and photographic records for visual reference. (Appendix 8). These documents must be available to the authorities for inspection or on request. The diary must include meetings/discussions with the contractor and must reflect environmental queries, agreed actions and dates of eventual compliance. These must form part of the official environmental record

Authority of the ECO:

The ECO has the authority to stop works if in his opinion there is a serious threat to or impact on the environment caused directly from the construction operations. This authority is to be limited to emergency situations where consultation with the Applicant/site representative is not immediately available. In all such work stoppage situations the ECO is to inform THE APPLICANT of the reasons for the stoppage as soon as possible.

A relevant reason should be supplied to the Applicant/Site representative as soon as possible after stoppage of such works.

Upon failure by the contractor or his employee to show adequate consideration to the environmental aspects of this contract, the ECO may recommend to the applicant/site representative to have the contractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the contractor

Duration of ECO site inspections

The ECO is appointed prior to commencement of construction activities, site inspections are decided upon between the applicant and the environmental consultant depending on the environmental sensitivity of the construction areas and site location.

The frequency of site inspections is also determined prior to commencement of works but can change if the need arises.

14. CHANGES TO MANAGEMENT PLAN

Although care has been taken to address all known relevant environmental issues for the construction phase, it might become necessary to add or amend certain procedures or instructions to improve the efficiency of the EMP.

Only those additions to or amendments of this CP EMP that will either improve environmental protection or can be proved not to have any negative effect would be considered.

Changes have to be motivated in writing (Method statement). The same procedures as for a method statement has to be followed

Any additions or amendments will be submitted by the ECO to DEA&DP (if so requested), after the ECO has consulted the Applicant.

No deviation from the contents of the EMP is allowed without following the prescribed procedures.

15. RECORD KEEPING

All records relating to the implementation of this management plan (e.g. Declaration of Understanding, ECO Checklist and/or diary, Method Statements, etc.) must be kept together and can be retrieved easily. These records must be available for scrutiny by any relevant authorities.

Photographs

Photographs are to be taken of the site prior to, during and immediately after construction, as a visual reference. These photographs must be stored with other records related to this CEMP.

EMP Circulation List

Full copies of this CEMP will be made for the ECO, Site Engineer and Contractor. Appendices will also be made and circulated where relevant.

16. ENVIRONMENTAL COMPLETION STATEMENT

An Environmental Completion Statement is a report by the ECO to the relevant authorities stating completion of the project and compliance with the EMP and conditions.

17. ENVIRONMENTAL AUDIT REPORT

ENVIRONMENTAL AUDIT REPORT

An Environmental Audit Report by the ECO must be submitted by the Applicant to the satisfaction of the Chief Directorate Environmental Affairs, within six months after construction has been completed and also after the sites have been rehabilitated.

18. MANAGEMENT SPECIFICATIONS (PROGRAMME)

(This EMP is additional to conditions as set out in the EA)

Fauna and Flora

The Contractor must not deface, paint, damage or mark any natural features, if these should occur (e.g. trees, rock formations, buildings, etc.) situated in or around the Site for survey or other purposes unless agreed beforehand with the Engineer and the ECO. Any features affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the Engineer and the ECO

Except to the extent necessary for the carrying out of the works, flora must not be removed, damaged or disturbed nor must any vegetation be planted. Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site. Where the use of herbicides, pesticides and other poisonous substances are to be used, the Contractor must submit a Method Statement.

All incidents of harm to any animal or natural vegetation (apart from the agreed areas) must be reported to the ECO.

Protection and Rescue of Fauna and Flora

The removal of fauna from the site must be done in accordance with the requirements of the Nature Conservation Ordinance regulating these activities.

All flora identified by the Environmental consultant, Botanist, Cape Nature and/or ECO to be rescued must be removed and placed in an area specifically allocated for these plants to ensure that the necessary care thereof will take place until being planted in designated areas.

The areas of vegetation that are to be protected during construction must be indicated on a site plan and this should conform to the decision reached between the Botanist, the Local Authority, the Engineer, Cape Nature, the Contractor and the ECO. A method statement is to be submitted to the ECO by the Contractor, detailing the method of fencing for protection of the conservation areas.

Clearing of Vegetation

A Method Statement must be submitted detailing the methods to be used for vegetation clearing. All cleared areas must be stabilised as soon as possible. Burning of cleared vegetation is prohibited in terms of the Environmental Conservation Act. The burying of cleared vegetation or use as part of backfill or landscape shaping is prohibited unless written approval is obtained from the ECO.

Cleared vegetation may be used for mulch or slope stabilisation of the Site.

Protection of Archaeological & paleontological remains

If remains or artefacts are discovered on Site during earthworks, work in the vicinity must cease and the Contractor must immediately inform the Engineer and the ECO who must

Contact the South African Heritage Resources Agency (SAHRA) for information on the appropriate course of action to be taken

In the event that previously unknown archaeological features are exposed during the construction phase, the Contractor should inform the Engineer and the ECO who will advise the Applicant on the necessary course of action.

Note that the Contractor may not, without a permit issued by the responsible heritage resource authority; destroy, damage, excavate, alter, deface or otherwise disturb any archaeological site or archaeological material. The latter is a criminal offence under the Heritage Recourses Act.

Appropriate use of Machinery

Contractor must at all times carefully consider what machinery is appropriate to the task while minimizing the extent of environmental damage.

The contractor may not operate any machinery including a fuel driven compressor outside the demarcated area.

Where practical, all maintenance of plant on Site must be performed in workshops. If it is necessary to do maintenance outside of a workshop area, the Contractor must obtain the approval of the Engineer and the ECO prior to commencing activities

All vehicles and equipment must be kept in good working order and serviced regularly. Leaking equipment must be repaired immediately or removed from the Site. When servicing equipment, drip trays must be used to collect the waste oil and other lubricants. Drip trays must also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays will be kept free of water that will float the oil to overspill.

Demarcating and fencing

Final site demarcation must be carried out with all relevant parties (who will be responsible) present for the day-to-day activities on the site, they include;

The Applicant	Representative
Environmental Consultant	Environmental Consultant (EC)
Main Contractor	Project Site Manager
Sub-contractor	Project contractor
ECO	Environmental Control Officer

The proposed site will be demarcated prior to the commencement of any construction whatsoever, this includes site establishment, the moving of construction material or any other items onto the site, etc.

The site will be demarcated with appropriate strong steel dropper poles. A single strand of orange baler twine is to be attached to the dropper poles to indicate boundaries and no-go

Areas for site personnel and vehicular movement. (Alternative fencing may be decided upon dependent on site requirements)

The construction area i.e. road, stockpile areas etc. must be demarcated and fenced off with steel dropper poles and orange baler twine approximately 1m high is considered adequate. The demarcation will be agreed on during the start-up meeting.

All fencing and fence placement / positioning must be approved by the ECO on site.

Work areas and access routes must be clearly demarcated to minimise environmental impact.

NB Steel dropper poles and orange baler twine has proven to be the most environmentally friendly means of onsite demarcation.

In the event that sensitive features are threatened by construction activities, temporary fencing off of these areas (for individual areas such as trees or rocks) or the construction area (when working in a mainly natural environment) is recommended.

