



APPENDIX E:
COMMENTS AND RESPONSES REPORT



UTHUKELA DISTRICT MUNICIPALITY

**PROPOSED PHASE 2 OF CONSTRUCTION OF THE
DRIEFONTEIN COMPLEX BULK WATER SUPPLY
PIPELINE, KZN**

Appendix E: Public Participation Report

Issue Date : November 2013
Project No.: 11767
DAEA EIA ref: DC23/0004/2013

**PROPOSED PHASE 2 OF CONSTRUCTION OF THE DRIEFONTEIN
COMPLEX BULK WATER SUPPLY PIPELINE, LADYSMITH
DC23/0004/2013**

COMMENTS AND RESPONSE REPORT

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**PROPOSED PHASE 2 OF CONSTRUCTION OF THE DRIEFONTEIN
COMPLEX BULK WATER SUPPLY PIPELINE, LADYSMITH
REFERENCE NO: DC23/0004/2013**

COMMENTS AND RESPONSE REPORT

1 INTRODUCTION

The Public Participation Process forms an integral part of the EIA process. It is a mechanism that aids to identify potential impacts of proposed projects on the biophysical and the human environments. Identified Interested and Affected Parties (I&AP's) are given an opportunity to comment on the proposed project and make recommendations on mitigation requirements.

The process followed in informing I&AP's of the proposed projects is outlined below. This report presents comments received from I&AP's and responses provided thereto in accordance with Chapter 36 of the EIA Regulations, 2006 promulgated under Section 24(5) of NEMA, Act 107 of 1998 as amended.

The following means of distribution of information was undertaken:

- 10 signboards (5 English and 5 Zulu) were placed along the proposed route on the 10th of April 2013.
- An English advert was placed in The Witness and a Zulu Advert in the Ilanga Newspaper on the 16th of April 2013.
- Authorities including the Department of Water Affairs, Department of Transport, Ezemvelo KZN Wildlife, WESSA, Uthukela District Municipality, Indaka Local Municipality, Emnambiti Local Municipality and the local ward councillor.
- All landowners were notified of the project through email or handouts and were invited to a meeting held on the 4th of September 2013.



Appendix E.1.1:
**INTERESTED AND AFFECTED PARTIES
DATABASE**

PROPOSED DRIEFONTEIN PIPELINE : INTERESTED & AFFECTED PARTIES / KEY STAKEHOLDERS DATABASE

NAME	ORGANISATION/INTEREST	TEL. NO.	CELL NO.	FAX	EMAIL	ADRESS
Norman Ward	DWA	031 - 336 2700		031 - 305 9915	wardn@dwaf.gov.za	88 Field Street, 7th Floor, Southern Life Building, DBN, 4000
Colleen Moonsamy	DWA	031 - 336 2700			moonsamyc@dwaf.gov.za	88 Field Street, 7th Floor, Southern Life Building, DBN, 4000
Weziwe Tshabalala	AMAFA	033 3946543		033 3426097	'amafa.pmb2@mweb.co.za'	Langalibalele Street Pietermaritzburg 3201
David Stephen	Umgeni Water	033 - 341 1111	083 441 5593	086 693 9687	david.stephen@umgeni.co.za	310 Burger Street, PMB, 3201
Asha Ramjatan	Umgeni Water	033 - 341 1111	083 679 4423	033 - 341 1349	asha.ramjatan@umgeni.co.za	310 Burger Street, PMB, 3201
Joshua Madlala	Umgeni Water	033 - 341 1111	083 262 9060	033 - 341 1349	joshua.madlala@umgeni.co.za	310 Burger Street, PMB, 3201
Fellicity Elliot	Ezemvelo KZN Wildlife	033 - 845 1458		033 - 845 1499	elliottf@kznwildlife.com	Queen Elizabeth Park, Montrose, PMB, 3201
Roy Ryan	Department of Transport	033 - 342 4082		033 - 342 3962	roy.ryan@kzntransport.gov.za	172 Burger Street, PMB, 3201
Michele Schmidt	Department of Transport	34 - 342 4082		34 - 342 3962	michele.schmid@Kzntransport.gov.za	173 Burger Street, PMB, 3201
John Johnson	Department of Local Government & Traditional Affairs	033 - 355 6570		033 - 355 6500	john.johnson@kznlgta.gov.za	Private Bag X9123, PMB, 3200
Heinz Kuhn	Department of Local Government & Traditional Affairs	033 - 395 2876	083 282 5119	033 - 355 6500	Karl-heinz.kuhn@kznlgta.gov.za	Private Bag X9123, PMB, 3200
Carolyn Schwegman	WESSA KZN Region	039 - 975 2147	083 9814814	039 - 9752147	afromatz@telkomsa.net	4 Beefwood Road, Pennington, 4184
Neziswa Mengqani	DAFF	033 3927739		033 3651210	Neziswame@nda.agric.za	3rd Floor Old Mutual Building. 185 Long Market Street. Pietermaritzburg 3201
Modise Seokwang	DAFF	033 3927739		033 3651210	seokwangM@daff.gov.za	4th Floor Old Mutual Building. 185 Long Market Street. Pietermaritzburg 3201
Michelle Nicol	Eskom	031 710 5404		031 710 5146	nicolm@eskom.co.za	25 Valley View Road, New Germany, 3610
Raymond Couch	Telkom	031 304 2714		031 363 3589	couchra@telkom.co.za	303 West Street Durban, 4001
Mr. Mduduzi Radebe/Mr Z Khuzwayo	uThukela District Municipality	036 638 5100/036 638 2400	0828807003	036 635 5501	zama@uthukeladm.co.za / guguh@uthukela.co.za	36 Lyell Street, Ladysmith, 3370
Mr KS Khumalo	Indaka Local Municipality	034 261 1000	082 801 7136	034 2612035	khedarik@indaka.gov.za / sinatrakhumalo@gmail.com	2748 F section, Ekuvukeni, wasbank, 292
Mr. MP Khathide	Enambithi Local Municipality	036 637 2231	082 497 8725	036 6372092	mm@ladysmith.co.za	221 Murchinson Street, Ladysmith, 3370
Vaughan Westwood	Transnet		083 459 3746		vaughan.westwood@transnet.net	
Gerard Rorke	Transnet Real Estate				gerard.rorke@transnet.net	
Mike Potter	General Manager at Nambiti		082 468 7028		mike@nambiti.com	
Casper Landman	SANRAL	0333928100			LandmanC@nra.co.za	58 Van Eck Place, Mkondeni, 3201



Appendix E.1.2:
BACKGROUND INFORMATION DOCUMENT

BACKGROUND INFORMATION DOCUMENT (BID)

ENVIRONMENTAL BASIC ASSESSMENT (BA) FOR THE PROPOSED DRIEFONTEIN COMPLEX
BULK WATER SUPPLY PIPELINE, PHASE 2, KWA-ZULU NATAL
DAEA REF NO: DC23/0004/2013

1. PURPOSE OF THIS DOCUMENT

SiVEST Environmental Division has been appointed by the Willcocks Reed & Kotze, on behalf of the uThukela Municipality, to conduct an Environmental Basic Assessment Process in terms of Regulations 21 to 25 of the Regulations compiled in terms of **Chapter 3** of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended 2010, for this project which will be registered with the Provincial Department of Agriculture and Environmental Affairs (DAEA).

The purpose of this Background Information Document (BID) is to inform interested and/or affected parties (I&AP's) of the Environmental Basic Assessment Process (BA) that will be conducted for the Driefontein Complex Bulk Water Supply Pipeline.

In addition to supplying information about the proposed Project, this BID will also provide I&AP's with the opportunity to:

- **Register as stakeholders in the public participation process;** and
- **Provide initial comments on the proposed project.**

2. BACKGROUND TO THE PROPOSED PROJECT

Uthukela District Municipality proposes to construct approximately 56 kilometres of potable bulk water pipe mains ranging between 500 & 600mm Ø from the existing Observation Hill reservoir site in Ladysmith to Hobsland in the Driefontein Complex, from where it will extend further to the existing Zandbult Reservoir at Ekuvukeni, including the construction of a new 5 MI reservoir along the pipe route to aid as a balancing and storage structure. The route for Phase 2 starts on Jacob's farm and runs along the N11 to Ekuvukeni. The majority of the pipe line route is proposed to run adjacent to the N11 towards Newcastle and then follows the R602 for a short distance and thereafter runs adjacent to the railway line

3. MOTIVATION FOR THE PROJECT

The proposed pipeline forms part of a larger project, which aims to upgrade infrastructure and supply potable water to the greater part of the uThukela District Municipality area. This pipeline will provide potable water to a number of communities in the greater Emnambithi and Indaka Local Municipality areas. This project will improve the infrastructure and services in the area, as well as to improve the lifestyle of the communities.

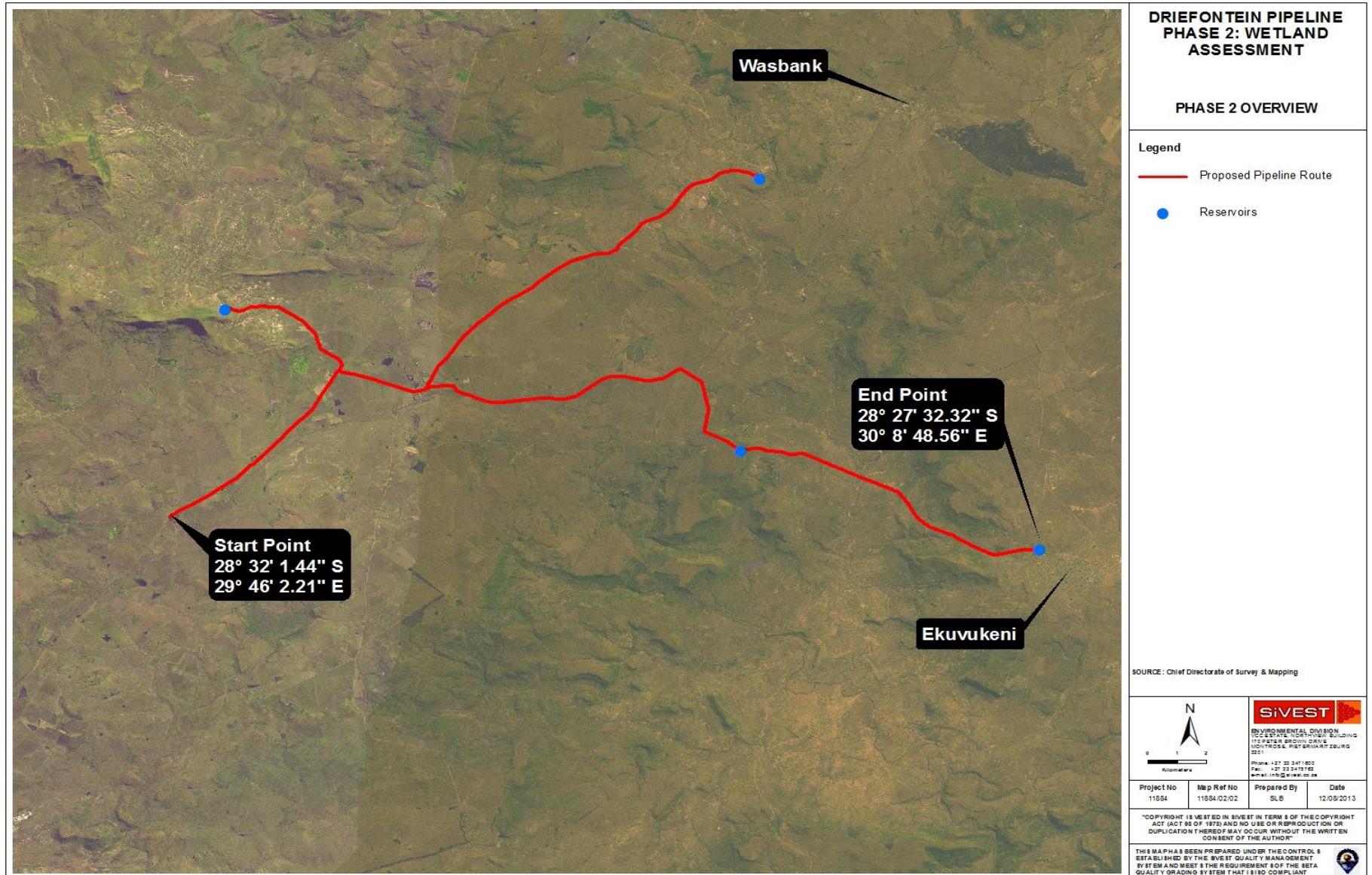
4. PROPOSED CONSTRUCTION SCHEDULE AND METHODOLOGY

Depending on the issuing date of the approval of Environmental Authorisation (EA), and should an EA be granted by DAEA, it is proposed that uThukela Municipality will commence with construction in 2013.

Should you wish to view a preliminary alignment for the proposed pipeline and reservoir, please go to the SiVEST website (www.sivest.co.za) and follow the downloads link.

5. SITE LAYOUT

The proposed route is highlighted in red, with the reservoirs in blue on the below map:



6. ENVIRONMENTAL AUTHORISATION PROCESS

6.1 What is a Basic Assessment?

A Basic Assessment (BA) is a process of collecting, organising, analysing, interpreting and communicating information that is relevant for the consideration of a particular application. BA's are undertaken where the impacts are less likely to have significant impacts on the receiving environment.

BA's are used by planning authorities/developers to obtain an independent and objective view of the potential environmental (biophysical and social) impacts that could arise during the construction and operation of the proposed development. This information needs to provide the Competent Authority with a sound basis for their decision-making. Environmental management and mitigation measures are also identified through the BA process.

6.2 National Environmental Management Act (NEMA)

In terms of the Environmental Regulations promulgated under the National Environmental Management Act, the EIA will be conducted for the proposed development in terms of the new EIA Regulations **Section 27 to 36** for the following activities:

Relevant Government Notice:	Activity No. (s)	Describe each listed activity as in the relevant Government Notice:
GNR 544 of 18 June 2012	9	<i>The construction of facilities or infrastructure for the bulk transportation of water, sewage or storm water exceeding 1000 metres in length</i> <i>(i) with an internal diameter of 0,36 metres or more; or</i> <i>(ii) with a peak throughput of 120 litres per second or more, excluding where:</i> <i>(a) such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or</i> <i>where such construction will occur within urban areas but further than 32 meters from a watercourse, measured from the edge of the watercourse</i>
	11	<i>The construction of:</i> <i>(i) canals;</i> <i>(ii) channels;</i> <i>(iii) bridges;</i> <i>(iv) dams;</i> <i>(v) weirs;</i> <i>(vi) bulk storm water outlet structures;</i> <i>(vii) marinas;</i> <i>(viii) jetties exceeding 50m² in size;</i> <i>(ix) slipways exceeding 50m² in size;</i> <i>(x) buildings exceeding 50m² in size; or</i> <i>(xi) infrastructure or structures covering 50m² or more</i> <i>where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</i>

6.2.1 Competent Authority

The Competent Authority, as described according to the new EIA Regulations, for this proposed project is the Provincial Department of Agriculture and Environmental Affairs (DAEA) which will ultimately be responsible for providing a decision on whether the proposed Activity will be granted Environmental Authorisation in terms of NEMA.

7. THE BA PROCESS FOR THIS PROPOSED PROJECT

Draft Basic Assessment Report	Final Basic Assessment Report & EMPr	Decision-Making Phase
<ul style="list-style-type: none"> a) Identify potential issues & nominate preferred alternatives b) I&AP's can assist the environmental specialist by ensuring that all possible environmental impacts are being considered. c) Detailed studies of potential positive and negative impacts associated with the nominated preferred alternative. d) Findings of impact assessment studies. e) Draft Environmental Management Programme. 	Consolidate & finalise BAR; a) I&AP comments and concerns raised throughout from the Basic Assessment Report will be addressed and included into the Final BAR.	Authorities use BA findings to decide if the project should be authorised.

7.1 *Environmental Issues to be investigated by SiVEST during the BA Phase of the proposed Project*

- Soil erosion and sedimentation
- Water and soil pollution
- Loss of biodiversity
- Impacts on watercourses

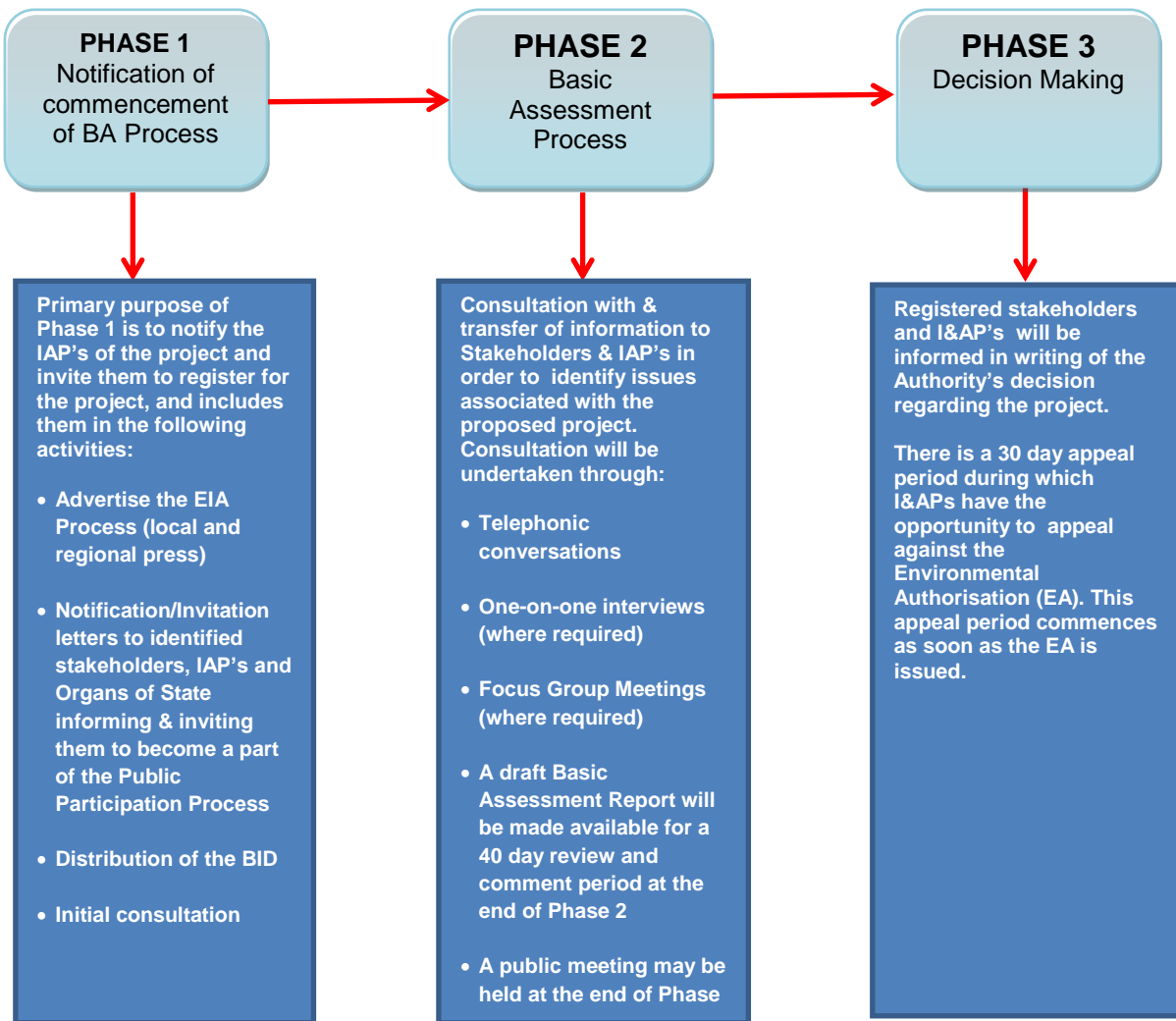
7.2 *The Public Participation Process*

Public Participation is the cornerstone of any BA, as it will be for this proposed project. The principles of NEMA govern many aspects of BAs, including public participation.

The key objective of public participation during this BA will be to provide I&AP's with sufficient and transparent information on an on-going basis in order to ensure effective participation throughout the process. As part of this public participation process you will also be provided with the opportunity to comment on the findings of the Basic Assessment Report, which will be made available for public review during the process.

It is important that relevant I&AP's are identified and involved in the public participation process from the outset of the proposed project. In order to ensure effective public participation, the public participation process includes the following steps:

7.2.1 Public Participation Process for Basic Assessment



You will receive personal notification, once registered, by fax or e-mail of all documents available for comment, and due dates for comment at every stage.

Your responsibilities as an I&AP:

In terms of the EIA Regulations, your attention is drawn to your responsibilities as an I&AP:

- In order to participate in this EIA process, register yourself on the project database.
- Inform any other parties (neighbours, friends, colleagues, etc) who may be interested and/or affected by the proposed project about the EIA process and encourage them to become involved.
- Ensure that any comments regarding the proposed project are submitted within the timeframes that have been approved or set by DAEA, or within any extension of a timeframe agreed to by DAEA and the applicant (i.e. uThukela Municipality).
- Disclose any direct business, financial, personal or other interest which you may have in the approval or refusal of the application for the proposed Driefontein Bulk Water Supply Pipeline.

Our responsibilities as Independent Environmental Consultants:

In terms of the EIA Regulations, our responsibilities in the public consultation process include:

- Ensure that sufficient information regarding this proposed project is made available to you, either through the BID or providing information as and when requested.
- Ensure that you have an understanding of the proposed project to be able to comment informatively and to enable you to submit any concern in an informed manner.
- Ensure that the following actions are taken upon receiving any comments/queries/issues:
 - * The contact details provided by you are entered into the project database and that you are sent all further information releases
 - * If you send us queries or comments, we respond in writing
 - * If you call us, your details and queries / comments are recorded. Should we not be able to answer your question immediately, your call will be returned as soon as possible with a response.

How to become involved:

1. Respond (by phone, fax or e-mail) to our invitation for your participation, which has been advertised in the printed media.
2. Mail, fax or e-mail the attached Registration and Comment Form to SiVEST.
3. Attend the meetings to be held during the course of the project. Should you register as an I&AP you will automatically be invited to attend these meetings. The public meeting date will also be advertised in the printed media.
4. Contact us telephonically should you have a query, comment or require further project information.
5. Review the draft Basic Assessment Report within the 40-day review periods that will be stipulated in the advertisement.

If you consider yourself an I&AP for this proposed project, we urge you to make use of the opportunities created by the public participation process to become actively involved in the process and provide comment or concerns which affect and/or interest you, or about which you would like more information. Your input into this process forms a key part of the Environmental Studies and we would like to hear from you to obtain your views on the proposed project.

By completing and submitting the accompanying Registration and Comment Form, you automatically register yourself as an I&AP for this proposed project, and are ensured that your comments and/or concerns raised regarding the proposed project are noted. The public participation consultants will respond to all comments and queries received during the course of the project.

Please be informed that all relevant public documents can be downloaded from SiVEST's website (<http://www.sivest.co.za/Downloads.aspx> - then select Driefontein Bulk Water Supply Pipeline EIA).

We look forward to your contributions. Please also feel free to suggest other stakeholders to be consulted.

8. COMMENTS AND QUERIES

Tarryn Curtis

 PO Box 707, MSUNDUZI, 3231
 Phone: (033) 347 1600
 Fax: (033) 347 5762
 E-mail: tarrync@sivest.co.za

LIST OF ACRONYMS

BID	Background Information Document
DAEA	Department of Agricultural and Environmental Affairs
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMP	Environmental Management Programme
I&AP	Interested and Affected Party
NEMA	National Environmental Management Act.

**ENVIRONMENTAL BASIC ASSESSMENT (BA) FOR THE PROPOSED DRIEFONTEIN COMPLEX
BULK WATER SUPPLY PIPELINE, KWA-ZULU NATAL
DAEA REF NO. DC23/0004/2012**

REGISTRATION AND COMMENT FORM

WE WELCOME YOUR COMMENTS AND QUESTIONS

Please complete this form and return it to the Public Participation Office below:

Tarryn Curtis

📮 PO Box 707, MSUNDUZI, 3231
 ☎ Phone: (033) 347 1600
 📠 Fax: (033) 347 5762
 📱 Cell : 083 657 2536
 ✉ E-mail: tarrynh@sivest.co.za

Website: www.sivest.co.za

TITLE (Prof/Mr/Mrs)		FIRST NAME	
SURNAME			
CAPACITY (e.g. Secretary/Director)			
ORGANISATION			
POSTAL ADDRESS		POSTAL CODE	
TEL. NO.: ()		CELL NO.:	
FAX NO.: ()		E-MAIL ADDRESS:	

COMMENTS (You are welcome to use a separate sheet if required)
 The following environmental, social and economic impacts must be addressed during the EIA / BA:

Please add the following of my colleagues/friends/neighbours onto your mailing list:

Name:		Organisation:
Contact details:		
Address:		
Tel.:	Fax:	Cell:
E-mail:		

IF YOU WISH NOT TO RECEIVE ANY FURTHER INFORMATION REGARDING THIS PROPOSED PROJECT, AND PREFER TO BE REMOVED FROM THE PROJECT'S DATABASE, PLEASE SIGN BELOW AND RETURN THE FORM TO THE PUBLIC PARTICIPATION CONSULTANTS WHOSE CONTACT DETAILS ARE PROVIDED ABOVE

Yes , please delete my contact details from the project's database	SIGNATURE:
---	-------------------



Appendix E.1.3:
ADVERTS AND SITE NOTICES

Wife killer to appeal 18-year sentence

INGRID OELLERMANN

THE case against self-confessed wife-killer Madhan Maharaj (49) "cried out" for pre-sentencing reports to be obtained before he was jailed for 18 years.

This was because of allegations of a history of family and marital problems and that he suffered from schizophrenia.

These were among the submissions made by Advocate Louis Barnard, who yesterday successfully applied to regional court magistrate Riaan de Wet for leave to appeal Maharaj's sentence in the KwaZulu-Natal High Court.

Regional court prosecutor Pransha Kasool did not oppose the application.

Barnard submitted that even though Maharaj was legally represented at his trial, the trial magistrate ought to have called for presentencing reports, saying a defended accused "ought not to be worse off than an undefended one".

He also submitted that another court might find that Maharaj should not have been sentenced to 18 years' imprisonment, which is three years longer than the minimum prescribed sentence for unpremeditated murder.

Barnard said De Wet should have explained to Maharaj at the outset that even though he was a first offender, he ran the risk of being sentenced to a period higher than the prescribed minimum.

He submitted that the magistrate should also have informed Maharaj's attorney that he was thinking of imposing more than the minimum sentence and invited him to address the court before doing so.

"There was no need to impose a sentence in excess of the prescribed minimum," he submitted.

Another reason for the appeal was that there was no need for the trial court to impose a non-parole period of 12 years' imprisonment on Maharaj.

Barnard said this should only be imposed in exceptional circumstances, and only after the defence had an opportunity to address the court in that regard as well.

Barnard argued further that there was a reasonable possibility that another court could find that it was a misdirection by the magistrate to find that Maharaj had "lived a carefree life for seven years".

He said another court might find that the fact that Maharaj pleaded guilty, together with the circumstances that led to the murder, amounted to compelling and substantial circumstances that could justify a court imposing even less than the prescribed minimum term on him.

Maharaj was arrested last year for the murder of his wife Caroline Rajah in 2005, after living as a fugitive from justice for seven years. He was discovered by police working as a caretaker at Riverview Primary School in Phoenix.

Soon after his arrest last August, Maharaj pleaded guilty to bludgeoning his wife to death in anger after he had accused her of having an affair, which she denied.

When sentencing Maharaj, De Wet said he had decided to impose more than the minimum sentence because of the seriousness, prevalence and brutality of the offence. He also found Maharaj had not shown true remorse for his actions because he had lived a carefree existence for seven years while hiding from police.

Rajah's sister, Roslyn, told the court that the couple had a stormy relationship and that her sister had been assaulted by Maharaj on other occasions.

The date for Maharaj's appeal to the high court has not been determined, but *The Witness* was told it could be heard before the end of the year.

• ingrido@witness.co.za

ELEPHANTS: HANDLER DIES IN PLAYFUL INCIDENT

A MAN was yesterday fatally stepped on by a "playful" elephant in a freak accident at the Elephant Sanctuary near Brits, west of Pretoria.

Craig Saunders, spokesperson for the centre, said the experienced handler, whose name has not yet been made public, was riding one of the elephants when a bull and cow showed "normal elephant behaviour".

He said the handler fell between the elephants, which moved on "playfully" without noticing that one of them had stepped on the handler. He died on the scene. — Media24.

MSUNDUZI: Mayor says Mxolisi Nkosi's contract has been renewed

Municipal manager to stay

NALINI NAIDOO

MSUNDUZI municipal manager Mxolisi Nkosi is going nowhere, despite death threats and rumours of his imminent resignation.

Mayor Chris Ndlela called a press conference yesterday to say that Nkosi is here to stay. Nkosi's contract had been renewed two weeks ago, after he scored "very high" in a performance assessment conducted at the end of his probation period, he said.

He added that Exco, the full council and the ruling party, both at regional and provincial levels, were happy

with his performance so far and had no plans to deploy him elsewhere.

Referring to *The Witness* report last Friday that Nkosi was facing death threats, the mayor assured residents that the threats were not being taken lightly and that state security agencies were handling the matter. "We are confident that they are doing a good job and we will be attending to security improvements as and when they advise us to do so," Ndlela said.

The Witness reported that Nkosi was being persecuted for his efforts to fix the municipality and ensure that it did not slide back to the days of being

poised on the edge of bankruptcy. Previous *Witness* reports stated that the reason the municipality went into administration was because of political interference in its operations and the council being split into factions.

Staff were said at the time to support one or other faction and the daily running of the municipality was affected by constant work stoppages, worker unrest by one or other faction, as well as rumour-mongering.

Staff, who spoke on condition of anonymity, said the situation with Nkosi, the rumours and the death threats, had a familiar ring. They hoped that

there would not be a repeat of the municipality being driven by factions and instability, as one or the other faction fight to gain the upper hand and control of the municipality.

Nkosi's tenure so far has also been marred by strikes, workers invading his office and go-slows.

However, the mayor is confident that they are on top of the situation and that service delivery was improving.

He believes it will get better when 428 critical posts are filled during the course of this year. "We have no doubt that such capacity will have a direct

impact on both service delivery and revenue generation," he said.

Asked who could possibly be making the death threats, the mayor was reluctant to speculate. He added that it could be disgruntled individuals, unhappy with the route taken in terms of the turnaround strategy to get everyone working and to deal with irregularities.

"The route we have taken is inevitable. No amount of threats is going to move us away from doing what is right for this city and for our citizens," Ndlela said.

• nalini@witness.co.za



KRUGER: VIDEO SHOWS BADGER MAKING A MEAL OF LEGUAAN

A video showing a badger killing a leguana has become one of the favourite videos on kykNET's environment and travel programme *Projek Aardwolf*. The video was shot in the Kruger Park by Sanita Kemp from Parys, who said she was passing a group of tourists looking at baboons when she noticed the cloud of dust kicked up by the desperate leguana. The badger quickly flipped the large reptile on its back and started eating it alive, before biting through its neck to kill it. Kemp said she was lucky to capture the footage. "I am a bird watcher and normally miss the action on the ground. I've always wished to see a kill. This was my first kill!"

PHOTO: SANITA KEMP

SA polocrosse team mentor gets her PhD in sports psychology

ANNZRA NAIDOO

KIRSTEN van Heerden has always been passionate about sports. This passion has led her into sports psychology, where she works with the South African polocrosse team and physically and intellectually disabled swimmers.

She is also an international eligibility officer, assessing intellectually disabled athletes to allow them to compete in the Paralympics.

Van Heerden graduated yesterday with a PhD at the University of KwaZulu-Natal.

Using her experience as a swimmer, while at Pietermaritzburg Girls' High School, she has been able to prepare athletes and get them in the right mindset to compete.

Using these skills, Van Heerden, who has since moved to Durban, helped lead the South African polocrosse team to victory in the Polocrosse World Cup in England in 2011. South Africa are now ranked number



Kirsten van Heerden has always been passionate about sports. She coached the national polocrosse team in the 2011 world cup. PHOTO: SUPPLIED

one in the world in polocrosse.

"It was such an incredible experience," Van Heerden said of the world cup. "South Africa had never made it to the semi-finals before, and to win the whole tournament was such an achievement."

After the Sydney Paralympics scandal in 2000, when 10 members of the Spanish basketball team lied about being intellectually disabled, the Paralympics banned intellectually disabled athletes from competing en-

tirely.