The Contractor must maintain in good order all demarcation, fencing and barriers for the duration of construction activities, or as otherwise instructed. Any temporary fencing removed for the execution of any portion of the works is to be reinstated by the Contractor as soon as practicable. The Contractor at the end of the contract must remove all demarcation, fencing or barriers not forming part of the final works on Site.

Once in place the demarcation barriers may not be moved or altered without consultation with the site ECO and the main contractor

“NO-GO” Areas

Areas if so required by the CEMP, EA or ON SITE START-UP MEETING are certain pre-determined or as a result of the OSS MEETING must be “NO-GO” areas. The contractor must ensure that no person, machinery, equipment enter the “NO-GO” areas at any time.

If so required by specifications in the CEMP, certain areas must be demarcated as "No go" areas. The Contractor must ensure that, insofar as he has the authority, no person, machinery, equipment or material enters the "No go" areas at any time.

Areas of special importance will be decided upon between the Engineer, Contractor and the ECO and demarcated as “No go” areas on a site plan and fenced off. Such areas are out of bounds to the Contractor and his staff, sub-contractors and their staff or suppliers and their staff and to any other person involved in the construction, without the written permission specified by the ECO.

Storm water, Erosion & Sedimentation Control

The Contractor must take appropriate and active measures to prevent erosion resulting from his own works, operations and activities as well as storm water control measures to the satisfaction of the ECO.

During construction the Contractor must protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible.

Other measures as may be necessary must be taken to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas. All such measures must be discussed with and approved by the ECO.

Fuel, Tar Compounds and Oil

No Fuels and flammable materials are to be stored on the site.

Basic guidelines to follow if any fuels are to be stored are as follows:

- These areas must comply with general fire safety requirements.
- All vehicles, equipment, fuel and petroleum services and containers must be maintained in a good condition that prevents leakage and possible contamination of soil or water supplies. Drip trays to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks
- Quantities of fuels must never be more than 2 x 200 litres at any time.
- All must have a drip tray present to use in the event off accidental spillage of oils and fuels.
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established.
- Fuels and oils must be safely located out of harm's way from the elements and safety and fire prevention must be strictly adhered to.

- All spills are to be recorded in the ECO diary.

Fuel Storage proposals must be cleared by the ECO before any storage or stockpiling takes place.

Hazardous Substances

If potentially hazardous substances are to be stored on site, the Contractor must provide a Method Statement detailing the substances/materials to be used, together with the storage, handling and disposal procedures of the materials to the Engineer and the ECO.

Paints: - No paint products may be disposed of on Site and brush/roller wash facilities must be established to the satisfaction of the Engineer and the ECO. Oil based paints and chemical additives and cleaners such as thinners and turpentine must be strictly controlled. A Method Statement detailing the paint management procedures is required.

Hazardous building materials: -Hazardous building materials (e.g. asbestos, fibre claddings, refrigerants, coolants, substation cooling oils, etc) must be identified and dealt with in accordance with the relevant safety and health legislation. All such material must be separated on Site and disposed off at appropriate licensed disposal sites. The Contractor must supply the ECO with a certificate of disposal.

Concrete works

The Engineer (in collaboration with the ECO) must indicate the permitted location of batching plants (including the location of cement stores and sand and aggregate stockpiles), if these are to be present on Site, on a site plan. A Method Statement indicating the layout and preparation of such facilities must be submitted

Cleaning of equipment and flushing of mixers must not result in pollution of the surrounding environment. All wastewater resulting from batching of concrete must be disposed of via the contaminated water management procedure. Used cement bags must be stored in weatherproof containers to prevent wind dispersion and water contamination. Used bags

Must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose.

All visible remains of excess concrete must be physically removed and disposed of on completion of cement work. Washing the remains into the ground is not acceptable. All excess aggregate must also be removed.

The following recommendations must be implemented to minimise impact.

- The concrete mixing must take place on top of boarding and/or sheeting as so as to protect the ground. This board and or sheeting must be removed from the site once the mixing is complete
- Concrete batching to place at demarcated areas

-
- Cement contaminated water may not enter a natural or man-made (e.g. trench / sloop or dam) water system. Preventative measures include establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste site.
 - Mixing areas to be carefully placed in consultation with the ECO.
 - If possible/appropriate ready mix concrete must be used.
 - Cement bags are to be stored securely out of harm's way from the elements (wind and rain). Bags has to be covered and placed on plastic sheeting
 - Sand and stone to be stored on plastic if it is stored outside the future fenced off site.
 - Excess or spilled concrete must be confined within the works area and then removed to a waste site.
 - Wash down areas must be confined to within the concrete batching area only.

Blasting / drilling

In the event where blasting or rock drilling is required, the following recommendations must be implemented:

- A Method statement must be provided for each case separately **prior** to commencement of works.
 - The contractor must take all necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly rock.
 - The contractor must ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid. The contractor must take all reasonable measures to limit dust generation as a result of drilling operations.
 -
- The ECO must be given 24-hour notice before blasting events.

Fires and smoking

No fires are allowed.

If Smoking is allowed onsite then arrangements must be made for disposal of cigarette buds. No smoking will be allowed outside the demarcated areas.

Adequate fire fighting equipment according to the fire hazard during the construction period must be available on site in good working order (at least one type ABC (all purpose) 12.5 kg extinguisher and 3 fire beaters per working area). The persons on site must be trained in the use of such equipment.

The main contractor must provide a list of all authorities involved in fire fighting in the region. This list must include emergency contact numbers.

Welding, gas cutting or cutting of metal will only be permitted inside the working areas.

The Contractor must pay the costs incurred to organizations called to put out any fires started by him. The Contractor must also pay any costs incurred to reinstate burnt areas as deemed necessary by The Applicant.

It is required that contractors have available [if there is cell phone reception] the emergency telephone numbers of the nearest local Fire Fighting Station and that an emergency fire fighting action plan has been drawn up with on site workers and the property owner or resident farmer.

Emergency Procedures

Fire: The Contractor must advise the relevant authority of a fire as soon as one starts and must not wait until he can no longer control it. The Contractor must ensure that his employees are aware of the procedure to be followed in the event of a fire.

Spills: The Contractor must ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which must include notifying the Engineer, the ECO and the relevant authorities. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO and Local Authority.

Dust

The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities (including dust generated on haul roads) to the satisfaction of the ECO and Local Authority

Solid Waste Management

No on-site burying or dumping of any waste materials, vegetation, litter or refuse must occur. The Contractor must provide vermin and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must be kept firmly on

At all times the bins may not be allowed to become overfull and must be emptied at least once a day. Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger proof and which the Engineer and the ECO has approved.

All solid waste must be disposed of offsite at an approved landfill site in terms of section 20 of the Environment Conservation Act (Act No. 73 of 1989). The Contractor must supply the ECO with a certificate of disposal. All hazardous waste must be disposed of at a licensed hazardous waste site.

The Contractor must make provision for workers to clean up the Contractor's camp and working areas every day so that no litter is left lying around and so that the site is in a neat and tidy state. The Contractor must remove from site the refuse collected at least once a week.

The Contractor must be responsible for the establishment of a refuse control system that is acceptable to the ECO.

Disposal arrangements must be made in advance and cleared with the ECO before construction starts.

Toilets & Ablution Facilities

A minimum of one toilet must be provided per 15 persons at each working area or as stipulated in the Management plan. The Contractor must provide suitable sanitary arrangements near the construction sites.