Van Heerden played her part in getting intellectually disabled athletes back into the Paralympics last year for the first time in over a decade. She volunteered to become an eligibility officer for Inas, the International Federation for sport for para-athletes with an intellectual disability.

"Intellectually disabled people are the most underrated people in South Africa. Sport is an incredible tool to use for them and opens up numerous

opportunities for them to achieve. I love working with disabled athletes. They are amazing people who have gone through so much, but still succeed despite their disability..." said Van Heerden.

She said she balances her work between both able and disabled athletes. "Although I work with both types of athletes, I do work more with the para-athletes. Working with both types of athletes brings different challenges and requires different skills."

ROBBERY: ACCUSED ADMITS TO STABBING DRIVER

INGRID OELLERMANN

A 22-YEAR-OLD Copesville man admitted yesterday that he took part in robbing four occupants of a car and "kissed" an unwilling female passenger.

Thilendran Pillay, of Indus Road, also admitted having stabbed the driver during the robbery on March 31 in the Copesville area.

Regional court magistrate Chris van Vuuren convicted Pillay on three counts of robbery with aggravating circumstances and one of sexual assault.

Sentencing was postponed until Thursday for the state to obtain a record of Pillay's previous convictions.

Pillay and a co-accused, Riaz Aly (24), both appeared earlier yesterday before magistrate Ashin Singh. Aly's trial was adjourned to April 22, after he indicated he intends to plead not guilty.

The names of the victims are being withheld to protect the identity of the woman.

Although the charge sheet alleged that Pillay had violated the 21-year-old by "kissing her and touching her all over her body, including between her thighs", he admitted only to kissing her, which was accepted by the prosecution.

UKZN to honour Clegg with doctorate

THE University of KwaZulu-Natal will be honouring Johnny Clegg with a Doctor of Music *honoris causa* this morning.

UKZN spokesperson Nomonde Mbadi praised Clegg's status in international and southern African popular music, saying his music stems directly from his articulation, through his widely acknowledged musically

expressive language, of the most pressing realities of South Africa's polarised racial and social identities.

She said his musical debut at a crucial moment in the country's struggle against apartheid was revolutionary in its juxtaposition and reconciliation of white and Zulu culture.

Clegg was instrumental in putting the new SA on the world map. — WR.

SIVEST

NOTICE OF ENVIRONMENTAL BASIC ASSESSMENT PROCESS
 APPLICATION FOR THE PROPOSED DRIEFONTEIN BULK WATER SUPPLY PIPELINE, PHASE 2, KWA ZULU-NATAL
 DAEA REFERENCE NO. DC23/0004/2013

Notice is hereby given in terms of Regulation 54 of the Environmental Impact Assessment Regulations 2010 as amended, the intent to carry out an activity as listed under Section 24(5) of the National Environmental Management Act (Act No. 107 of 1998) and published in Government Notice No. R.543 of 2010. The intention is therefore to seek Environmental Authorisation for the following activity:

GNR 544 Activity 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
 ii) With a peak throughput of 120 litres per second or more

Excluding where:
 a) Such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve
 b) Where such construction will occur within an urban area but further than 32 metres from a watercourse, measured from the edge of the watercourse.

Proposed Activity: The uThukela District Municipality proposes to construct approximately 56 kilometres of potable bulk water pipe mains ranging between 500 and 600 mm Ø from the existing Observation Hill reservoir site in Ladysmith to Hobland in the Driefontein Complex, from where it will further extend to the existing Zandbult Reservoir at Ekuvukeni, including the construction of new 5 Ml reservoirs along the pipe route to aid as a balancing and storage structure. Phase 2 of the pipeline route will run for 40km starting on Jacop's farm outside of Ladysmith to Ekuvukeni.

Location:
 The route for Phase 2 starts on Jacob's farm and runs along the N11 to Ekuvukeni. The majority of the pipeline route is proposed to run adjacent to the N11 towards Newcastle and then follows the R602 for a short distance and thereafter runs adjacent to the railway line.

Geographical Co-ordinates:
Start Point: 28° 32' 1.44" S; 29° 46' 2.21" E
End Point: 28° 27' 32.31" S; 30° 8' 48.55" E

Name of Applicant:
 Uthukela District Municipality

Type of Assessment:
 The project falls under the definition of an Activity which must follow an Environmental Basic Assessment Process as described in the Regulations 26 through 35 of the Environmental Impact Assessment Regulations, 2010. Please note that there are a number of Activities that may be triggered as a result of the proposed project and these will be listed and assessed as part of the Environmental Basic Assessment Process to be conducted.

Consultant to contact: SIVEST Environmental Division
Contact: Tarryn Curtis
P.O. Box 707, Msunduzi, 3231
Tel: 033 347 1600
Fax: 033 347 5762
Email: tarrynh@sivest.co.za

In order to ensure that you are registered as an Interested and/or Affected Party (I&AP) and to receive further information regarding this process, please submit in writing your name, contact information and interest in the matter to the contact person named above.

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Programme Director:
Ingrid Roberts

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For bookings contact: Mary Lynn 033 355 1110
 email - marketing@witness.co.za

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Izingwazi kwifilimu eyenziwa e-KZN

SAMUKELE DUMA

ISIHLABANI uKgomotso Christopher odlala indawo kaKatlego Sibeko kwiSidingo, sithelake eThekwini ngoLwesihlanu ukuyohlunga abalingisi esizodlala nabo kwifilimu, iReunion, ezoqoshe-lwa KwaZulu-Natal ngoNhlaba (May).

Inhlangano ebhekelela amakhono nobuciko KwaZulu-Natal, Impucuzeko Skills and Training Development, imeme uKgomotso nabanye abalingisi abahamba phambili ukuba babe yingxeny yale filimu ebhalwe nguThabani Mthembu, umakadebona kulo mkhakha wamafilimu obuye abe yisikhulu sale nkampani.

Uthi ujabule kakhulu ukuthola abalingisi abazingeni njengoDumisani Mbebe obedlala indawo kaDumisani Shabane kwi-Generations - kanti useke wadlala kwiSoul City, Inkaba nakweminye imidlalo - naye uKgomotso njengoba esekela wadlala kwi-4play Sex Tips for Girls eklonyeliswe ngezindondo eziyisi-7 kwi-South African Film and Television Award (SAFTA) nonyaka.

UMthembu uthi ukumthokoziisa kakhulu wukuthi laba balingisi ngeke badlale izindawo ezinkulu ngoba inkampani yakhe ifuna ukuthuthukisa abalingisi baKwaZulu-Natal.

Uchaze Impucuzeko njengenhlangano ezogxila ekuthuthukiseni abalingisi baKwaZulu-Natal. Isizathu salokhu, uthi yingoba ubesekhathele ukusebenza eGoli esebenzela izinkampani - ezikhizisa imidlalo - ezithola abalingisi eGoli bese beza KwaZulu-Natal bezoqhophela khona ngenxa yobuhle bendawo.

Uthi laba balingisi baseGoli baphindela emuva kodwa abaKwaZulu-Natal basale bengahlomulanga lutho.

NgoLwesihlanu Impucuzeko Skills and Training Development ibiseDurban University of Technology (DUT) kuhlungwa abazodlala kwiReunion.

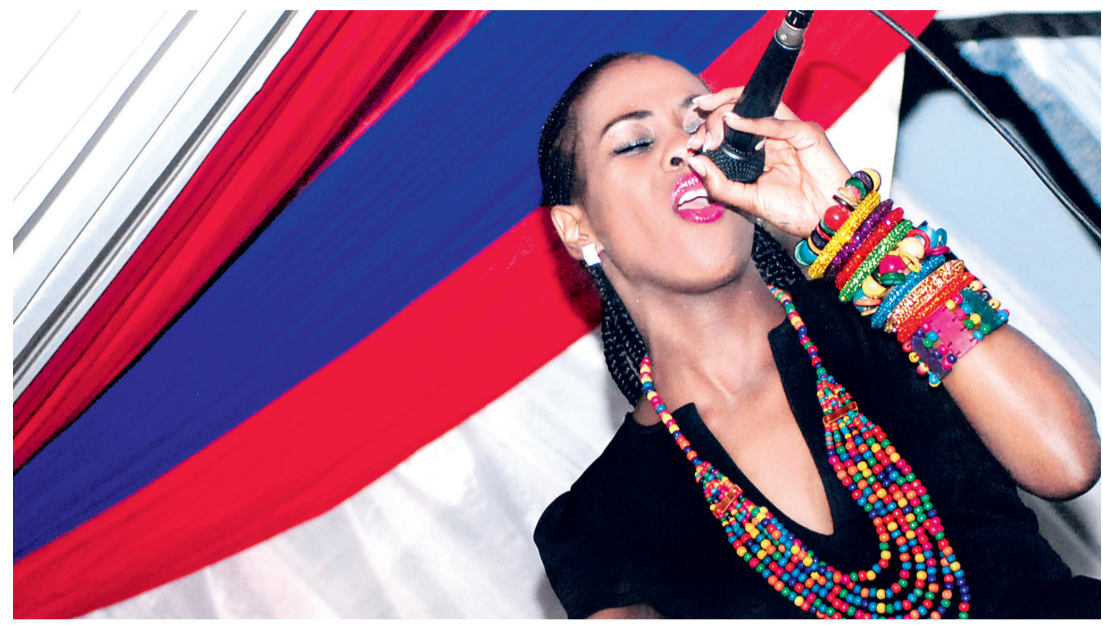
Abafundi bakulesi sikhungo abenza izifundo ze-drama, baphume ngobuningi ukuyoveza amakhono abo.

Le filimu izobuye ithathe nalabo bafundi ase-bepothulile iziqu zabo.

UMthembu uveze ukuthi le filimu ikhuluma ngabangani abakade bagcinana, abahlangana ndawonye ngemuva kwesikhathi bengabonani. Ukuhlungana kwabo kwenzeka okuningi phakathi kwabo njengoba bexoxa nangezinto ezenzeka empilweni zabo.

Uyifanise ne-Act Like a Lady Think Like a Man neWhy Did I Get Married.

USHAYE INTO ECOKEME U-NAIMA



UNAIMA ongumculi ongenisa ngesivini kulo mkhakha wezobuciko, ushaye into ecomeme emcimbinini wekhethele obekumenywe kuwona izicukuthwana ezahlkane kusukela kosaziwayo, izintatheli nosomabhizinisi abahlukene. Le ntokazi ibiyenze umcimbi lapho ibishaya amanoni azozwakala kwi-albhamu yayo ezophuma maduze ephrojuswe yizinkakha uRobbie Malinga, Mjakes noMondli Ngcobo.

ISITHOMBE NGU: SABELO MASUKU

SIVEST

ISAZISO SOHLELO LOKUCWANINGA UKUTHINTEKA KWEZEMVELO

ISICELO SESAKHIWO ESIHLONGOZWAYO SEPAYIPI ELIKHULU LOKULETHA AMANZI E-DRIEFONTEIN, PHASE 2, KWAZULU NATAL

DAAE REFERENCE NO. DC23/004/2013

Isaziso sikhishwa ngokwesimiso nombolo-54 semithetho ebuyekeziwe yokucwaninga ukuthinteka kwezemvelo 2010, eyenziwe ngaphansi kwesigaba 24(5) somthetho kazwelonke wokuphatha kwezemvelo (Act No. 107 of 1998) futhi owashicilelwa kwisaziso sikaHulumeni nombolo R.543 sika 2010. Inhliso yesaziso ukuthola igunya kwabezemvelo lokwenza lokhu okulandelayo:

GNR 544 Activity 9: Ukwakhiwa kwezakhiwo noma kwengqalasizinda enamapayipi okuletha amanzi, amapayipi okuthutha amanzi angcolile, kanye nawemvula, ubude bawo obungaphezulu kwamamitha angu 1000

- i) Ipayipi elingu 0,36m ububanzi balo noma ngaphezulu noma,
- ii) Ipayipi elikwazi ukumamitha amalitha angu 120 noma ngaphezulu ngomzuzwana owodwa vo.

Ngaphandle lakhona:

- a) Lezozakhiwo noma leyoqalasizinda yamanzi okuphuzwa, angcolile, noma emvula yakhelwe maphakathi nomgwaqo.
- b) Lowomsenzi wokwakhiwa uzoba sendaweni eyidolobha kodwa ebuqamama nesiziba samanzi ngaphezulu kwamamitha angu 32, uma ukala kusukela onqanqameni lwalesosiziba.

Umsebenzi ohlongozwayo: uMasipala wasoThukela uhlongoza ukwakhiwa amapayipi amakhulu amanzi okuphuzwa ubude bawo obungaphezulu kwamakhilomitha angu-56 ububanzi bawo ubuzoba phakathi kuka 500 no 600mm, nazosuka esizindeni samanzi sase Observation Hill eMnambithi eya e-Hobsland e-Driefontein Complex, la ezosuka khona aqhubekele e-Zandbult Reservoir ese-Ekuvukeni, kanye nokwakhiwa kwesizinda samanzi esisha (5M) nesizoxhuma kulona lelipayipi njengendawo ezosiza ukugcina amanzi.

Indawo:

- > Phase 2 eJacobs farm izogijima eceleni kuka N11 oya ngase-Mnambithi, bese lilandela u-R 602 ibangana elincane, ngemuva kwalokho ligijime eceleni kukajantshi westimela.

Ama- Geographical Co-ordinates:
Start Point: 28° 32' 1.44"S; 29° 46' 2.21"E
End Point: 28° 27'32.31"S; 30° 08' 48.55"E

Igama Labafaki Sicele:
 UThukela District Municipality

Uhlolo lochwepheshe:
 Lomshikashika ubalelwa ngaphansi komsebenzi ophoqelekile ukulandela uhlelo lwezemvelo lokucwaninga njengoba uchazwe ezimisweni nombolo 26 kuye kunombolo 35 somthetho wezocwaningo ngokuthinteka kwezemvelo ka 2010. Uzoqaphela ukuthi miningi eminye imisebenzi ezovela ngalomshikashika ohlongozwayo futhi isazobalulwa icwaningwe kulona loluhlelo lwezemvelo lokucwaninga olusazokwenziwa.

Ochwepheshe ongathintana nabo: SIVEST Environmental Division
Thintana no: Tarryn Curtis
 P.O. Box 707, Msunduzi, 3231
 Tel: 033 347 1600
 Fax: 033 347 5762
 Email: tarrynh@sivest.co.za

Ukuze uqinisekise ukuthi uyabhalisa njengomuntu onogqozi kanye/noma othintekayo, noma ongathanda ukuthola imininingwane egcwele mayelana naloluhlelo, uyacelwa uthumele imininingwane ebhalwe, igama lakho, nezinombolo otholakala kuzo nezizathu zakho zokuba nentshisekelo yaloluhlelo kulochwepheshe obhalwe ngaphezulu.

1672/P

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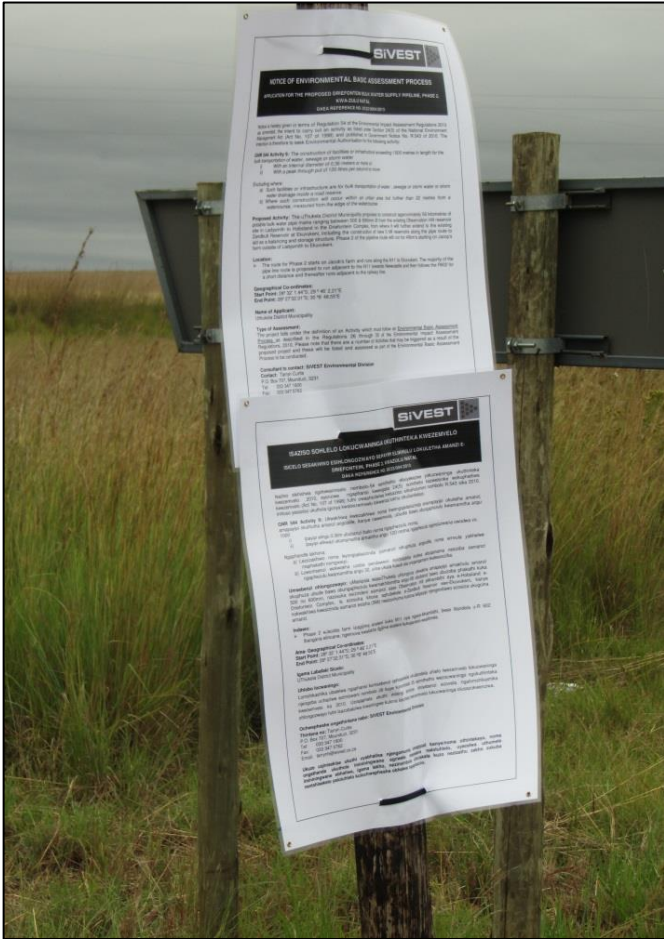


Plate 1. Site notice placed at the turn to Elandsplaagte.