The toilet must be within easy reach (max 200-m) of the working area and be cleaned on a daily basis. Toilet paper must be provided. The toilets must be emptied on a weekly basis or when full or when instructed by the ECO on site.

Disposal arrangements must be made in advance and cleared with the ECO before construction starts. Sanitation provision and servicing must be to the satisfaction of the ECO. The Contractor must ensure that toilets are emptied before any builders' holidays.

Toilets must be of a neat construction and must be provided with doors and locks and must be secured to prevent them blowing over.

If a long drop toilet system is the preferred system the catchment ditch must be a suitable depth to sustain use over the construction period and upon removal of the system adequate rehabilitation measures must be applied to the satisfaction of the ECO.

NB NO BURYING OF ANY WASTE MATERIAL ON OR NEAR THE CONSTRUCTION SITE OR ANYWHERE ON THE SURROUNDING PROPERTY IS PERMITTED.

Stockpiling

Any stockpiling of gravel, cut, fill or any other material including spoil must only be allowed in degraded areas or areas below the future cover of buildings and tar or paved parking surface. The Contractor must indicate the proposed areas for such operations and method of undertaking such operations in a Method Statement to be submitted to the ECO for approval before any such activity begins. Any area used for stockpiling and not covered by building

Development must be returned to at least the state they were in before stockpiling and it must be ensured that the erosion potential of these areas is not increased.

The Contractor must ensure that the material does not blow or wash away or mix with each other. If the stockpiled material is in danger of being washed or blown away, the Contractor must cover it with a suitable material, such as hessian, netting or plastic.

Preparation of Building Material

The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Specifications. The

Contractor must ensure that these delivery drivers are supervised during off-loading, by someone with an adequate understanding of the requirements of the Specifications

All manufactured and/or imported material must be stored within the demarcated area, and, if so required, out of the rain. All lay down areas outside of the construction camp must be subject to the Engineer and the ECO's approval in such a way as not to cause a nuisance or environmental damage.

All building materials are to be prepared at the batching plant, to enable the effects of cement and other substances, and the resulting effluent to be more easily managed

Discharge of construction water

Potential pollutants of any kind and in any form must be kept, stored, and used in such a manner that any escape can be contained and the water table not endangered. This

Particularly applies to water emanating from runoff from fuel depots/workshops/truck washing areas. Wash down areas must be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted.

Contaminated water includes water that is carrying excess sediment due to construction activities. Contaminated water storage facilities must not be allowed to overflow and appropriate protection from rain and flooding must be implemented. Contaminated water that is removed from site must be disposed of at a facility approved by the ECO and Local

Authority. No contaminated water that does not meet the water quality standards and criteria under the National Water Act may be released into a natural system, whether it is to surface or groundwater

All cement effluent from mixer washings, and run-off from batching areas and other work areas must be contained in suitable sedimentation ponds. Sedimentation ponds must be allowed to dry out on a regular basis to allow for solid material to be removed. This material must be disposed of in a suitable manner, depending on the nature of the material, and to the discretion of the ECO.

Treating of Pipelines

Cleaning/sterilization/flushing of pipelines shall not impair surrounding environmental quality. Any contaminated water from such activities shall be contained until it complies with the standards contained in the National Water Act or other relevant Acts, as well as those laid down by the Local Authority or else it shall be removed from site and disposed of at an approved waste disposal site.

Contractors Temporary Camping site & Eating Areas

The Contractor must designate eating areas to the approval of the ECO, which must be clearly demarcated. No eating of meals must take place outside these designated areas

Without the approval of the Contractor. The feeding or leaving of food for animals is strictly prohibited. Sufficient waste bins must be present in this area and emptied regularly.

No overnight camping/stay on site allowed. If overnight camping is necessary for security purposes then it must be cleared with the ECO on site.

No washing in dams or streams are allowed.

19. Traffic, Access Routes & Haul Roads

The Contractor must control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes. In addition such vehicles and plant must be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site, the vehicles of the Contractor and his suppliers must not exceed a speed of 25 km/h. On public roads adjacent to the Site vehicles will adhere to municipal and provincial traffic regulations.

As far as possible any access routes/haul roads must utilise existing roads or tracks. Any new access roads/haul roads must be designed so as to minimise erosion and must run across slopes and not directly up them.

All temporary access routes must be rehabilitated at the end of the contract to the satisfaction of the ECO.

Method Statements for any new access/ haul roads must be submitted

Site Clean Up and Rehabilitation

The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The construction site must be cleared, and cleaned to the satisfaction of the ECO.

Land Management

Visiting vehicles must be driven carefully in hazardous road conditions, sharp bends, narrow roads, bad weather, and children on or near a road or domestic animals on or near the road.

Vehicle movements should be kept to a minimum during rain to avoid damage to access roads.

No fences or gates of property owners must be damaged. The condition of all-user gates must be closed upon access and exit to construction areas to prevent animals from getting

out or access by unauthorised personnel. The access gates to the construction areas must always be closed.

Soil erosion must be prevented at all times along the access roads and around construction areas.

No bush or brush clearing to be undertaken without the knowledge of the ECO and landowner.

Socio-Cultural Issues

Property owners or property occupiers must be treated with respect and courtesy at all times.

The cultural lifestyles of the communities living in close proximity to the construction areas must be respected.

Additional Associated Installations

Construction of new access roads

In the event of the construction of a new access road to the site the access route is pre-determined prior to the On Site Start-Up Meeting.

Discussed at the Access Road Start-Up Meeting include the following but not restricted to;

- CEMP and contents thereof
- Demarcation of the access route
- Containment of soil and rock from excavation
- Transit areas of excess excavation road materials
- Stockpile areas for sub-base and surface material
- Earthmoving machinery for specific tasks
- Mandatory Site Equipment
- Placing of onsite toilet facilities
- Specific requests from farmers or property owners
- Dust Pollution
- Post construction erosion methods
- Site Specific agreements emanating from the Start-Up Meeting

Installation of Power lines & trenching of AC cables

In the event of the installation of an electrical overhead power line or the trenching of AC cable the proposed route has been pre-determined prior to the On Site Start-Up Meeting.

Discussed at the power line installation Start-Up Meeting includes the following but not restricted to;

- CEMP and contents thereof
- Establishing the location of the "TAP-OFF" point
- Arranging a time for the physical "Walk-In" and inspection of the power line route with the contractor, and the site ECO. [If required a representative from The Client may be present as well as the property owner or farmer]

- Establishing suitable stockpile areas for poles, machinery and accessories.
- Placing of poles on heavy duty plastic.
- Exit and entry points along the power line route
- Method of Pole Drilling. Pole Planting and Stringing phases
- Method of approach to pole hole location [i.e. Drive in Reverse out]
- Specific requests from farmers or property owners
- Mandatory Site Equipment
- Placing and method of site toilets.
- AC cable trenching
- Site Specific agreements emanating from the On Site Start-Up Meeting

20. TERMS AND ABBREVIATIONS:

The following definitions are applied:

Audit.-[Site Completion] Environmental Site Inspection and verification of construction activities to CEMP Bund - enclosure under / around a storage facility to contain any spillage.

Batch plant - a concrete or plaster mixing facility and associated equipment and materials.