Plate 2. Site Notice on the N11 in close proximity to the cabins.



Plate 3. Site notice erected at Elandsplaagte F.A. turn

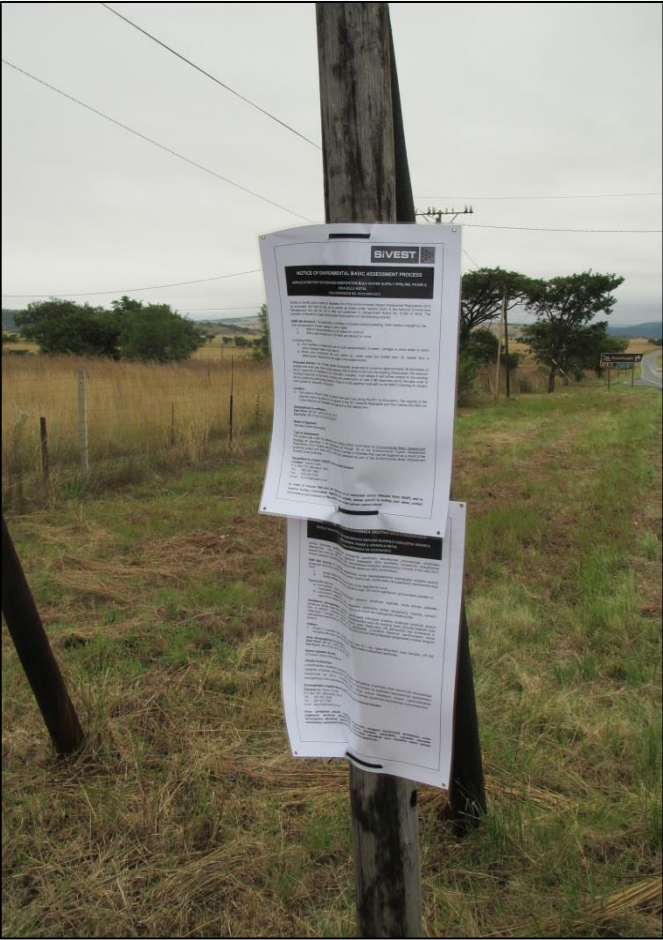


Plate 4. Sites notices along the N11



Plate 5. Site notices on the R 602 at the Wesselsnek turn



Appendix E.1.4:
COMMENTS AND NOTIFICATIONS

Shivani Naidoo

From: Shivani Naidoo
Sent: 03 September 2013 03:44 PM
To: 'EllisS@ingonyamatrust.org.za'; 'byroosmotors@gmail.com'; 'john@defranca.co.za'; 'fodofarm@gmail.com'; jacobsbdy@webmail.co.za; matt.k.merrick@googlemail.com; 'ksteenkamp@ithala.co.za'
Cc: Tarryn Curtis
Subject: RE: Reminder of Public Meeting_Driefontein Water Pipeline Phase 2_Wednesday 4 September 2013
Attachments: WRK Pipeline_draft BID_SEP 2013 final.pdf

Dear All

Just as a friendly reminder with regards to the proposed water pipeline for the Ladysmith area, as your property has been identified along the pipeline route. Please be reminded that the public meeting is to discuss the proposed routing and address any concerns or queries that you may have. Attached is the Background Information Document for the project to provide more insight as well as an amended map for the proposed project.

Please note that the meeting will take place at the Eland Laagtes farming association tomorrow, Wednesday 4 September at 10am. If could you also inform other landowners that you know, who may be affected or have an interest in the project of the public meeting.

Thanking you.

Regards,

SHIVANI NAIDOO
Junior Environmental Consultant
SiVEST Environmental Division - PMB

Tel +27 33 347 1600 **Fax** +27 33 347 5762 **Cell** +27 72 324 2009
Email shivani@sivest.co.za **Website** www.sivest.co.za

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Durban • Johannesburg • Pietermaritzburg • Richards Bay • Ladysmith • Cape Town • Harare (Zimbabwe)

Shivani Naidoo

Subject: Notice of Public Meeting_Driefontein Water Pipeline Phase 2_Wednesday 4 September 2013

Location: Eland Laagtes Farming Association - Ladysmith

Start: Wed 2013/09/04 10:00 AM
End: Wed 2013/09/04 12:00 PM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: Shivani Naidoo
Required Attendees: jacobsbey@webmail.co.za; byroosmotors@gmail.com; ellis@ingonyamatrust.org.za; john@defranca.co.za; fodofarm@gmail.com; Tarryn Curtis

Importance: High

Dear All

As per telephonic conversations earlier, and with regards to the proposed water pipeline for the Ladysmith area, your property has been identified as possibly being affected by the pipeline. Please accept this invitation to the public meeting to discuss the proposed routing and address any concerns or queries that you may have.

Please note that the meeting will take place at the Eland Laagtes farming association next Wednesday at 10am. Could you kindly confirm your attendance and also inform other landowners that you know who may be affected or have an interest in the project.

Thanking you.

Regards,

SHIVANI NAIDOO
Junior Environmental Consultant
SiVEST Environmental Division - PMB

Tel +27 33 347 1600 **Fax** +27 33 347 5762 **Cell** +27 72 324 2009
Email shivani@sivest.co.za **Website** www.sivest.co.za

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Landowner Notification



agriculture & environmental affairs

Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

NOTIFICATION TO LANDOWNER OR PERSON IN CONTROL OF THE LAND ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN

In terms of the requirements of sub-regulation 15(1) of the Environmental Impact
Assessment Regulations, 2010.

Kindly note that:

- This document should be attached as an appendix to:
 - The application form for **Environmental Authorization** in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended) or
 - The application form for a **Waste Management Licence** in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

1. DETAILS OF APPLICANT

Project applicant:	uThekela District Municipality	
Trading name (if any):		
Contact person:	Mr Mduduzi Radebe	
Physical address:	36 Lyell Street, Ladysmith	
Postal address:	PO Box 116, Ladysmith	
Postal code:	3370	Cell:
Telephone:	036 638 5100	Fax: 036 635 5501
E-mail:	mdu@uthukeladm.co.za	

Landowner Notification

2. DETAILS OF LANDOWNER OR PERSON IN CONTROL OF THE LAND

(where the applicant is not the landowner or person in control of the land)

Landowner or person in control of the land:	
Contact person:	
Postal address:	
Postal code:	
Telephone:	Cell:
E-mail:	Fax:

3. PROJECT DETAILS AND ACTIVITIES APPLIED FOR

Project title: Construction of the Driefontein Comple Bulk Water Supply Pipeline, Phase 2

Activities applied for:

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity:
GNR 544 of 18 June 2010	9	The proposed water pipeline will be approximately 56 kilometres with a diameter ranging from between 500 & 600mm
GNR 544 of 18 June 2010	11	Construction of bulk storm water outlet structure will be occurring within 32 metres of a watercourse.

4. PROPERTY DESCRIPTION

Property description: _____
(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

Town(s) or district(s): Ladysmith

Physical (street) address of project: _____

Landowner Notification

**5. PROOF OF NOTIFICATION TO LANDOWNER
OR PERSON IN CONTROL OF THE LAND**

I COENRARD STEYN, declare under oath that, I:-

- Am the landowner or person in control of the property described in Section 4 of this document;
and
- hereby state that I have been notified of the proposed activity/ies as described in Section 3 of this document on the abovementioned property:



Signature of the landowner or person in control of the land

04/09/2013

Date

Landowner Notification



agriculture
& environmental affairs

Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

**NOTIFICATION TO LANDOWNER OR PERSON IN CONTROL OF THE
LAND ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN**

In terms of the requirements of sub-regulation 15(1) of the Environmental Impact
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Kindly note that:

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 - The application form for a **Waste Management Licence** in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

1. DETAILS OF APPLICANT

Project applicant:	uThekela District Municipality	
Trading name (if any):		
Contact person:	Mr Mduduzi Radebe	
Physical address:	36 Lyell Street, Ladysmith	
Postal address:	PO Box 116, Ladysmith	
Postal code:	3370	Cell:
Telephone:	036 638 5100	Fax: 036 635 5501
E-mail:	mdu@uthukeladm.co.za	

Landowner Notification

2. DETAILS OF LANDOWNER OR PERSON IN CONTROL OF THE LAND

(where the applicant is not the landowner or person in control of the land)

Landowner or person in control of the land:		
Contact person:		
Postal address:		
Postal code:		Cell:
Telephone:		Fax:
E-mail:		

3. PROJECT DETAILS AND ACTIVITIES APPLIED FOR

Project title: Construction of the Driefontein Comple Bulk Water Supply Pipeline, Phase 2

Activities applied for:

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity:
GNR 544 of 18 June 2010	9	The proposed water pipeline will be approximately 56 kilometres with a diameter ranging from between 500 & 600mm
GNR 544 of 18 June 2010	11	Construction of bulk storm water outlet structure will be occurring within 32 metres of a watercourse.

4. PROPERTY DESCRIPTION

Property description:
(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

Town(s) or district(s):
Ladysmith

Physical (street) address of project:

Landowner Notification

**5. PROOF OF NOTIFICATION TO LANDOWNER
OR PERSON IN CONTROL OF THE LAND**

I R. S. BVRao, declare under oath that, I:-

- Am the landowner or person in control of the property described in Section 4 of this document;
and
- hereby state that I have been notified of the proposed activity/ies as described in Section 3 of
this document on the abovementioned property:



Signature of the landowner or person in control of the land

04/09/2013

Date

Landowner Notification



agriculture & environmental affairs

Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL

NOTIFICATION TO LANDOWNER OR PERSON IN CONTROL OF THE LAND ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN

In terms of the requirements of sub-regulation 15(1) of the Environmental Impact
Assessment Regulations, 2010.

Kindly note that:

- This document should be attached as an appendix to:
 - The application form for **Environmental Authorization** in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended) or
 - The application form for a **Waste Management Licence** in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

1. DETAILS OF APPLICANT

Project applicant:	uThekela District Municipality	
Trading name (if any):		
Contact person:	Mr Mduuzi Radebe	
Physical address:	36 Lyell Street, Ladysmith	
Postal address:	PO Box 116, Ladysmith	
Postal code:	3370	Cell:
Telephone:	036 638 5100	Fax: 036 635 5501
E-mail:	mdu@uthukeladm.co.za	

Landowner Notification

2. DETAILS OF LANDOWNER OR PERSON IN CONTROL OF THE LAND

(where the applicant is not the landowner or person in control of the land)

Landowner or person in control of the land:	
Contact person:	
Postal address:	
Postal code:	
Telephone:	Cell:
E-mail:	Fax:

3. PROJECT DETAILS AND ACTIVITIES APPLIED FOR

Project title: Construction of the Driefontein Comple Bulk Water Supply Pipeline, Phase 2

Activities applied for:

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity:
GNR 544 of 18 June 2010	9	The proposed water pipeline will be approximately 56 kilometres with a diameter ranging from between 500 & 600mm
GNR 544 of 18 June 2010	11	Construction of bulk storm water outlet structure will be occurring within 32 metres of a watercourse.

4. PROPERTY DESCRIPTION

Property description: _____
(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

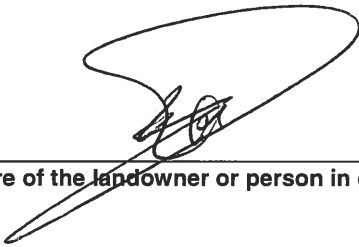
Town(s) or district(s): Ladysmith

Physical (street) address of project: _____

5. PROOF OF NOTIFICATION TO LANDOWNER OR PERSON IN CONTROL OF THE LAND

I JOHN DE FRANCO, declare under oath that, I:-

- Am the landowner or person in control of the property described in Section 4 of this document;
and
- hereby state that I have been notified of the proposed activity/ies as described in Section 3 of this document on the abovementioned property:



Signature of the landowner or person in control of the land

04/09/2013

Date



APPENDIX F:
**ENVIRONMENTAL MANAGEMENT
PROGRAMME (EMPR)**



Willcocks, Reed and Kotze cc

Proposed Driefontein Water Pipe Line from Ladysmith to Ekuvukheni, Phase 2

ENVIRONMENTAL PROGRAMME

MANAGEMENT

Issue Date: November 2013
Revision No.: 1
Project No.: 11767

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APPENDICES:

Appendix A Environmental Authorisation

LIST OF TERMS USED

Contaminated water:

Means any water contamination by the Contractor's activities, e.g. concrete water and run-off from plant / personnel wash areas.

Contractor:

Persons/organisations contracted by the Developer to carry out parts of the work for the planned development. The Contractor shall ensure compliance with this EMP of his entire team and any sub-contractors appointed. The contractor is responsible for the site and is liable should he or any of his sub-contractors contravene any portions of the EMP and associated environmental legislation. The contractor shall request advice from the Environmental Control Officer where considered appropriate.

Construction Phase:

The Construction Phase is the period of commencement of physical disturbance to the land, excluding rehabilitation activities, such as re-vegetation and replacing of topsoil.

Demolition:

The removal of unwanted existing infrastructure and associated materials.

Environment:

The surroundings within which humans live and that consist of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life
- any part or combination of (i) and (ii) and the interrelationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Audit:

A systematic, documented verification process of objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process to the client.

Environmental Control Officer:

The person appointed by the Developer who will provide direction to the Project Engineer concerning the activities within the Construction Zone, and who will be responsible for conducting the environmental audit of the project during the construction phase of the project according to the provisions of the Environmental Management Programme.

Environmental Management Programme: A legally binding working document, which stipulates environmental and socio-economic mitigation measures that must be implemented by several responsible parties throughout the duration of the proposed project.

Groundwater:

All subsurface water that fills voids between highly permeable ground strata comprised of sand, gravel, broken rocks, porous rocks, etc. and move under the influence of gravitation.

Hazardous substance:

A substance which can have a deleterious effect on the environment, as defined in the Regulations for Hazardous Biological Agents, 2001.

Interested and Affected Parties (I&AP's):

Those individuals or organisations who have an interest in the proposed development or will be directly affected by the activities of the development, as identified in the environmental impact assessment process.

Landscape Philosophy:

The landscaping design ethic, style and standard that is commensurate with ecological sustainability including the conservation and rehabilitation of the local landscape and the promotion of the aesthetics of the built environment by complementing the architectural style of the development. It is determined by a number of elements including the client's brief and the Provincial and Local Authority requirements.

Method Statement:

A method statement is a written submission by the Contractor to the Engineer in response to the specification or a request by the Engineer, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer when requesting a Method Statement. It contains sufficient detail to enable the Engineer to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

Pollutant:

A contaminant at a concentration high enough to endanger the environment or the public health.

Pollution:**National Water Act, 36 of 1998:**

"Water pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it –

*less fit for any beneficial purpose for which it may reasonably be expected to be used; or
harmful or potentially harmful –*

(aa) to the welfare, health or safety of human beings;

(bb) to any aquatic or non-aquatic organisms;

(cc) to the resource quality; or

(dd) to property".

National Environmental Management Act, No. 107 of 1998:-

"pollution means any change in the environment caused by –

- *substances;*
- *radioactive or other waves; or*
- *noise, odours, dust or heat*
- *emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future."*

Project Engineer:

Person/organisation appointed by the developer to oversee the work of the Contractor. The Project Engineer shall liaise with the Environmental Control Officer.

Rehabilitation:

Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before disruption.

1 INTRODUCTION

SiVEST Environmental Division has been appointed by **Willcocks Reed and Kotze cc** on behalf of **uThukela Municipality**, to undertake the Environmental Impact Assessment for the proposed project, as per the environmental legislative requirements detailed in **Section 17(1)** of G.N.R. 543 of June 2010. This EMPr serves as an Environmental Management tool by providing a generic structured plan of mitigatory measures, which serves as a guide to assist in minimising the potential environmental impact of the activities that may arise during the pre-construction, construction and operational phases of this development.

This EMPr provides a set of guidelines for the Environmental Management of all works executed by the Developer, Project Engineer, Contractor and Subcontractor/s to have a minimum impact on the environment in accordance with all relevant legislation, policies and standards.

In this context it should be viewed as a dynamic or 'living' document, which may require updating, or revision during the life-cycle of the development to address new circumstances as the need arises. It is essentially, a written plan of how the environment is to be managed in practical and achievable terms.

The effectiveness of the EMPr is limited by the level of adherence to the conditions set forth in this report by the Developer, the Contractor and Sub-contractors. It is further assumed that compliance with the EMPr will be monitored and audited as set out in this EMPr and contractual clauses.

2 AIM AND OBJECTIVES OF THE EMPr

The aim of the EMPr is to:

- Identify those construction activities identified for the proposed development that may have a negative impact on the environment;
- Outline the mitigation measures that will need to be taken and the steps necessary for their implementation;
- Describe the reporting system to be undertaken during construction.

The objectives of the EMPr are to:

- Identify a range of measures which could reduce and mitigate the potential adverse impacts to minimal or insignificant levels.
- Provide a pro-active and practical working mechanism to enable the measurement and monitoring of environmental performance on site, i.e. to provide guidance for the environmental auditing of the project.
- Provide management structures that address the concerns and complaints of I&AP's pertaining to the development.
- Ensure that the environmental specifications are identified, effective and contractually binding so as to enable compliance on site.

3 COMPLIANCE WITH APPLICABLE LAWS

The supreme law of the land is “The Constitution of the Republic of South Africa”, which states: “Every person shall have the right to an environment which is not detrimental to his or her health or well being”.

Laws applicable to the protection of the environment in terms of Environmental Management (and relating to construction activities) include but are not restricted to:

- Atmospheric Pollution Prevention Act, No 45 of 1965
- Aviation Act, No 74 of 1962
- Conservation of Agricultural Resources Act, No 43 of 1983
- Environmental Conservation Act, No 73 of 1989
- Explosives Act, No. 26 of 1956
- Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947
- Forest and Veld Conservation Act, Act No 13 of 1941
- Hazardous Substances Act, No 15 of 1973
- KwaZulu-Natal Health Act, No 4 of 2000
- KwaZulu-Natal Planning and Development Act No 5 of 1998 (re: soil conservation)
- Land Survey Act, No 9 of 1921
- Machinery and Occupational Safety Act, No. 6 of 1983
- Mines and Works Act, No. 27 of 1956
- Minerals Act, No 50 of 1991
- Mineral Development Draft Bill
- National Environmental Management Act, No. 107 of 1998
- National Environmental Management: Air Quality Act(AQA), No 39 of 1994
- National Environmental Management Biodiversity Act, No 10 of 2004
- National Forests Act, No 84 of 1998
- National Heritage Resources Act, No. 25 of 1999
- Natal Nature Conservation Ordinance 15 of 1974
- National Water Act, No 36 of 1998
- National Water Act (amendments)
- National Veld and Forest Fire Act, No 101 of 1998
- Occupational Health and Safety Act, No 85 of 1993
- Provincial and Local Government Ordinances and Bylaws
- Soil Conservation Act, Act No 76 of 1969
- Sub-division of Agricultural Land Act Repeal Act 64 of 1998 (re: soil conservation)
- Water Services Act No 108 of 1997

and all regulations framed there-under and amendments there to.

Of particular importance is **Section 28 (1) of the National Environmental Management Act, Act No. 107 of 1998** (NEMA) which places an obligation on all individuals to take due care of the environment and to ensure remedial action is instituted to minimize and mitigate environmental impact.

The EMPr forms part of the Contract Documentation and is thus a legally binding document. In terms of this Act an individual responsible for environmental damage must pay costs both to the environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the *Polluter Pays Principle*.

4 COMPLIANCE WITH THE EMPr

4.1 Contractor

The Contractor is deemed not to have complied with this generic EMPr if:

- within the route of the Driefontein-Ladysmith Pipeline, during the Construction Phase, adjacent areas and haul/ access roads there is evidence of contravention of clauses;
- if environmental damage ensues due to negligence;
- the Contractor fails to comply with corrective or other instructions issued by the Local Authority, Project Engineer or Environmental Consultant within a specified time,
- the Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance. The penalty imposed will be per incident. Unless stated otherwise in the project specification, the penalties imposed per incident or violation will be:

➤ Failure to demarcate working areas	R10 000
➤ Working outside of the demarcated area	R30 000
➤ Failure to strip topsoil with intact vegetation	R50 000
➤ Failure to stockpile topsoil correctly	R30 000
➤ Failure to stockpile materials in designated areas	R10 000
➤ Pollution of water bodies and/or groundwater	
➤ (incl. increased suspended solid loads)	R20 000
➤ Failure to implement storm water management provisions during construction	R20 000
➤ Failure to control storm water runoff	R30 000
➤ Downstream erosion	R30 000
➤ Failure to provide adequate sanitation	R10 000
➤ Unauthorised removal of indigenous vegetation	R50 000
➤ Failure to erect temporary fences	R10 000
➤ Failure to provide adequate waste disposal facilities and services	R50 000
➤ Nuisance to neighbours by Construction staff	R10 000
➤ Failure to reinstate disturbed areas within the specified time-frame	R50 000
➤ Failure to rehabilitate disturbed areas within the specified time-frame	R50 000
➤ Any other contravention of particular (general) environmental specification	R10 000

Such fines will be paid by the Contractor to the Developer and will be used in rehabilitation and/ or landscaping.

4.2 Implementation and Compliance with the EMPr

The Developer is responsible for the implementation of the EMPr and for compliance monitoring of the EMPr. The EMPr will be made binding on all contractors (including sub-contractors) operating on the site and will be included with the Contract. Non-Compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

5 DETAILED SCOPE OF EMPr

5.1 Conditions of Contract / Roles and Responsibilities

The Project Engineer and Contractor shall be responsible for ensuring compliance with the provisions contained in the EMP, and shall be held accountable in terms of the EMPr.

5.1.1 Duties and powers of the Developer

The Developer has overall responsibility for compliance with the EMPr as it is a fundamental component of the authorisation requirements for the project.

This means that the Developer must:

- Ensure that the professional team and the Contractors are appropriately briefed and that their appointment includes environmental requirements as relevant.
- Ensure that he is kept fully informed of the performance of the project against the requirements of the EMPr.
- Ensure that appropriate action is taken where consistent incidents of non-compliance are taking place.
- Ensure that any corrective action required by the authorities (DAEA) is implemented.

5.1.2 *Duties and powers of the Project Engineer*

The Project Engineer is also responsible for ensuring compliance with the Environmental Management Programme.

The Project Engineer:

- Maintains a register of complaints and queries by members of the public at the site office. This register is forwarded to the Environmental Control Officer on a bi-monthly basis.
- Enforces the EMPr on site.
- Monitors compliance with the requirements of the EMPr.
- Assesses the Contractor's environmental performance in consultation with the Environmental Control Officer.

5.1.3 *The Environmental Control Officer*

The Environmental Control Officer (ECO):

- Must be appointed by the Developer to visit the site from time to time once the first activities start on site.
- Undertake induction training and briefs the Project Engineer and the Contractor about the requirements of the Environmental Management Programme.
- Advises the Project Engineer about the interpretation, implementation and enforcement of the Environmental Specification and other related environmental matters.
- Attends site meetings, as necessary.
- Monitors the Contractor's compliance with the EMPr by undertaking an environmental audit at the start of the construction phase, then monthly thereafter until all works on site have been completed, and then a close-out audit is to be undertaken after construction is complete.
- Reports on the performance of the project in terms of environmental compliance with the EMP to be submitted to the Project Engineer, Local Municipality, DWA and DAEA on a monthly basis.
- Provides technical advice relating to environmental issues to the Project Engineer.
- Acts as liaison with DAEA and other environmental organisations or stakeholders as necessary.

5.1.4 *Extent of the Contractor's Obligations*

The Contractor is required to:

- Supply method statements and management plans for all activities requiring special attention as specified and/or requested by the Project Engineer or Environmental Control Officer for the duration of the Contract.
- Be conversant with the requirements of the Environmental Management Programme.
- Brief staff about the requirements of the Environmental Management Programme.
- Comply with requirements of the Environmental Control Officer in terms of this EMPr.

- Ensure any sub-contractors/ suppliers who are utilised within the context of the contract comply with the environmental requirements of the EMPr. The Contractor will be held responsible for non-compliance on their behalf.
- Bear the costs of any damages/ compensation resulting from non-adherence to the EMPr or written site instructions.
- Comply with all applicable legislation in terms of section 3 above.
- Ensure that the Project Engineer is timeously informed of any foreseeable activities that will require input from the Environmental Control Officer.

The Contractor will conduct all activities in a manner that minimises disturbance to directly affected residents and the public in general, and foreseeable impacts on the environment.

5.2 Compliance with Environmental Specification

The Contractor is deemed **not** to have complied with the Environmental Specification if:

- Environmental damage ensues due to negligence.
- Failure to take any reasonable measure to protect the environment if there is a perceived or identified environmental risk associated with an activity that has not been defined in the EMPr.
- Pollution of land surfaces and air pollution results from construction and related activities.
- The Contractor fails to comply with corrective or other instructions issued by the Engineer within a specified time.
- The Contractor fails to respond adequately to valid complaints from the public.

6. PRE-CONSTRUCTION (SITE SET-UP OR ESTABLISHMENT) PHASE

Pre-Construction EMPr activities are those relating to the preparation of the site prior to the start of the Construction Phase.

6.1 Access to the Site

This site must have strict access control to reduce the risks associated with vehicular transportation and pedestrian access on the site. The Contractor shall be made aware of this requirement by the Developer prior to construction commencing on site.

6.2 Preparation of Method Statements and/or Management Plans

Method Statements and/or Management Plans shall be submitted by the Contractor to SiVEST and shall be adhered to by the Contractor and Project Engineer. These relate to water and storm water management requirements, traffic requirements, solid waste management requirements, fuel storage and filling and dispensing of fuel (diesel and petrol), hydrocarbon spills, contaminated water treatment, the storage of hazardous materials, standard emergency procedures, and biohazard control.

The Environmental Control Officer shall monitor the implementation of the Statements and Management Plans. All copies of the statements and plans shall be submitted to the appointed Environmental Control Officer.

6.3 Permits required

The necessary permits shall be obtained by the Developer prior to the commencement of construction and sufficient time shall be allowed to obtain such permits, for activities such as:

- The sourcing of borrow material which if required, would constitute Mining Right Permits from the Department of Minerals & Energy (DME).
- The disposal of effluent on site.
- The management of storm water on site.

- Impacting on water sources, would constitute a water use licence from the Department of Water Affairs (DWA).

6.4 Provision of Bulk Services

The Project Engineer confirms that the existing services on site are sufficient for the demands of operating plant, such as water and electricity. Agreement is required with the uThukela District Municipality or service provider for these services.

6.5 Layout of Construction Camp

A site camp position will be identified on site, and agreed to by the Environmental Consultants. It must be ensured that it fulfils the environmental and construction requirements. The site camp should, if possible, be able to connect into all Municipal Services. At establishment and or should these services not be available, temporary / stand alone services will be required and the details thereof are to be furnished by the contractor to the ECO. No construction camps should be set up on private properties.

The construction camp usually comprises the following :

- a site office;
- ablution facilities;
- a designated first aid area;
- eating areas;
- staff lockers and showers
- storage areas;
- batching plant
- refuelling areas
- maintenance areas
- crushers

The size of the camp should be kept to a minimum (especially where natural vegetation or grassland has to be cleared for its construction). Parking for staff and visitors needs to be adequately provided. The Contractor must also ensure that drainage on the camp site is such to prevent standing water and/or sheet erosion from taking place.

A Complaints Register must be maintained on site by the ECO or foreman for all complaints. This must form part of the Environmental File that must be maintained on site. The minimum composition for this file should be as follows:

- Complaints register
- Waybills receiving
- MSDS sheets
- SHEQ File
- Hazardous substances register

6.6 Environmental Awareness & Training

The Contractor shall ensure that the construction team and all sub-contractor/s are familiar with the EMP requirements and have a basic level of environmental awareness training. The Environmental Control Officer shall undertake environmental awareness induction training prior to the start of construction activities on site.

Topics to be covered by the training should include:

- Explanation of what is meant by “environment” and why the environment needs to be protected and conserved.
- How construction activities can impact on the environment, and what measures can be taken to mitigate against these impacts.
- Awareness of emergency and hazardous spills response provisions.

- Prevention of pollution and litter control and the minimization of disturbance to sensitive areas.
- Social responsibility during construction. This entails being considerate to local residents. Construction Workers need to be made aware that they are not to make excessive noise (e.g. shouting/hooting) as the site borders residential properties.
- The need for a “clean site” policy also needs to be conveyed to construction workers.
- Worker conduct on site which encompasses a general regard for the social and ecological well-being of the site and adjacent areas. Workers need to be made aware of the following general rules of behaviour.
- No alcohol/drugs to be present on site and no firearms permitted on site or in vehicles transporting staff to /from site, (unless used by security personnel).
- Prevention of noise and unsocial behaviour.
- Bringing pets on site is forbidden, and no harvesting of firewood from the site or from areas adjacent to it.
- Workers are to make use of facilities provided for them, as opposed to ad-hoc alternatives (e.g. the use of surrounding bush as a toilet facility is forbidden; fires for cooking).
- Driving under the influence of alcohol is prohibited.
- Trespassing on private/commercial properties bordering the site is forbidden.
- Other than pre-approved security staff, no workers shall be permitted to live on site unless deemed necessary due to the specific project.

It is also important that the Project Engineer/ECO is on hand to explain more complex/technical issues and to answer questions. It is recommended that an Environmental Officer (EO) is appointed by the Developer or Contractor who will be responsible for the execution of the listed activities on the development site as per the EMPr requirements.

6.7 Storm Water Management

On-site storm water controls shall be implemented prior to the start of construction. If required, a Storm Water Management Plan shall be submitted by the Contractor and approved by the Project Engineer. The contractor will ultimately be responsible for Storm water Management during the construction phase and the developer will be responsible for Storm water Management during the operational phase.

The increase in storm water run-off resulting from construction activities must be estimated and the drainage system assessed accordingly to prevent storm water damage.

6.8 Soil Management

The Contractor should ensure that wind screening and storm water management controls should be undertaken to prevent soil loss during site establishment. This may involve erection of shade cloth fencing around the site perimeter, where considered necessary by the Engineer.

The time that stripped areas are exposed should be minimised wherever possible. Care should be taken to ensure that lead times are not excessive.

Procedures that are in place to conserve topsoil during the construction phase are to be applied during the site establishment phase. i.e. topsoil is to be conserved while providing access to the site and setting up the camp.

Prior to Site establishment the Contractor shall strip and stockpile all soil within the works area for possible subsequent use. Stockpiled soil should not be in excess of 2 m in height, and should be protected from wind and rain with the use of tarpaulins where necessary. The area stripped of soil is to be surfaced, and it is unlikely that the stripped soil will be required for rehabilitation purposes. Stockpiles must be positioned away from water-courses or storm water drainage lines to prevent soil eroding directly into any water courses and drains nearby. Stockpiles must be positioned in an area that will prevent dust particles being blown onto the residents and road users. The Environmental Consultants in conjunction with the contractor and project engineer should identify the relevant areas for stockpiling that are both environmentally sound and will prevent double handling of material.

6.9 Conservation of Natural Resources

This section is applicable to site establishment outside the proposed property boundaries.

No natural vegetation may be cleared during the site establishment without the prior permission of the Engineer and Environmental Control Officer. The ECO must be given an opportunity to mark vegetation such as indigenous trees (where applicable) that are to be conserved before the Contractor starts to clear the site.

Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be paid to imported material. No faunal species should be harmed and poaching is prohibited.

6.10 Security Fencing and Lighting

During site establishment the site should be secured if necessary to minimize the opportunity for criminal activity in the locality of the site. The site should be fenced and manned on a 24 hour basis. The erection of lighting must be undertaken in such a manner as to preclude the lighting from becoming intrusive. Lighting positions must take cognisance of night time vehicular movement and ensure that it does not cause temporary blindness of any vehicle operators.

6.11 Noise Impacts and Designated Working Hours

Construction vehicles are to be fitted with Standard silencers prior to the start of construction. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicles or machinery from site. Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) will be used as per operating instructions and maintained properly during site operations.