Contractor - the principal persons / company and all other sub-contractors involved in the construction of the project.

Construction phase - The construction phase period of a cellular communications Construction site is defined as from the commencement of site establishment up to and including the practical site handover.

DEADP Department Environmental Affairs & Development Planning

DTEC – Department Of Tourism, Environment and Conservation [Northern Cape Province]

Declaration of Understanding – Form that is signed by all contractors involved in the construction works of their understanding and acceptance of the CEMP and site-specific additions to the CEMP.

Development site - boundary and extent of development works and infrastructure.

ECO - Environmental Control Officer: - Must be a suitably qualified independent site environmental consultant appointed to ensure compliance with the CEMP.

ESA – Environmental Site Agent

ER – Engineers representative or Main contractors representative

On Site Start-Up Meeting – The OSSM held at site to discuss CEMP and determine Site Specific additions that will be included as the basis for the CEMP.

EA – Record Of Decision issued by DEADP or DTEC for the authorisation to commence construction under certain environmental compliances.

BAR	Basic Assessment Report
CMC	Cape Metropolitan Council
DTEC	Department of Tourism Environment and Conservation
DEA&T	Department of Environmental Affairs and Tourism
DWA&F	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme, although the term Environmental Management <i>Plan</i> is often used interchangeable with <i>Programme</i> .
EMS	Environmental Management System
IEM	Integrated Environmental Management
*ECO	Environmental Control Officer
ER	Engineer's Representative
I&AP	Interested & Affected Party
SAHRA	South African Heritage Resources Agency

Environment means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part of the combination of the above two bullets and the interrelationships between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Potentially hazardous substance is a substance, which, in the reasonable opinion of the Engineer, can have a deleterious effect on the environment.

Method Statement is a written submission by the Contractor to the Engineer or relevant responsible person such as the Project Leader, in response to the Specification, or a request by the Engineer/Project Leader, setting out the plant, materials, labour, method, responsible persons and timeframe that the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer/Project Leader when requesting the Method Statement, in such detail that the Engineer/Project Leader is enabled to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

The Method Statement shall cover applicable details with regard to:

- construction procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/non-compliance with the Specifications;
- any other information deemed necessary by the Engineer/Project Leader.

Reasonable means, unless the context indicates otherwise, reasonable in the opinion of the Engineer/Project Leader after he has consulted with a person, not an employee of the Applicant Directorate, suitably experienced in "environmental implementation plans" and "environmental management plans", both as defined in the Environmental Management Act (Act No 107,1998).

Solid waste means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. Plastic packets and wrappers).

Contaminated water means water contaminated by the Contractor's activities, e.g. concrete water and runoff from plant/ personnel wash areas.

Construction site means the area influenced and affected by the construction activities or under the control of the Contractor, often referred to as "the Site".

Contractor's camp means the designated and suitably demarcated areas on the Site within which all site offices and staff facilities are situated and within which equipment will be stored, for instance, borrow areas, batching plant, crusher plant, sand washing plant, workshop, offices, rest areas, ablution areas, etc., whichever is applicable.

Construction means the period of the project during which the actual works are carried out, deemed to include site establishment, site preparation, the works, maintenance period and decommissioning.

Precautionary principle means the basic principle, that when in doubt or having insufficient or unreliable information on which to base a decision, to then undertake actions that will have minimum risk.

Applicant	The person/organisation (usually the landowner or holder of the servitude rights) with rights to undertake the development of the site.
Audit/Monitoring	Regular inspection and verification of construction activities for degree of compliance to the Environmental Management Programme.
Bund	Enclosure under/around a storage facility to contain any spillage.
Batch plant	Machinery used on site for the large-scale mixing and production of concrete or plaster and associated equipment and materials.
Contract	An accepted offer to execute specified work within a stated time for a monetary reward. It takes the form of all the documents and drawings issued when tenders are invited (in which the nature and quantity of the work to be executed are set out), the schedules of which documents have been priced by the contractor for completion within a stated time, and the acceptance, in writing, of the Contractor's price) (source: SABS 0120; 1986). OR The General Conditions of Contract and Special Conditions, Specifications, Drawings, Tender, written records of matters agreed after the submission of the Contractor's tender, Letter of Acceptance and Agreement, together with other documents which the parties have agreed in writing shall form part of the Contract and such amendments or additions to the Contract as may be agreed in writing between the parties (source: GCC, 1990).
Contractor	The natural or juristic person or partnership whose tender has been accepted by, or on behalf of the Employer and where applicable, includes the Contractor's heirs, executors, administrators, trustees, judicial managers or liquidators, as the case may be.
Developer	The developer is the person/body responsible for the development of the project and

Emergency	<p>could be the same as, or different to the applicant. A situation requiring immediate action and where failure to implement appropriate actions timorously may result in environmental damage.</p>
Engineer	<p>A person who represents the Applicant and is responsible for the technical, environmental and contractual implementation of the works to be undertaken.</p>
Engineer's Representative	<p>The person appointed from time to time by the Engineer in terms of the General Conditions of Contract. The Engineer's Representative shall:</p> <ul style="list-style-type: none"> • Observe the execution of the Works, examine and test materials and workmanship and receive from the Contractor such information as he shall reasonably require. • Have the authority: <ul style="list-style-type: none"> ○ Given to him by any provisions of the Contract. ○ Given to him by the Engineer. ○ To deliver to the Contractor oral or written communications from the Engineer. ○ To receive on behalf of the Engineer oral or written communications from the Contractor. <p>The powers and authority of the Engineer's Representative would be subject to certain conditions.</p>
Environmental Awareness Course Environmental Completion Statement	<p>An environmental education course for the Contractors management staff and labour force which informs them of the requirements of the EMP. A report document submitted to the relevant authority showing that the EMP environmental controls were appropriately implemented on a project.</p>
Environmental Completion Audit	<p>Similar to an Environmental Completion Statement but it is more detailed and will contain detailed information regarding controls and their effectiveness. This document would be required for large projects normally where a professional environmental scientist was appolnted as the ECO.</p>
Environmental Management Programme:	<p>A programme for managing potential impacts identified during the approval process. It could consist of one or more of the following components, depending on necessity dictated by the nature of the development:</p> <ul style="list-style-type: none"> • Standard Environmental Specification • Detailed Environmental Specification • Guldeline documents and tools for implementation by the different role players • The Environmental Education Course • Standard Revegetatlon Specification • Detailed Revegetation Specification
*ECO (Environmental Site Officer	<p>As mentioned earlier, the term Environmental Management <i>Plan</i> is often used interchangeable with Environmental Management <i>Programme</i> and for the purposes of this document will be assumed to have the same definition. Designation is reserved for suitably qualified environmental site managers, who are to be appointed by the Engineer, and are mainly associated with large and complex developments.</p>
*ECO (Environmental Control Officer) Environmental Specification	<p>Designation is reserved for suitably qualified authority or officer acting on their behalf. The ECO is usually a professionally registered Environmental Scientist. For the purposes of this study, this designation is reserved for the combination of the Standard Environmental Specifications and the Detailed Environmental Specifications.</p>
General Conditions of Contract	<p>A document that sets out the general rights and obligations of the parties to a contract, on such matters as sureties, quality of work, program, supervision, insurance, co-operation with others, provision of plant, material and labour, the regulation of wages, samples, tests, examination, commencement and completion of work, penalties for delay, requirements for maintenance, methods of dealing with defects, variations, measurements and payments, and the settlement of disputes. In South Africa the most widely accepted general conditions of contract for general civil engineering works is the SAICE General Conditions of Contract for Works of Civil Engineering Construction (sixth edition, 1990).</p>
No Go Areas	<p>Areas identified as being environmentally sensitive in some manner and delineated on plan, and on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained from the Engineer/Project Leader prior to entry.</p>