Designated working hours will be restricted to 7 am-5 pm on weekdays and 8 am-1 pm on Saturday. These times and working days are restricted, due to the relatively close proximity of surrounding dwellings, and in accordance with the Department of Labour Gazetted Guidelines.

6.12 Cultural Heritage Environment

Before construction commences, all staff need to know what possible archaeological or historical objects of value may be present and to notify the Engineer/Contractor should such an item be unearthed. This will be covered during the environmental awareness training process when the contractor and their staff establish on site.

7 CONSTRUCTION PHASE

Construction EMPr activities are those relating to the Construction Phase as defined.

7.1 Access to the Site

Access to other properties shall be prohibited, and enforced by the Contractor.

All access roads within the property need to be maintained in a good condition by addressing problems associated with construction traffic such as potholes, corrugations and storm water damage as soon as these are apparent. This should be conducted on a weekly basis or after heavy rains by the Project Engineer.

Unnecessary compaction of soil on site by heavy vehicles must be avoided as far as possible and construction vehicles need to be restricted to demarcated access, haulage routes and turning areas.

7.2 Maintenance of the Construction Camp

This covers various areas for inspection on a regular basis. The Contractor must monitor and manage drainage and runoff from the camp site to avoid standing water and soil erosion.

Weekly servicing of the chemical toilets on site needs to be practiced by the supplier and service records are to be filed on site with the environmental site file. Toilets on site need to be kept in a clean and hygienic state. It is required by law that for every fifteen labour employed there is one (1) portable toilet. Portable toilets which require weekly servicing will only be in use during the construction period.

The Contractor shall ensure that all litter is collected daily from the work and camp areas. Similarly, all bins and/or skips should be regularly emptied and their waste disposed of at a registered landfill site. All waybills are to be filed on site. The Contractor shall ensure that the camp site, working & eating areas are maintained in a clean, hygienic and orderly state.

7.3 Ablution & Eating Facilities

Where waterborne sewerage is not available, temporary chemical toilets must be supplied and approved by the Engineer. These toilets must be available to all site staff, both at the camp site, and on site as agreed by the Engineer. 1 Toilet per 15 staff members must be provided. Toilets should be no nearer than 50 m from any wetlands or natural drainage lines.

Chemical abluion facilities shall be located adjacent to the Site Establishment Office (containers) and shall occur at a minimum ratio of 15 workers per toilet. Provision should be made for additional employee facilities, including shelter and washing facilities. The Contractor should designate eating areas to the approval of the Engineer. Strict control shall be enforced to ensure that no waste is left in these demarcated areas.

The construction of "long drop" toilets is forbidden. Under no circumstances may neighbouring open areas or the surrounding bush be used as a toilet facility.

7.4 Provision for Camp Waste Disposal & Set-up of Waste Management Procedures

Bins and / or skips need to be supplied at convenient intervals on site for disposal of waste within the construction camp. The bins should have liner bags for easy control and safe disposal of waste. There should be recycling of waste practiced with separate drums provided for paper and cardboard; glass; plastics; metals and organic waste.

The excavation and use of rubbish pits on site is forbidden. The burning of waste is forbidden. The area demarcated for the sorting and disposal of waste needs to be fenced off. The provision of separate skips for different waste types (i.e. "household" type refuse; building rubble) need to be provided.

A designated, bunded area is to be set aside for vehicle washing and maintenance. Materials caught in this bunded area must be disposed of at a suitable waste site or as directed by the Engineer in conjunction with the ECO.

7.5 Visual Impacts

Storage facilities, elevated tanks and other temporary structures on site should be located such that they are visually un-obtrusive to the local residents. The construction camp should be screened with the use of shade cloth prior to the start of construction as considered necessary by the Engineer. This is especially important along commercial or tourism areas. Screening of highly reflective material should be given particular attention.

7.6 Staff Conduct

The Contractor needs to monitor the performance of workers to ensure compliance with good environmental practices and general conduct as explained earlier during the site set-up phase. It is during this phase that the employees undergo their environmental awareness induction training.

7.7 Dust/Air Pollution

Vehicles travelling back and forth on the construction site must adhere to speed limits so as to avoid generating excessive dust. A speed limit of 30 km / hour must be adhered to on site on all un-surfaced roads.

The Contractor shall take appropriate measures to minimise the generation of dust as a result of construction works, operations and activities to the satisfaction of the Environmental Control Officer. The site must be dampened with a water bowser or sprinklers, as necessary to minimise dust problems. In addition, the Contractor needs to ensure that the fence-line consisting of the wooden poles/supports and shade cloth structure is maintained in good condition to act as a screen to minimize dust pollution.

Stockpiles are to be managed in accordance with the guidelines as per Section 7.9. Vehicles and machinery are to be kept in good working order and should excessive emissions be noted, the Contractor is to have equipment serviced as soon as possible.

No fires are to be permitted on site except for the burning of firebreaks. Should burning be required the necessary written approval must be obtained from the local Fire Chief and all the necessary precautions taken to avoid any potential damage to surrounding land owners or their personage.

7.8 Noise Associated with Construction Activities

Construction vehicles are to be fitted with standard silencers prior to the start of construction. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site. Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) will be used as per operating instructions and maintained properly during site operations.

Designated working hours, times and week-end activities are restricted, due to the relatively built up nature of the proposed site. However, should any neighbour complain about disruptive noise impacts, the times and durations of construction activities shall be reconsidered by the Engineer.

Blasting, piling or other 'noisy' activities must take place during normal working hours. The community must be notified 3 days prior to any planned activities that will be unusually noisy. These activities could include, but are not limited to, blasting and piling. It is suggested that a Bulletin Board on site in a visible location be considered.

7.9 Soil Erosion

Clearing activities, including removal of vegetation and heavy earthworks, must only be undertaken during agreed working times and permitted weather conditions as agreed upon with the ECO. If heavy rains are expected clearing activities should not be commenced with. In this regard, the contractor must be aware of weather forecasts. The unnecessary removal of groundcover from slopes must be prevented, especially on steeper slopes. Following the clearing of an area, the surfaces of all exposed slopes must be roughened to retain water and increase infiltration (especially important during the wet season). Any steep or large embankments that are expected to be exposed during the 'rainy' months should either be armoured with fascine like structures or grassed immediately with strip sods established at regular intervals (50-100 cm) down the bank with hydro-seeding between the strip sods. These areas will be restricted to the cut embankments that will be formed as a result of the cut to fill exercise that will be undertaken during the earthworks phase of construction.

Once an area has been cleared of vegetation, the top layer (nominally 150 mm) of soil should be removed and stockpiled in the designated areas, which have been identified approved by the engineer and ECO. Vegetation shall be stripped in a sequential manner as the work proceeds so as to reduce the time that stripped areas are exposed to elements. Top-soiling and re-vegetation shall start immediately after the completion of an activity and at an agreed distance behind any particular work front.

Storm water control and wind screening should be undertaken to prevent soil loss from the site. The earthworks have been designed to ensure a zero balance, i.e. no material will require off-site spoiling.

The battering of all banks shall be such that cut and fill embankments are no steeper than previous natural slopes unless otherwise allowed by the Engineer. Cut and fill embankments steeper than previous ground levels must be re-vegetated immediately. All embankments, unless otherwise directed by the Engineer, shall be protected by a cut off drain to prevent water from running down the face of the embankment and resulting in erosion.

7.10 Storm Water Control

During site establishment, storm water culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the Project Engineer. Provision should be made during the set up phase for all polluted runoff to be treated to the Engineer's approval before being discharged into the storm water system (this will be required for the duration of the project).

Construction activities often result in the diversion of natural water flow resulting in the concentration of flow and an increase in the erosive potential of the water. Thus the Contractor shall not in any manner modify or damage the banks or bed of streams, rivers, wetlands, other open water bodies and drainage lines adjacent to or within the designated area, unless as part of the construction project specification, other than approved by the DAEA in the Environmental Authorisation.

Earth, stone and rubble must not be placed in storm water channels, drainage lines or rivers. Periodic checking of the site's drainage system needs to be conducted by the Engineer and ECO to ensure that it is unobstructed. It is important to ensure that the storm water management plan/system implemented is functioning as intended and that the peak storm water discharge from the site has not increased with the development of the site.

Further principles that should be followed include:

- The avoidance of the use of high velocity storm water pipelines in favour of open, high friction, semi-permeable channels wherever feasible;
- The construction of a number of smaller storm water outfall points instead of a few large outfall points, and;
- The design of storm water outfalls should facilitate reduced flow velocity, minimize, and avoid stream banks and soil erosion through design features such as reno-mattresses or splitter blocks.

Similarly, un-channelled flow must be controlled to avoid erosion. For this purpose, rows of straw/hay or bundles of cut vegetation should be dug into the soil in contours to slow surface wash and trap eroded soil. This is known as brush packing. The spacing between rows will be dependent on the slope. Similarly, the exposed soil can be re-vegetated by the planting of an indigenous grass seed mix or indigenous groundcover mix and the use of grass fencing material at intervals along the slope. In situations where the surface run-off is concentrated as is the case along exposed roadways/tracks, flow should be attenuated by contouring with hay bales or bundled vegetation generated during the site clearance operation. If the area is used for construction vehicles, berms may be used alternatively. These should channel concentrated flow into the detention/attenuation ponds or areas protected with hay bales for flow minimization and sediment trapping.

Furthermore physical measures that can be taken to prevent storm water pollution include:

- Where necessary rock pitched diversion ditches or berms are to be used to divert water runoff away from exposed soil or construction areas. Silt fences may also be used.
- Separate storm water collection areas and interceptors at fuel storage areas, batching plants and other potentially polluting activities shall be constructed.
- The use and storage of all materials, fuels and chemicals, which could leach into the ground, shall be controlled. Adequate spillage containment measures shall be implemented, such as cut off drains, berms, etc. Fuel and chemical storage containers shall be set on a concrete plinth with 110% containment capacity to be provided by the bund walls.
- Any residue from spillages shall be removed from site by appropriate contractors. Handling, storage and disposal of excess or containers of potentially hazardous materials shall be in accordance with the requirements of the adjudicating authority or any other relevant department.
- No storage of any materials whatsoever will occur on or near the drainage system.
- Clearing activities must only be undertaken during agreed working times and permitted weather conditions. If heavy rains are expected clearing activities should be put on hold. In this regard, the contractor must be aware of weather forecasts.
- Silt fences, sandbags and spoil rock must be on hand at all times to assist in establishing temporary runoff control measures and should be used wherever necessary to proactively control erosion and trap sediment.
- Silt traps and sandbags must be used to reduce the energy of surface runoff and capture sediment along the sloping portions of the running track within and outside the wetland units.
- Erosion gullies and rills within the construction ROW must be rehabilitated immediately and the root cause of the erosion dealt with immediately.
- The unnecessary removal of groundcover vegetation from slopes must be prevented and only vegetation within the demarcated construction right-of-way (ROW) must be cleared.
- Natural and artificial preferential flow paths (e.g. channels, culvert outlets, etc.) within the wetland units must be respected and should be flumed / piped across the trench and running track corridors to avoid erosion issues.
- It is important that all of the above-listed mitigation measures are costed for in the construction phase financial planning and budget so that the contractor and/or developer cannot give financial budget constraints as reasons for non-compliance. Proof of financial provision of these mitigation measures must be submitted to the ECO prior to construction commencing.

7.11 Water Quality Management

The treatment of contaminated water on site shall require a Method Statement approved by the Engineer and Environmental Control Officer.

Storage areas that contain hazardous substances must be bunded with an approved impermeable liner. Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity. The requirements for a bunded area are listed below:

The following environmental protection is required for each tank installed:

- The bunding will be 110% of the capacity of the tank.
- The bunding must be constructed of a concrete foundation with brick walls, and must have an impermeable lining (e.g. epoxy coating on internal surfaces).
- The containment bund must be sloped to a low point.
- A gate valve to be installed at the low point in the wall to allow for the release of excess storm water in the event of excessive rainfall.
- In the event of a build-up of rainwater within the bund, the level of contamination of the said rainwater must be assessed by the ECO. The contaminated water will need to be pumped into storage drums and disposed of at an appropriate treatment facility.

Provision should be made during set up for all polluted runoff to be treated to the Engineer's approval before being discharged into the storm water system. This will be required for the duration of the project.

A designated, banded area is to be set aside for vehicle washing and maintenance. Run-off from fuel depots / workshops/ truck washing areas and concrete swills shall be directed in to a conservancy tank and disposed of at a waste disposal site approved by the Engineer and the local authority.

Contaminated water storage facilities shall not be allowed to overflow and appropriate protection from rain and flooding shall be implemented.

Should the Contractor require construction vehicles to be washed on site using a high pressure sprayer, all wash areas will have oil traps installed before draining into the sewer system. The Contractor shall confirm that contaminated wash water does not enter drainage structures untreated.

7.12 Groundwater and Soil Contamination

Every precaution must be taken to ensure that any chemicals or hazardous substances do not contaminate the soil or groundwater on site.

For this purpose the Contractor must:

- Ensure that the mixing /decanting of all chemicals and hazardous materials should take place on a tray or impermeable surface.
- Waste generated from these should then be disposed of at a registered landfill site.
- Ensure all storage tanks are properly designed and managed in order to prevent pollution of drains, groundwater and soils.
- Construct separate storm water collection areas and interceptors at storage tanks, and other associated potential pollution activities.
- Ensure that use and storage of fuels and chemicals that could potentially leach into the ground be properly controlled. Adequate spillage containment measures shall be implemented, such as cut off drains, etc. Fuel and chemical storage containers shall be set on a concrete plinth. The containment capacity shall be equal to the full amount of material stored, plus 10%.
- Appoint appropriate contractors to remove any residue from spillages from site. Handling, storage and disposal of excess or containers of potentially hazardous materials shall be in accordance with the requirements of the above-mentioned Regulations and Acts.
- Ensure that used oils/lubricants are not disposed of on/near the site, and that contractors purchasing these materials understand the liability under which they must operate. The Environmental Control Officer will be responsible for reporting the storage/use of any other potentially harmful materials to the relevant authority.
- Ensure that potentially harmful materials are properly stored in a dry, secure environment, with concrete or sealed flooring. The Environmental Control Officer will ensure that materials storage facilities are cleaned / maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil or surface water. The management of such storage facilities and means of securing them shall be agreed.
- Site staff shall not be permitted to use any stream, river, other open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any other construction or related activities. Municipal water or another source approved by the Engineer should rather be used for all activities such as washing of equipment, dust suppression, concrete mixing and compacting.

7.13 Stockpile Management

A general requirement for stockpiles are that they should be situated in an area that should not obstruct the natural water pathways on site. Topsoil stockpiles will be kept separate from other stockpiles, shall not be compacted, and shall not exceed 2 m in height unless otherwise allowed by the Engineer. If they are exposed to windy conditions or heavy rain, they could either be protected by re-vegetation using an indigenous grass seed mix or cloth, depending on the duration of the project. The construction of a berm consisting of sand bags or a low brick wall can be placed around the base of the stockpile for retention purposes. They should be maintained free of alien vegetation and weeds by regular weeding. Stockpiles

shall be kept free of any contaminants whatsoever, including paints, building rubble, cement, chemicals, oil, etc.

Subsoil and topsoil stockpiles will be moved to areas of final utilisation as soon as possible to avoid unnecessary erosion. Stockpiles not utilized within three months of the initial stripping process (or prior to the onset of seasonal rains) will be seeded with appropriate grass seed mixes, including indigenous grasses normally found in grasslands or brush-packed to further avoid possible erosion. Stockpiles must be positioned away from water-courses or storm water drainage lines to prevent soil eroding directly into any water courses and drains nearby. Stockpiles must be positioned in an area that will prevent dust particles being blown onto the adjacent residents and road users.

7.14 General & Hazardous Substances and Materials

Storage areas can be hazardous, unsightly and can cause environmental pollution if not designed and managed carefully. The selection of the site for the storage of materials needs to consider the prevailing winds, distance to water bodies and general on-site topography. These areas need to be designated as per the camp layout plan, demarcated and fenced if necessary. They should be secure so as to reduce the risk of crime and safe from access from children and animals.