Particular Specification	A specification that covers construction work involving a specialist type of operation that is not adequately covered in a Standardized Specification.
Project Specification	A specification that describes the Works in general terms (including the locality, the conditions on Site, the extent of the Contract, the construction programme, and the service facilities available and to be taken into consideration) and that may include clauses that amend or amplify or add to any requirement(s) of a standardized specification (or standard or particular specification) in the sequence in which the requirements and specifications occur in the contract documents.
Reference Group:	The funding body and major role-players (including the environmental authorities) who may resolve environmental disputes, which could arise between the different role-players on site.
Revegetation Specification Site	This designation is reserved for the combination of the Standard Revegetation Specifications and the Detailed Revegetation Specifications. The boundary and extent of development works and infrastructure, including any areas off the main site on which works are to be carried out in order to allow the development to proceed successfully.
Specification	Technical descriptions of the standards of materials and workmanship that the Contractor is to use in the Works to be executed, the performance of the Works when completed and may include the manner in which payment is to be made. It is essential for the specifications to be clear, concise and to the point, and use should not be made of ambiguous terms or phraseology.
Standard Specification	An established or accepted model specification. In South Africa the most widely accepted standard specification for general civil engineering works is the set of SABS 1200 Standardized Specifications (refer to definition below), however, other Standard Specifications such as BS, AAWA and Standard Water Specifications are also used.
Standardized Specification	A specification that is published by the South African Bureau of Standards (SABS) and that so covers a particular class of civil engineering construction that the specification is generally applicable throughout the Republic of South Africa.
Top material	This refers to any surface material in the construction area, whether it is soil, fine material or stones including vegetation.
Works	The works to be executed in accordance with a contract.

21. APPENDICES:

Appendix 1: SITE START-UP REPORT

Appendix 2: PENALTIES FOR NON-COMPLIANCE

Appendix 3: DECLARATION OF UNDERSTANDING

Appendix 4: INFORMATION ON METHOD STATEMENTS

Appendix 5: EXAMPLE OF METHOD STATEMENT

Appendix 6: CONTRACTOR/S REPRESENTATIVE: ENVIRONMENTAL DAILY CHECKLIST

Appendix 7: BASIC RULES OF CONDUCT

Appendix 8: ECO DAILY REPORT/CHECKLIST

Appendix 9: EA.

Appendix 10: DRAWINGS (SEE BAR).

Appendix 11: RECOMMENDATIONS AS PER BAR

Appendix 12: Other documents.

APPENDIX 1: START-UP REPORT

TO BE INCLUDED AFTER START-UP MEETING

APPENDIX 2: PENALTIES FOR NON-COMPLIANCE

The contractors / sub-contractors must contact the ECO at any stage if unsure about any matter, or if a pollution incident occurs, or vegetation or animals are damaged.

ECO = Environmental Control Officer ECO= Environmental Site Officer

PHASE	Penalty for Non-compliance	
	Bottom range	Top Range*
PRE-CONSTRUCTION PHASE		
Construction area to be marked off before construction starts.		5000
The demarcated area must be maintained throughout the construction phase	500	1000
Site area for stock piling of building material must be demarcated	500	5000
Site area for storing of waste material must be demarcated	500	5000
Fencing off the construction site with mesh fencing of 1.8m, where necessary or other suitable material as agreed on by ECO	500	1000
Sitting of access road/s to be approved by ECO & demarcated with stakes before any construction starts (if applicable)		5000
Temporary route used for construction must be determined on site with ECO (if applicable)	1000	5000
Telecommunications & AC power routes must be determined with the ECO (if applicable)	1000	5000
Sensitive features that may be harmed must be clearly marked or demarcated.	500	2000
Vegetation that may not be removed must be clearly marked or demarcated.	500	5000
Contractor must make the Construction team and all sub-contractors aware of all environmental aspects that could lead to imposition of penalties	100	5000
Contractor to sign Declaration of understanding (DOU) before construction starts		5000
Contractor to assure that all subcontractors be informed and signed DOU	1000	5000
Method statements must be provided on request by the ECO. No work may commence until the Method Statement is accepted by the ECO and Engineer	1000	5000
CONSTRUCTION PHASE		
Information		
A copy of the CEMP & Record of Decision with all the conditions of approval, and the relevant Method Statements must be at site at all times.	200	5000
Construction crew behaviour		
Construction crews may not overnight on site.	200	5000
No amplified music allowed on site	100	200
Construction crew must stay within the demarcated construction area. (Applicable in sensitive sites)	50	500
Eating of meals only allowed in demarcated area	50	500
No pets permitted on site		100
Driving, Parking & Storing of machinery and vehicles are only allowed inside demarcated areas and existing roads	1000	5000
Machinery may only be used on the road and may not disturb the vegetation on the sides of the road except if cleared by ECO. Machinery used must be carefully considered to limit environmental damage	500	5000
No vegetation other than that agreed on may be damaged - i.e. no access to areas outside construction area.	500	2000

No individual may cause unnecessary damage to flora and fauna on, around or near the site	20	2000
No littering allowed (incl. cigarette butts)	50	500
Excavations		
No topsoil may be removed or altered outside the demarcated area and/or which was not specified.		2000
Commercial sources of sand, rock and gravel to be cleared with ECO	200	5000
All surplus material to be taken off-site and be disposed of at approved site	500	5000
Toilets		
Sufficient ablution facilities must be provided		3000
Toilets to be secured to prevent them from falling or blowing over.	100	1000
They must be serviced regularly, (according to the manufacturer's instructions) and kept clean.	100	1000
Everybody on site must make use of ablution facilities	50	1000
Fire Prevention		
All mandatory fire fighting equipment (as specified at start-up) must be on site at all times	500	4000
Fire fighting equipment to be in good working order and serviced.	500	2000
No fires, including cooking fires, allowed on site	1000	5000
Cement		
Concrete may only be mixed within the boundaries of the demarcated area and/or where was agreed on by the ECO.	500	5000
All excess cement & concrete mixes to be contained on construction site prior to disposal off site	200	5000
Any cement / concrete spillage to be cleaned up immediately.	500	5000
Mixing and storage areas must be appropriately located in demarcated area	500	1000
Dust pollution control		
Ensure that loose building material is covered to prevent dust pollution	100	1000
Water run-off		
Contamination of water bodies, rivers, dams or wellands must be prevented at all cost	500	5000
Rainwater from construction & building site/s must be channelled, contained & allowed to dry out, so as not to transport any pollutants into the surrounding area. Temporary trenches, straw stabilising, brush cutting can be used	500	5000
Waste control		
Sufficient refuse bins must be placed on site	500	2000
Refuse bins must be cleaned on a regular basis	100	1000
General litter / building refuse must be cleaned up on a regular basis from the site	500	3000
Cement-contaminated water; paint; oil; cement slurries etc must be stored in watertight containers or as agreed with ECO	500	5000
Store all refuse & waste material in wind & animal proof containers	100	1000
Waste must be disposed of at an official waste deposit site on a regular basis.	500	5000
The absence of or inadequate drip trays or bunding facilities	500	5000
Failure to address oil/fuel leaks from on-site machinery	200	5000
Herbicides		
No herbicides or pesticides whatsoever may be used.	200	2000
Construction road		
Road must be upgraded to prevent degradation and erosion of the road and surrounds.	500	5000
Power and Telecommunications supply		
Demarcate power supply route	500	5000
No vehicles to drive through vegetation unless authorised by ECO	500	5000