Fire prevention facilities must be present at all storage facilities. It is important that the storage areas for hazardous chemicals are positioned away from the neighbouring residential or business properties (where applicable). The Contractor shall maintain storage of all potentially polluting materials, and shall undertake potentially polluting operations as far away as practically possible from drainage areas, and topsoil/subsoil stockpiles. The Contractor will ensure that additional supervisory time is spent to monitor such works. Such materials/operations include (but are not limited to):

- batching, storing of cement, concrete and mortar
- petrol, oil and chemical storage and transfer
- washing, ablution and toilet facilities
- plant storage

Hazardous materials to be stored on site are those that are potentially poisonous, flammable, carcinogenic or toxic. These materials include diesel, petroleum, oil, bituminous products; cement; solvent based paints; lubricants; explosives; drilling fluids; pesticides and herbicides and Liquid Petroleum Gas (LPG). Material Safety Data Sheets (MSDS's) shall be readily available on site for chemicals and hazardous substances to be used on site. MSDS's should also include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.

Furthermore hazardous storage and refuelling areas must be bunded with an approved impermeable liner to protect groundwater quality. A Method Statement is required for the filling of and dispensing from fuel storage tanks should such tanks be required. All necessary approvals with respect to fuel storage and dispensing (if required on site) shall be obtained from the appropriate authorities. The Contractor shall submit a Method Statement to the Engineer for approval. Fuel tanks must meet relevant specifications and be elevated so that leaks can be easily detected. These areas shall be clearly signed. All staff working with these materials/substances must be aware of their potential impacts and follow the appropriate safety measures.

The Contractor shall submit a Method Statement and plans for the storage of hazardous materials including emergency procedures. Should a spill occur within these bunded areas it must be cleaned up, removed and disposed safely from these areas as soon as possible after detection in order to minimize pollution risk and reduced bunding capacity. A designated, bunded area is to be set aside for vehicle washing and maintenance. Materials collected in this area must be disposed of at a suitable waste site or as directed by the Engineer.

All oils and lubricants that are unopened shall be stored in the workshop store on site. Used oils/lubricants will be put into drums and recycled. The Contractor shall be responsible for ensuring that these used oils/lubricants are not disposed of on/near the site, and that contractors purchasing these

materials understand the liability under which they must operate. The Contractor and Environmental Control Officer shall be responsible for reporting the storage/use of any other potentially harmful materials to the relevant department.

All imported materials (e.g. sand) as well as materials excavated from the site must be stockpiled within the site boundary / Construction Zone. Sand and excavated material stockpiles should be protected against wind using temporary screens, and from water erosion using tarpaulins where necessary.

In the event that the concrete requirements are transported to site as "ready mix" certain precautions must be taken. To prevent spillage onto roads, "ready mix" trucks shall rinse off the delivery chute into a suitable sump prior to leaving the Site.

If a concrete batching plant is required on site, the environmental specifications detailed below are to be employed:

- Shade cloth around the batching plant to prevent the cement dust being dispersed across the site;
- A sump for the collection of water over flow from the batching process;
- A method statement from the contractor must be drawn up to deal with overruns in the batching of concrete, i.e. 5 m³ is batched, but only 4.5 m³ is utilised, what will happen to the 0.5 m³ unused.

Cement / concrete shall not be mixed directly on the ground. Mixing boards, mixing trays and impermeable sumps shall be used at all mixing and supply points. Unused cement bags are to be stored so as not to be effected by rain or runoff events. Used cement bags shall be stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags shall be disposed of on a regular basis via the solid waste management system, and shall not be used for any other purpose.

All visible remains of excess concrete shall be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable as groundwater contamination could occur. All excess aggregate shall also be removed. With respect to exposed aggregate finishes, the Contractor shall collect all contaminated water and fines and store it in sumps for disposal at an approved waste site.

Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction shall be stored in secondary containers. The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDS shall be followed in the event of an emergency situation.

No paint products may be disposed of on site.

The Environmental Control Officer and Contractor shall be responsible for ensuring that potentially harmful materials are properly stored in a dry, secure environment, with concrete or sealed flooring and a means of preventing unauthorized entry. The Environmental Control Officer shall further ensure that materials storage facilities are cleaned / maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil. The management of such storage facilities and means of securing them shall be agreed. A ledger of all hazardous materials stored on site must be maintained and a record of the people that have accessed the materials kept as part of the safety system of the materials. In addition, this system will ensure that the correct people are accessing these materials and therefore they will be well versed in their usage and the precautions required.

All fuel and oil is to be stored within a demarcated area on site. Areas for storage of fuels and other flammable materials shall comply with standard fire safety regulations and may require the approval of the Local Municipal Fire Prevention Officer. Safety and fire prevention precautions must be strictly adhered to. Fuels and oils must be stored in tanks or drums with lids that remain firmly closed and shielded from the elements, and kept under lock and key.

All asbestos material shall be disposed of according to the Asbestos Regulations 2001, as per Government Notice. R: 155, dated 10 February 2002, promulgated under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).

7.15 Risks Associated with Materials on Site

Material stockpiles or stacks such as pipes, must be stable and well secured to avoid collapse and potential injury to site workers and/or local residents. Flammable materials should be stored as far as possible from adjacent residents / landowners. Similarly, no materials are to be stored in unstable or high risk areas such as steep slopes or floodplains. Fire fighting equipment should be present on site at all times as per OSHA. Obstruction to drivers' line of site due to stockpiles and stacked materials must be avoided, in particular at intersections and sharp corners. All I & AP's should be notified in advance of any known potential risks associated with the construction site and the activities thereon.

7.16 Handling of Hazardous Materials

A number of considerations relating to the use of these materials must be adhered to. These include:

- The mixing of all concrete must occur on a designated, impermeable surface.
- No vehicles transporting concrete to the site are to be washed on site.
- No vehicles transporting, placing or compacting asphalt or any other bituminous product may be washed on site.
- Lime and other powders must not be mixed during very windy conditions.
- Similarly the spraying of herbicides or pesticides should not occur under windy conditions and must comply with OSHA regulations and other chemical handling laws.
- All substances required for vehicle maintenance and repair must be stored in sealed containers until they can be disposed of/removed from the site.
- Hazardous substances/materials are to be transported in sealed containers or bags.
- The Contractor needs to submit a Method Statement for the dealing of accidents / spillages of hazardous materials.

In particular a Method Statement for the Management of Hydrocarbon Spills shall be prepared by the Contractor. The site shall have a ready supply of absorbent material available to absorb any emergency hydrocarbon spills, and where possible, be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials available shall be able to absorb / deal with a minimum of 200 litres of hydrocarbon liquid spill. The source of the spillage shall be isolated. The Contractor shall contain the spillage using sand berms, sandbags, pre-made booms, sawdust or absorbent materials, and the area shall be cordoned off. The Engineer shall be immediately notified.

7.17 Waste Management

Waste receptacles such as skips/bins need to be provided at intervals along the work front and in the construction camp area. Regular disposal needs to be practiced for these containers. Non-hazardous waste generated on site needs to be disposed of at a registered landfill site and waybills submitted on a monthly basis proving disposal for audit purposes. Hazardous waste generated needs to be collected and disposed of by an approved Waste Contractor.

Similarly the chemical toilets on site need to be regularly serviced by the supplier on a weekly basis. Construction rubble needs to be disposed of at a registered landfill site. There should be recycling of waste practiced with separate drums provided for paper and cardboard; glass; plastics; metals and organic waste. Construction rubble shall be disposed of in pre-agreed demarcated spoil dumps that have been approved by the Engineer and ECO, or at a registered disposal site.

All vehicles and equipment must be maintained in a good condition in order to minimize the risk of leakage and possible contamination of the soil or storm water by fuels, oils and hydraulic fluids. Sufficient quantities of suitable hydrocarbon absorption or remediation materials must be present on site at all times. Absorbent spill-mop-up products need to be readily available. All fuel, oil or hydraulic fluid spills

are to be immediately reported to the Engineer and Environmental Control Officer, and disposed of in a permitted landfill site for hazardous substances. A sump (earth or other) must be created for concrete waste. This is to be de-sludged regularly and the cement waste is to be removed to a waste disposal site as approved by the ECO.

For the purposes of this EMP, refuse includes all construction rubble, debris and waste (e.g. food waste, vegetation and tree stumps, building rubble, etc.), including hazardous waste (e.g. oils);

- The Contractor shall be responsible for the refuse removal control system that is acceptable to the Environmental Control Officer, the Project Engineer and the Local Authority. Refuse removal should be managed as part of the daily waste management activities.
- Transport of all waste on site shall be undertaken by a reputable, registered waste contractor, approved by the local authority.
- Hazardous waste such as fuel, oils and chemicals shall be disposed of at a licensed hazardous waste disposal site.
- The Contractor shall keep the site clean, tidy and litter free at all times. Strict control of the management of the refuse generated by the employees, such as in the eating areas, shall be enforced. The Contractor shall take steps to ensure that littering by construction workers does not occur and shall collect litter from the site and immediate surroundings, including litter accumulating at fence lines.
- No refuse or waste material is to be disposed of by burying or burning.
- All vehicles and equipment must be maintained in a good condition in order to minimize the risk of leakage and possible contamination of the soil or storm water by fuels, oils and hydraulic fluids.
- Sufficient quantities of suitable hydrocarbon absorption or remediation materials must be present on site at all times. Absorbent spill-mop-up products need to be readily available.
- All vehicles requiring servicing or which are parked on site overnight are to make use of a drip tray to prevent 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.
- All fuel, oil or hydraulic fluid spills are to be immediately reported to the Engineer and Environmental Control Officer, and must be disposed of in a permitted landfill site for hazardous substances.
- All asbestos material shall be disposed of according to the Asbestos Regulations 2001, as per Government Notice. R: 155, dated 10 February 2002, promulgated under the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).

7.18 Wetlands

Recommendations from the Wetland Report (Appendix D of the Basic Assessment Report) must be adhered to. These include:

- Ideally, construction should be undertaken between the months of April and August.
- The wetland and riparian zone boundaries either side of the crossing must be demarcated using shade cloth or snow fencing prior to the construction commencing.
- Disturbance to the wetland and riparian zone soils along the crossing should be restricted to an established construction right-of-way (ROW) corridor.
- The ROW corridor within the wetlands and riparian zones should be as narrow as practically possible and should be demarcated and fenced off during the site setup phase to the satisfaction of the ECO.
- The construction ROW should comprise the trench area and a narrow one-way running track only.
- No refuelling must be done in the designated wetland areas.
- Indigenous wetland and riparian vegetation and topsoil along the running track and ROW must be turfed and stored outside of the wetland. These turfed stockpiles must be regularly wetted to ensure that the wetland plants do not die out and the clayey soils remain moist. The location of these wetland and riparian vegetation/topsoil stockpile area must be agreed upon by the ECO prior to construction commencing.
- Once the running track is turfed, Geotextile / geofabric / bog mats must be laid down along the running track within the wet areas.

- Geotextile / geofabric must be laid down along the sub-soil stockpile corridors to ensure that the stockpiled soils do not mix with the existing wetland soils.
- The subsoils and topsoils must be reinstated in the proper order that they were excavated.
- After the trench soils are re-instated, the geotextile fabric along the soil stockpile corridors should be lifted by hand.
- Excavated soil must not be stockpiled within the wetland or riparian zones.
- All wetland areas outside of the demarcated ROW must be considered no-go areas.
- Silt fences and sandbags should be established down-slope of the construction site to protect the downstream slopes from erosion and sedimentation.
- De-watering must be done in a controlled manor. De-watering should discharge into silt traps / lagoons in order reduce sediment and runoff velocities.
- The in-stream silt fences should be erected downstream before activities are initiated.
- The fluming of the stream was undertaken quickly and efficiently resulting in as little silt kick-up as possible.
- All bare surfaces and slopes must be re-vegetated immediately on completion of platform and embankment shaping with an indigenous grass mix suitable for the area.
- The crossings must be checked for erosion rills and gullies after rainfall events and erosion rills and gullies must be rehabilitated immediately.
- Additional silt fences and sandbags must be used to control and manage runoff along erosion scars and preferential flow paths onsite if necessary.
- Compacted wetland and riparian soils along the running track must be ripped to a depth of 20-30 cm. Thereafter, the turfed topsoil and vegetation must be reinstated within the wetland and riparian areas along the running track by hand to the satisfaction of the ECO.
- Where no indigenous vegetation is present, the compacted areas must be ripped and seeded immediately. A deep rooting indigenous plant seed mix should be used as recommended by a wetland specialist.
- The disturbed area should be monitored for erosion once a month during the first wet season after construction.
- The re-instated wetland and riparian areas must be monitored for a year post-construction by a suitably qualified wetland specialist on a bi-monthly basis. During this time, the measures to manage and control alien vegetation in the wetland rehabilitation and management plan must be applied to the re-instated ROW.
- Method statements for all activities within the wetlands and riparian zones must be submitted to the ECO for approval prior to construction commencing.

7.19 Vegetation

Recommendations from the Vegetation Report (Appendix D of the Basic Assessment Report) must be adhered too. These include:

- The top soil, nominally 250 mm, should be cleared and stockpiled separately. The sub-soil and topsoil should be stock piled on opposite sides of the trench so as to prevent the incorrect sequence of back filling of the soils and the resultant loss of soil profile and integrity.
- The entire working servitude width is to be determined in conjunction with the Engineer and the Environmental Control Officer, however, our recommendation is that should the use of OPVC be accepted then the servitude width should not exceed 8 (eight) metres. In difficult areas and steep portions of the proposed pipe line alignment we would suggest reducing the width to the minimal acceptable width, which would allow for the pipe sections to be walked in and placed in the trench, i.e. reduce the width to 6 (six) metres.
- Sub-soil must be well compacted around the pipe once the pipe has been bedded on the correctly sourced bedding material, traditionally an evenly graded sandy material with a very low clay content.
- The area of excavation should not precede the laying of the pipe line by more than a single working week;
- Once the pipe line excavation has been backfilled the top soil should be placed and lightly compacted;

- Thereafter a light watering of the replaced soil will be essential. It is also advised that the topsoil which has been excavated is lightly watered every second day while outside of the trench however, this may pose a significant issue and may not be possible.
- In steep areas, it is essential that cross berms, or some erosion control mechanisms are put in place to ensure that the pipe line is protected as well as the rehabilitation efforts are afforded an opportunity to succeed;
- This will be required, particularly in areas on the ingress to the reservoir at Jonono's Kop and the ingress to the reservoir in Wasbank and Ekuvhukeni.
- Given the high volume of rock in these areas we would propose that this rock is utilised at intervals of approximately 2 metres on slopes greater than 120, or where its lowest outfall point will coincide with well established vegetation. These rock berms are to be put in place to check storm water velocity, reduce the scour potential of storm water and prevent all the valuable topsoil from being gathered up and displaced at the bottom of the excavation.
- The rapid excavation and replacement of the soils should result in the current seed bank within the soils being impacted upon only a very low level;
- The seed bank will thus supplement the proposed re-seeding that must take place, utilising the standard NPA mix;
- Regular watering will be required of the seeded areas, unless hydro-seeding is utilised which will have significantly higher initial input costs, however, the results and coverage will reduce the ongoing input costs;
- The regular control and management of alien invasive species will be required. It is our recommendation that every 3 months for a year post construction, the pipe line servitude is revisited and the alien vegetation removed, either through hand-pulling. Where this is not possible or appropriate the very carefully monitored application of chemical herbicides.

7.20 Cultivated Crops

The Contractor shall be held liable for all unnecessary damage to crops. Photographic records (of such damage) are to be kept by the contractor. The date, type of damage and reason for damage shall be recorded in full to ensure the responsible party is held liable.

7.21 Traffic

The Contractor is to ensure that all construction vehicles are in a road-worthy condition. No materials may be transported off site without the load being secured under a tarpaulin or similar, in order to prevent possible danger to other road users from materials falling from the back of vehicles.

All un-surfaced roads on site shall be damped down on a regular basis as considered necessary by the Engineer, as often as is necessary under prevailing climatic conditions, to reduce the levels of dust created by construction vehicles operating on the un-surfaced roads. Furthermore, dust can be an aesthetic nuisance for adjacent landowners as well as a significant health hazard.

Construction signs must be utilised to warn road users travelling along the district roads of the construction access and exit points and to slow down. If necessary, the speed limit should be reduced at these points.

Deliveries by large trucks to and from the construction site should be undertaken in periods where traffic volumes are not peaking, i.e. between 8:30 AM and 3:30 PM. This process will require management and it must be controlled by the Stores Manager who should not accept deliveries outside of these prescribed times. All suppliers will be notified of such and will need to comply or otherwise their vehicles will be turned away and only off-loaded once the delivery window opens.