Storage of equipment may only take place at an area demarcated by the ECO.	500	5000
Working must be done in phases to prevent trampling of vegetation	N/A	
Use of generators and fuel powered equipment		
A watertight cover must be placed under the power generator equipment to prevent accidental spillage of fuel & oil seeping into the soil.	500	5000
Drip tray must be able to take 120% of fuel on site	500	5000
All waste material generated from the use of this equipment must be contained and removed from the site	500	5000
Mobile fuel powered equipment must be well maintained and must not have any fuel or oil leaks.	200	5000
Soil Stabilisation		
Ensure that soil material for filling and stabilisation comes from a source that does not contain seeds alien to the area. The source must be cleared with the ECO.	100	2000
Rehabilitation		
Remove rocks and stones and stock pile in area recommended by ECO	500	5000
Remove all plants that can be used for rehabilitation and store on- or off-site in appropriate manner as agreed with ECO	200	5000
Removal of all old concrete and alien materials from site	500	5000
Site must be cleared of all waste and building material	500	5000

*(Large scale / repeated offence)

APPENDIX 3: DECLARATION OF UNDERSTANDING

DECLARATION OF UNDERSTANDING

I, _____

Representing _____

Declare that the conditions of the authorisation were brought under my attention and that I have read and understood the contents of the Environmental Management Plan (which includes all documents as per Record of Decision).

SITE: _____

Record of Decision: ref. _____

Date: _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the aforementioned site.

I also undertake to inform all persons under my supervision of such specifications and contents of the documents.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness 2: _____

APPENDIX 4: INFORMATION ON METHOD STATEMENTS

Method Statements are to be completed by the person undertaking the work (i.e. the Contractor). The Method Statement will enable the potential negative environmental impacts associated with the proposed activity to be assessed.

The Method Statement can only be implemented once approved by the ECO.

The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

The ECO will use the Method Statement to audit compliance by the Contractor with the requirements of the approved Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the ECO, denoting that the changed methodology or works are necessary for the successful completion of the works, and are environmentally acceptable. The Contractor will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

This Method Statement **MUST** contains sufficient information and detail to enable the ECO to apply their minds to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him/her in order to undertake the works.

THE TIME TAKEN TO PROVIDE A THOROUGH, DETAILED METHOD STATEMENT IS TIME WELL SPENT. INSUFFICIENT DETAIL WILL RESULT IN DELAYS TO THE WORKS WHILE THE METHOD STATEMENT IS REWRITTEN TO THE ER'S AND ECO'S SATISFACTION. The page overleaf provides a *pro forma* method statement sheet, which needs to be completed for each activity requiring a method statement in terms of the EMP.

APPENDIX 5: EXAMPLE OF METHOD STATEMENT

METHOD STATEMENT

CONTRACT:..... **DATE:**.....

PROPOSED ACTIVITY (give title of method statement and reference number):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:

End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):

Note: please attach extra pages if more space is required

DECLARATIONS

1) ENVIRONMENTAL CONSULTANT AND/OR SITE OFFICER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

(Signed) (Print name)

(Signed) (Print name)

Dated: _____

2) PERSON UNDERTAKING THE WORKS

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ECO will audit my compliance with the contents of this Method Statement

(Signed) (Print name)

Dated: _____

3) THE APPLICANT

The works described in this Method Statement are approved.

(Signed) (Print name) (Designation)

Dated: _____

4) APPROVING AUTHORITY

The works described in this Method Statement are approved.

(Signed) (Print name) (Designation)

Dated: _____

APPENDIX 6: CONTACTOR/S REPRESENTATIVE: ENVIRONMENTAL CHECKLIST

CONTACTOR/S REPRESENTATIVE: ENVIRONMENTAL DAILY CHECKLIST

SITE: _____

PHASE OF WORK AND % OF COMPLETION: _____

ENVIRONMENTAL ASPECT	YES/NO (✓/✗)	COMMENTS
• How many workers are on site		
• All new personnel on site are aware of the contents of the EMP and have been through the environmental awareness course.		
• Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
• Sufficient and appropriate fire fighting equipment is visible and readily available.		
• Waste control and removal system is being maintained.		
• Refuse bins in place and maintained		
• Toilets are in place and clean		
• Demarcation and other fences are being maintained.		
• What machinery are on site		
• Drip trays are being utilised where there is a risk of incidental spillage		
• Bunds/ drip trays are being emptied on a regular basis (especially after rain).		
• No leakages (oil & fuel) are visible from construction vehicles		
• No go areas, remaining natural features and trees have not been damaged.		
• Dust control measures (if necessary) are in place and are effectively controlling dust.		
• Noise Control measures (if necessary) is in place and is working effectively.		
• Erosion control measures (if necessary) are in place and are effective in controlling erosion. (Access road, site areas etc.)		
• Stockpiles are located within the boundary of the site, do not exceed 2 m in height and are protected from erosion.		

Completed by:..... Sign:..... Date:.....

To be submitted at the end of each week to the Environmental Site Officer (ECO)

Received by:

Environmental Site Officer:..... Sign:..... Date:.....

APPENDIX 7: BASIC RULES OF CONDUCT

BASIC RULES OF CONDUCT

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid.

NOTE: **ALL new site personnel must attend an environmental awareness presentation.** Please inform your foreman or manager if you have not attended such a presentation or contact the ECO.

DO:

- USE THE TOILET FACILITIES PROVIDED – REPORT DIRTY OR FULL FACILITIES
- CLEAR YOUR WORK AREAS OF LITTER AND BUILDING RUBBISH AT THE END OF EACH DAY – use the waste bins provided and ensure that litter will not blow away.
- REPORT ALL FUEL OR OIL SPILLS IMMEDIATELY & STOP THE SPILL CONTINUING.
- DISPOSE OF CIGARETTES AND MATCHES CAREFULLY. (Littering is an offence.)
- CONFINE WORK AND STORAGE OF EQUIPMENT TO WITHIN THE IMMEDIATE WORK AREA.
- USE ALL SAFETY EQUIPMENT AND COMPLY WITH ALL SAFETY PROCEDURES.
- PREVENT CONTAMINATION OR POLLUTION OF STREAMS AND WATER CHANNELS.
- ENSURE A WORKING FIRE EXTINGUISHER IS IMMEDIATELY AT HAND IF ANY “HOT WORK” IS UNDERTAKEN e.g. welding, grinding, gas cutting etc.
- REPORT ANY INJURY OF AN ANIMAL.
- DRIVE ON DESIGNATED ROUTES ONLY.
- PREVENT EXCESSIVE DUST AND NOISE.

DO NOT:

- REMOVE OR DAMAGE VEGETATION WITHOUT DIRECT INSTRUCTION.
- MAKE ANY FIRES.
- INJURE, TRAP, FEED OR HARM ANY ANIMALS – this includes birds, frogs, snakes, lizards etc.
- ENTER ANY FENCED OFF OR MARKED AREA.
- ALLOW CEMENT OR CEMENT BAGS TO BLOW AROUND.
- SPEED OR DRIVE RECKLESSLY
- ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM
- SWIM IN THE DAM.
- LITTER OR LEAVE FOOD LAYING AROUND

Notes:

1. Must any animals such as tortoises, chameleons or snakes be encountered then do not harm them. The ESSO or RE must be contacted to remove these safely. The harming of any animal will result in disciplinary action.
2. Construction and heavy machine operators must be particularly sensitive to staying within access routes and prevention of unnecessary damage. Dust and noise is also of particular concern. Ensure that vehicles and machinery do not leak fuel or oils. Refuelling or maintenance must be done within the maintenance camp area only.
3. Alien plant clearing and control work teams must be closely supervised.

BASIESE GEDRAGSKODES

Die volgende lys vertenwoordig die Moets en Moenies vir omgewingsbewustheid wat alle deelnemers aan hierdie projek in ag moet neem tydens die uitvoer van hul take. Hierdie lys is nie volledig nie en dien slegs as 'n vinnige verwysing.

NOTA: ALLE nuwe terreinpersoneel moet 'n aanbieding ten opsigte van omgewingsbewustheid bywoon. Indien u nog nie so 'n aanbieding bygewoon het nie, lig asseblief u voorman of bestuurder in of kontak die Omgewings Terreinbeampte.

MOETS:

- GEBRUIK DIE BESKIKBARE TOILET-GERIEWE – RAPPORTEER VUIL OF VOL GERIEWE.
- MAAK U WERKPLEK SKOON VAN ROMMEL OF BOUROMMEL AAN DIE EINDE VAN ELKE DAG – gebruik beskikbare vullisdromme en verseker dat rommel nie rondwaaï nie.
- RAPPORTEER ALLE BRANDSTOF- EN OLIE STORTINGS ONMIDDELLIK – STOP VERDERE STORTING.
- WEES VERSIGTIG MET DIE WEGDOEN VAN SIGARETTE EN VUURHOUTJIES. (rommelstrooi is 'n oortreding.)
- BEPERK WERKAKTIWITEITE EN DIE STOOR VAN TOERUSTING TOT DIE ONMIDDELLIKE WERKAREA.
- GEBRUIK VEILIGHEIDSTOERUSTING EN VOLDOEN AAN ALLE VEILIGHEIDS-MAATREËLS.
- VOORKOM BECOEDELING VAN STROME EN WATERBANE
- VERSEKER DAT 'N BRANDBLUSSEER IN WERKENDE TOESTAND BYDERHAND IS WANNEER "WARM" WERK VERRIG WORD bv. Sweis, wegslyp, gasny, ens.
- RAPPORTEER BESEERDE DIERE.
- RY SLEGS OP AANGEWESSE ROETES.
- VOORKOM OORMATIGE STOF EN GERAAS.

MOENIE:

- PLANTEGROEI VERWYDER OF BESKADIG SONDER DIREKTE INSTRUKSIE NIE.
- ENIGE VURE MAAK NIE.
- ENIGE DIERE DOOD, BESEER, VANG OF VOER NIE, insluitende voëls, paddas, slange, akkedisse, ens.
- ENIGE OMHEINDE OF AFGESPERDE AREAS BINNETREE NIE.
- SEMENT OF SEMENTSASSE LAAT RONDWAAI NIE.
- VINNIG OF ROEKELOOS BESTUUR NIE.
- ENIGE ROMMEL, AFVAL, OLIE OR ENIGE VREEMDE MATERIAAL IN STROME LAAT BELAND NIE.
- IN DIE DAM SWEM NIE.
- ROMMELSTROOI OF KOS LAAT RONDLÊ NIE.

Notas:

1. Indien enige diere soos skilpaaie, verkleurmannetjies of slange teëgekóm word, moet hulle nie beseer of dood nie. Kontak die OTB of RI om hulle veilig te verwyder. Die besering van diere sal lei tot dissiplinêre optrede.
2. Operateurs van konstruksie- en swaar masjiene moet veral versigtig wees om binne toegangsroetes te bly en om enige onnodige skade te voorkom. Verseker dat voertuie en masjiene nie olie of brandstof lek nie. Brandstofaanvulling en voertuigonderhoud mag slegs binne die onderhoudsarea gedoen word.
3. Streng toesig moet gehou word oor indringerplantbeheerspanne.

EZIPPHAMBILI EKUNYANZELEKILEYO UKUBA ZENZIWE

Zonke ezi zinto zilandelayo zizinto ekufuneka zenziwe nekufuneka zingenziwanga. Wonke umntu ofikayo kufuneka afundiswe ngemigaqo kupala. Nceda yazisa iforman yakho ikuba awukhange uye kufundiswa.

IZINTO EMAZENZIWE

- SEBENZISA IZINDLU ZANGASESE, YAZISA XA KUKHO UMONAKALO.
- ZAMA UKUCOCA APHO UBUSEBENZA KHONA.
- SEBENZISA IMIGQOMO YENKUKUMA UNGAYEKI IPHAPHTIEKE.
- YAZISA XA UBONA IOIL ECHITHSKALAYO OKANYE IPETROL.
- CIMA LOZOLI CIGARETTE XA UGQIBIBILE UKUTSHAYA
- ZONKE IZIXHOBO USEBENZA ZIBUYISELE APHO ZIHLAKA KHONA XA UCGIBILE APHO ZIHLALA KHONA XA UGQIBILE UKUZISEBENZISA.
- ZISEBENZISE IZIKHUSELIXA UZINKIWE.
- SUKUGALELA IZINTO EMLANJENI.
- MASIBEKHO ISICIMA MLILO XAUSEBENZA NGOMLILO.
- YAZISA MSINYANE XA UBONE ISILWANYANA EZONZAKELEYO.
- XAUQHUBA ISITHUTHI HAMBA ENDLELENI QHA UNGAFATHULINJE.
- NAPHINA ZAMAUNGENZI THULI OKANYE INGXOLO XA USEBENZA.

EMAZINGENZIWA

- SUKUSUSA NESIPHINA ISITYALO UNGAKHANGE UXELELWE
- SUKWENZA MLILO NOKUBA SEKUBANDA
- AMAGQARA UKUBULALA IZILWANYANA NOKUZIFIDA AKUVUMELEKANGA
- SUKUNGENA XA KUVALIWE NGAPHANDLE KWE MVUME
- INGXOWA ZESAMENTE MAZINCEDWE ZINGALHLWA NJE
- SUKUQHUBA NGESANTYA ESIPHAKAMILEYO
- SUKUGALELE NA YIPHI INTO PHAYA EMLANJENI
- SUKUQUBHA EDAMENI Q OQOSHA YONK INKUKUMA

ECO / ESO SITE VISIT CHECKLIST / REPORT:

PROJECT & PHASE:		DATE
		LOCATION
ENVIRONMENTAL ASPECT	1-3 NA	COMMENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
1. DEMARCATION METHOD STATEMENT Boundaries of "no go" areas, construction sites, offices, temporary storage areas as well as labourer's facilities must be demarcated (EMP and ECO requirements) and maintained for the length of the construction period.		
2. NO-GO AREAS/PROTECTION OF FAUNA & FLORA Identified "No-Go Areas", remaining natural veld and indigenous- or significant trees are protected features and must be demarcated for protection from construction damage (including secondary impact). <ul style="list-style-type: none"> • All areas outside of the demarcated construction sites and access roads to be regarded as NO-GO areas unless otherwise agreed upon with the client and ECO. • All flora identified to be rescued must be removed and placed in an area specifically allocated and taken care off until re-used in pre-approved way. • Identified areas with significant vegetation must be protected as NO-GO areas. 		
3. CLEARING OF VEGETATION & TOPSOIL REMOVAL METHOD STATEMENT Before any construction or earthworks, topsoil must be stripped (>150mm) and stockpiled for rehabilitation/ landscaping. Stockpiles: <ul style="list-style-type: none"> • must be protected (may not blow or wash away or gets compacted) and stored separately. • may not be moved further than 50m or mixed with any other soil. • must be convex and should not exceed 2m in height. In addition: <ul style="list-style-type: none"> • Cleared areas must be stabilized. • Burning or burying of cleared vegetation is prohibited, but may be used for mulch or slope stabilisation on site. 		
4. STOCKPILING METHOD STATEMENT Top- and subsoil's from trenches must be located within site boundaries, stabilised and may not exceed 2m in height.		
5. TEMPORARY STORAGE FACILITIES METHOD STATEMENT Must be demarcated, organised, neat and tidy and of acceptable standards.		

ENVIRONMENTAL ASPECT	1-3 NA	COMMENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
6. CONSTRUCTION CAMP & SITE OFFICES METHOD STATEMENT Must be demarcated, organised and free of day-to-day litter (maintaining good housekeeping standards).		
7. FUEL STORAGE METHOD STATEMENT Fuel storage areas must be situated within the demarcated construction camp site (or an area approved by the ECO). <ul style="list-style-type: none"> • Bunds must be built (EMP and ECO requirements) around larger fuel storage areas (accidental spillages). • Drip trays must be used (In accordance with EMP) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain. 		
8. LABOURER'S FACILITIES METHOD STATEMENT Facilities must be of acceptable standards suitably demarcated, well maintained, neat and tidy and with adequate ablution facilities.		
9. ENTRANCE AND HAUL ROADS METHOD STATEMENT Only approved entrance and haul roads may be used (existing roads and infrastructure). No new roads or parking areas may be developed without written approval from the ECO.		
10. MANDATORY SITE EQUIPMENT METHOD STATEMENT Mandatory site equipment must be in place, well maintained and in accordance with EMP and ECO requirements. <ul style="list-style-type: none"> • Sufficient refuse bins must be on site (well placed and conspicuous) and must be cleaned regularly. • Fire extinguishers must be readily available, maintained and functional. • Drip trays must be used (in accordance with EMP) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain. • Toilets and sanitation facilities must be kept clean neat and hygienic (toilet paper must be available). 		
11. WASTE CONTROL METHOD STATEMENT The contractor is expected to control all construction related waste material and general litter on actual construction sites and its immediate surroundings. <ul style="list-style-type: none"> • Waste management must be in accordance with the EMP, of acceptable standards, with regular removal of general waste, hazardous waste as well as construction waste (e.g. concrete waste and spoil). 		

ENVIRONMENTAL ASPECT	1-3 NA	COMMENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
<p>12. CEMENT MIXING & BATCHING AREAS</p> <p>METHOD STATEMENT</p> <p>Mixing areas must be approved by the ECO, suitably demarcated and may not result in pollution.</p> <ul style="list-style-type: none"> • Polluted cement water may only be released into sedimentation ponds. • Sedimentation ponds must be maintained and cleaned regularly (and reinstated after use). 		
<p>13. CONSTRUCTION VEHICLE MAINTENANCE</p> <p>METHOD STATEMENT</p> <p>Construction vehicles must be in good working order and well maintained to prevent oil and fuel leakages and to reduce noise levels.</p> <ul style="list-style-type: none"> • Maintenance areas must be approved by ECO. • Refuelling must be done in accordance with the EMP, using drip trays. 		
<p>14. HEAVY EARTHMOVING EQUIPMENT</p> <p>Construction vehicles and equipment may only operate <u>within</u> the demarcated site boundaries (and approved access roads), especially heavy earthmoving vehicles.</p>		
<p>15. DUST CONTROL</p> <p>METHOD STATEMENT</p> <p>Adequate control measures must be in place to prevent dust pollution as a result of construction activities (especially with regard to entrance-, haul roads and exposed surfaces).</p> <ul style="list-style-type: none"> • Areas of concern must be watered regularly during construction AND periods of strong winds, BUT must take water saving into account. 		
<p>16. EROSION CONTROL</p> <p>METHOD STATEMENT</p> <p>Erosion resulting from works must be controlled.</p> <ul style="list-style-type: none"> • Temporary and permanent drainage works must be maintained. • Erosion damage and damage in drainage courses must be reinstated. 		
<p>17. NOISE CONTROL</p> <p>METHOD STATEMENT</p> <p>Effective noise control measures must be in place and acceptable working hours must be kept (deviations must be approval by the ECO).</p>		
<p>18. ENVIRONMENTAL CONDUCT</p> <p>Environmental conduct of construction personnel must be acceptable (e.g. no burning or burying of refuse; no littering and no cement bags or other construction waste material lying around).</p>		

ENVIRONMENTAL ASPECT	1-3 NA	COMMENTS
Note: 1 = Poor, 2 = Average, 3 = Good, NA = Not Applicable		
19. REHABILITATION METHOD STATEMENT On completion of the project or phase, all areas impacted by the construction activities must be reinstated and/or rehabilitated to the satisfaction of the ECO with emphasis on the following: <ul style="list-style-type: none"> • Site offices must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO. • Labourer's facilities must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO. • All construction site areas must be rehabilitated or reinstated to the satisfaction of the ECO. • All temporary fencing and demarcation must be removed and the areas reinstated to the satisfaction of the ECO. • Temporary storage areas must be rehabilitated or reinstated to the satisfaction of the ECO. • All remaining construction material must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO. • Any additional disturbed areas must be rehabilitated or reinstated to the satisfaction of the ECO. 		
20. ADDITIONAL METHOD STATEMENTS Method statements must be submitted and approved before commencement of the works and must be available at the site offices.		
21. ENVIRONMENTAL CHECKLIST The contractor must ensure that the weekly environmental checklist is completed at the end of each week and it must be available at the site offices.		
22. SPOT FINES & PENALTIES Spot fines and penalties must be recorded and documented by the ECO (in accordance with the EMP).		
23. FIXED POINT PHOTOS Photographs must be taken by the ECO, Site Engineer and or Site Manager, prior to, during and immediately after construction as visual reference. These photographs must be stored with other records relating to the EMP.		

ECO: _____

_____ Date:

APPENDIX 11: RECOMMENDATIONS AS PER BAR.

To be included

APPENDIX 12: ANY OTHER RELEVANT DOCUMENTS