7.22 Social Impacts to the Neighbouring Residents

Regular communication between the Contractor, Engineer and the I&AP's is important for the duration of the contract and will be started during the Site Establishment/pre-Construction Phase. The Engineer and

Contractors are responsible for on-going communication with the I&AP's. A Complaints register should be kept at the site office. This should be in a duplicate format, with numbered pages. The I&AP's need to be made aware of the register and the methods of communication available to them. The Contractor needs to appoint a staff member(s) to act as liaison officer for formal consultation with I &AP's in order to handle questions and explain the construction process and what it will entail. This register is to be tabled during monthly site meetings. Any queries or complaints that arise need to be handled by the ECO following a set protocol.

There are a number of areas that need to be monitored in this respect.

- The disruption and safety of access to the local road network for the local residents must be minimized at all costs and have the Engineer's permission.
- The Contractor is to inform the neighbours in writing of disruptive activities at least 24 hours beforehand. Leaflets can be circulated in post boxes giving the Engineer's and Contractor's details or other method of communication can be used that is approved by the Engineer.
- It is important that the Contractor's activities and movement of staff are restricted to the designated construction areas.
- Notice of particularly noisy activities such as jackhammers, blasting, drilling must be given to residents adjacent to the construction site at least 72 hours prior to the activity taking place.
- Noisy activities must be restricted to the times given in the project specification or General Conditions of Contract.

Local residents must be given preference in the hiring of skilled and unskilled construction workers.

7.23 Courtesy

All contractors and their employees shall at all times be courteous towards land owners, tenants and the local community.

Activities that may cause conflict with land owners, tenants, the local work force or the local community shall be avoided. Should conflict arise it shall be immediately reported to the project manager or co-ordinator.

7.24 Damage to Private Property

Any damage to private property shall immediately be reported to the project manager and the owner. The damage shall be rectified immediately if possible and/or appropriate compensation shall be paid to the owner at the discretion of the project manager/co-ordinator in consultation with the property owner. A record of damages and rectifying action shall be kept. The owner's satisfaction with the outcome of rectifying action shall be obtained in writing.

Camp and office sites shall be dismantled and removed after completion of the construction phase of the project. The site shall be rehabilitated to as close as possible to its original condition to the satisfaction of the land owner which shall be in writing.

All excavations shall be enclosed to prevent animals or people from accidentally falling into excavations.

7.25 Theft and Poaching

Theft and poaching will not be tolerated.

7.26 Safety

The issues around safety are hugely underplayed. The type and extent of the current proposed linear development will require that certain issues are raised and addressed accordingly.

The first issue is leaving trenches and / or excavations open during periods of absence and overnight. The Occupational Health and Safety Act has been amended and danger tape is no longer a suitable medium for making people aware and preventing access to dangerous areas. The new requirement is for the utilization of Orange PVC Bonnox fencing that is placed around such areas to keep out people and livestock.

The second is making the construction team aware of the dangers of working in close proximity to rapidly moving vehicles that will be passing in very close proximity to the proposed excavations. The labour force need to be made aware and ensure that they take all possible precautions against any potential accidents. The utilization of point's people to make road users aware of the labour force and ensure that road users slow down are necessary for the entire project.

The third issue is the high presence of snakes, in particular Black Mambas. The contractor must have some form of risk aversion in place and measures that will allow the victim access to immediate medical care.

7.27 Fire Control

All fire requirements shall be carried out as contained in the National Building Regulations SABS 0400 and the safety code of the N.F.P.A.

The Contractor shall take all reasonable and active steps to avoid increasing the risk of fire through their activities on site. The Contractor shall ensure that basic fire-fighting equipment is to the satisfaction of the Local Fire Services. The Contractor shall designate a Fire Control Officer. The Contractor shall ensure that all the correct fire-fighting equipment is available on site and within easy access. No fires for heating or cooking shall be permitted. The disposal of any matter by burning is prohibited.

7.28 Welding

The Contractor shall take precautions when working with welding or grinding equipment near potential sources of combustion.

8 OPERATIONAL PHASE

8.1 Maintenance

Maintenance works shall be minimal, as confirmed.

8.2 Site Rehabilitation

The exposed surface where vegetation was removed during construction should be re-grassed with indigenous grass species.

8.3 Alien Invasive Plant Control

It is recommended that the relevant responsible Department remove/clear the invasive plants on site currently impacting on the biodiversity provided by the site.

8.4 Illegal Waste Dumping

It is recommended that that the extensive areas of fill and waste dumping affecting the biodiversity of the site be cleared/removed by the relevant responsible Department, to help rehabilitate the site.

8.5 Site Access:

Maintenance must be restricted to within the pipeline route. The area will need to be rehabilitated after the site has been assessed for the basic assessment. Areas will have to be cleared for access.

9 DECOMMISSIONING PHASE:

Due to the fact that the pipeline will be proving water to the general area it is unlikely that it will decommissioned, however if it is the following recommendations should be abided by:

- No protected plant species may be removed.
- Construction activities near watercourses must be carefully monitored.
- Any waste infrastructure removed should be properly disposed of.
- Proof of disposal shall be required.

10 AMENDMENTS TO THE EMP

Any major issues not covered in the EMP as submitted shall be addressed as an addendum to the EMP, submitted for approval prior to implementation.



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APPENDIX G:
IMPACTS SIGNIFICANCE ASSESSMENT



SIVEST (PTY) LTD: ENVIRONMENTAL DIVISION

ENVIRONMENTAL IMPACT ASSESSMENT METHOD

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ENVIRONMENTAL IMPACT ASSESSMENT METHOD

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SIVEST (PTY) LTD: ENVIRONMENTAL DIVISION

ENVIRONMENTAL IMPACT ASSESSMENT METHOD

1 INTRODUCTION

For the purposes of this study, impact significance is defined broadly as a measure of the desirability, importance and acceptability of an impact to society (Lawrence, 2007).

Before impact significance can be assessed, the impact to be assessed needs to be clearly defined.

1.1.1 *Impact Definition*

The determination of the impact to be assessed is probably the most important aspect of the impact assessment process because impacts on an environmental component or system occurs at different stages and scales within the same impact stream (the series of impacts resulting from a common primary/root impact). In this method, all impacts on the natural or biophysical environment are assessed in terms of the **overall impacts on the health (integrity) of ecosystems, habitats, communities, species, populations and individuals affected**. For example, the impact of hardening an area for commercial development will result in an increase in stormwater runoff generated by the development, which will increase the risk of erosion depending on the site topography and how the development manages its stormwater. The increased surface runoff discharged from the development will result in an increase in the risk of erosion which, if occurs, will impact on the health of adjacent, down-slope and/or downstream systems (e.g. river, wetland, forest, grassland etc.). For the purpose of this assessment method, the abovementioned series of impacts resulting from the primary (root) impact of surface hardening is assessed in terms of the impacts on the health of the affected and definable environmental systems and/or components. Therefore, to summarise the above example, the significance of the impact of surface hardening and increased surface runoff will be determined by the degree of change in the health of definable affected environmental systems and components in relation to their value to society (conservation value). If the impact of increased runoff on the integrity of a definable system is large, and the value of that system is high, one can either say that the impact of increased runoff resulting from surface hardening is highly significant, or that the impact of surface hardening on the health of the system is highly significant.

1.1.2 *Significance Criteria and their Synthesis*

The EIA Regulations (2010) promulgated in terms of Section 24(5), 24M and 44 of the National Environmental Management Act ("NEMA") (No. 107 of 1998), requires that each potentially significant impact identified in the Scoping Phase be assessed in terms of a number of criteria that give an overall indication of the significance of the impact. The criteria listed in the regulations include:

- nature,
- extent,
- duration,
- probability,
- reversibility,
- irreplaceable loss of resources, and
- mitigation potential.

The method used in impact assessment does not explicitly define each of these criteria because it is the opinion of the author that these criteria do not combine well to give an overall indication of significance, specifically within the paradigm of this method. Nevertheless, it is important to note that most of these criteria are dealt with indirectly within the different criteria of this method.

This method determines the significance of an impact by multiplying the **value** of the environmental system or component affected by the **magnitude** of the impact on that system or component (**System or Component Value x Impact Magnitude**). This method is considered a technical approach to impact significance determination (Lawrence, 2007).

Similarly, all impacts on the social and socio-economic environment are assessed in terms of the overall impacts to the **quality of life, health and safety** of the affected population, the communities and/or individuals, with the exception of the assessment of impacts on agricultural, heritage and other important resources that can be assessed without reference to impacts on quality of life and health.

2 ASSESSING IMPACTS ON THE BIOPHYSICAL ENVIRONMENT

The significance of an impact on biophysical systems or components is determined by multiplying the **environmental value/importance** of the systems or components affected by the **magnitude** of the impact on those systems or components (**Environmental Value x Impact Magnitude**).

2.1 Environmental Value/Importance

For the purpose of this method, environmental value is defined as the value of an ecosystem, habitat and/or community to society in terms of the level of ecosystem goods and services provided by the system in question and/or the importance of the ecosystem, habitat and/or community in terms of strategic conservation plans and in meeting the conservation targets of these plans. The higher value takes precedence. For species, populations and individuals, the environmental value is defined according to the local, national and global conservation status afforded to the specific population or species. More specifically, **Environmental Value (System) = Ecosystem Goods & Services Value and/or Importance in Strategic Conservation Plans** and **Environmental Value (Component) = Conservation Status**.

2.1.1 Ecosystem Goods & Services Value

Ecosystems are known to provide important goods and services to society. Ecosystem goods refer to the natural products harvested or used by humans such as water, fish, pastures for livestock, timber, firewood, crafts materials, medicinal plants and harvested wildlife such as game. Ecosystem services refer to a number of life support services provided by ecosystems that contribute to human well being and the production of the abovementioned ecosystem goods. Most ecosystem services can be grouped into the following general categories:

- Purification and detoxification: filtration, purification and detoxification of air, water and soils;
- Cycling processes: nutrient cycling, nitrogen fixation, carbon sequestration, oxygen production and soil formation and maintenance;
- Regulation and stabilization: pest and disease control, climate regulation, mitigation of storms and floods, erosion control, regulation of rainfall and water supply;
- Biodiversity maintenance: rare and/or diverse gene pools and/or habitats, storehouse of genetic material that is used in industrial, agricultural and pharmaceutical industries;
- Regeneration and production: production of biomass providing raw materials and food, pollination and seed dispersal; and
- Quality of life, fulfilment and knowledge: aesthetic, recreational, cultural and spiritual role, education and research.

At an ecosystem and community level, the Ecosystem Goods & Services Value expresses the relative importance of an ecosystem or community in terms of the provision of ecosystem goods and services to society as determined by specialists.

Table 1: Ecosystem goods & services value rating categories

A: Community/Ecosystem (System)	
1	<u>Low</u> : System provides a low/limited level of ecosystem goods and/or services to society and/or the goods are not valued or used by the local population in any way. Ecosystem goods and services are of low importance.
2	<u>Medium-Low</u> : System provides some (moderately low) level of ecosystem goods and/or services to society and/or the goods have some value the local population. Ecosystem goods and services are of medium-low importance.
3	<u>Medium</u> : System provides an intermediate/moderate level of ecosystem goods and/or services to society and/or the goods are moderately valued by the local population. Ecosystem goods and services are of medium importance.
4	<u>Medium-High</u> : System provides a moderately-high level of ecosystem goods and/or services to society and/or the goods are highly valued by the local population. Ecosystem goods and services are of medium-high importance.
5	<u>High</u> : System provides a high level of ecosystem goods and/or services to society and/or the goods are essential to human activities (e.g. provides potable water). Ecosystem goods and services are of high/critical importance.

2.1.2 Importance in Strategic Conservation Plans

For the purpose of this document, strategic conservation plans are national and/or provincial conservation plans aimed at identifying specific land areas and biophysical systems that are of strategic importance for preserving the viability of important species, ecosystems and ecosystem-derived natural resources into the future (i.e. biodiversity). Strategic conservation plans are compiled by governmental and non-governmental environmental organisations mandated with the conservation of natural ecological resources (e.g. Department of Water Affairs, South African National Biodiversity Institute and Provincial Conservation Departments) and generally fulfil the requirements of either the National Environmental Management Act (1998), the National Environmental Management: Biodiversity Act (2004) and the National Water Act (1998).

Table 2: Strategic Conservation Importance value rating categories

A: Community/Ecosystem (System)	
1	<u>Low</u> : System does not contribute to meeting the objectives of a strategic conservation plan.
2	<u>Medium-Low</u> : System fulfils a moderately-low role in meeting the objectives of a strategic conservation plan.
3	<u>Medium</u> : System fulfils a moderately-important (intermediate) role in meeting the objectives of a strategic conservation plan.
4	<u>Medium-High</u> : System fulfils an important role in meeting the objectives of a strategic conservation plan.
5	<u>High</u> : System fulfils a critically/vitally important role in meeting the objectives of a strategic conservation plan.

2.1.3 Conservation Status

At the species, population and individual level, conservation status refers to the likelihood of the survival of a species at present and into the future. The categories below have been adapted from Golding (2002).

Table 3: Conservation status rating categories

B: Individual/Population (Component)	
1	<u>Low</u> : Component is not considered rare, endemic, near-threatened, vulnerable or endangered nationally, provincially or locally.

B: Individual/Population (Component)	
2	<u>Medium-Low</u> : Component is considered near-threatened nationally, provincially and/or locally.
3	<u>Medium</u> : Component is considered rare, endemic and/or vulnerable nationally, provincially and/or locally.
4	<u>Medium-High</u> : Component is considered endangered nationally and/or provincially and/or locally.
5	<u>High</u> : Component is considered critically endangered nationally, provincially and/or locally.

2.2 Impact Magnitude

The impact magnitude score for each identified impact is calculated by the addition of four criteria, namely 'degree of disturbance', 'extent', 'duration' and 'probability'. The range of possible impact magnitude scores is from 4 to 20.

2.2.1 Degree of Disturbance

The 'Degree of Disturbance' to biophysical systems and components expresses the change in the health, functioning and/or role of the systems or components as a result of an activity in relation to the current state of the systems and/or components affected.

Table 4: Degree of Disturbance rating categories for biophysical/ecological systems

1	<u>Low</u> : Impact affects the quality, use and integrity of the systems/components in a way that is barely perceptible.
2	<u>Medium-Low</u> : Impact alters the quality, use and integrity of the systems/components but the systems/components still continue to function in a slightly modified way and maintain original integrity (no/limited impact on integrity).
3	<u>Medium</u> : Impact alters the quality, use and integrity of the systems/components but the systems/components still continue to function but in a moderately modified way (integrity impaired but functionality and major key processes/drivers maintained).
4	<u>Medium-High</u> : Impact affects the continued viability of the systems/components and the quality, use, integrity and functionality of the systems/components are severely impaired and may temporarily cease. High costs of rehabilitation and remediation, but possible.
5	<u>High</u> : Impact affects the continued viability of the systems/components and the quality, use, integrity and functionality of the systems/components permanently ceases and are irreversibly impaired (system/population collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

2.2.2 Impact Extent

The Extent of the impact generally expresses the spatial influence of the effects produced by a disturbance to a single or number of environmental systems or components.

Table 5: Extent rating categories

1	<u>Site</u> : Effects of an impact are experienced within or in close proximity (100m) to the project site. However, the size of the site needs to be taken into account. A really large site may have to be scored according to category 2 below.
2	<u>Surrounding Area</u> : Effects of an impact experienced beyond the project site but within a 2km radius of the site.
3	<u>Local</u> : Effects of an impact experienced within the local area (e.g. between a 2km to 50km radius of the site).
4	<u>Regional</u> : Effects of an impact experienced within the local region (e.g. between a 50km to 200km radius of the site).
5	<u>Provincial /National</u> : Effects of an impact experienced within a large geographic area beyond a 200km radius of the site.

2.2.3 Impact Duration

The *Duration* of the impact describes the period of time during which the environmental systems or components affected are changed by the impact.

Table 6: Duration rating categories

1	<u>Short-term</u> : The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	<u>Medium-Short</u> : The impact and its effects will continue or last for the period of a relatively long construction period and/or a limited recovery time after this construction period, thereafter it will be entirely negated (2 – 5 years).
3	<u>Medium-term</u> : The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (5 – 15 years).
4	<u>Long-term</u> : The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (15 – 50 years).
5	<u>Permanent</u> : The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).

2.2.4 Impact Probability

The probability of the impact describes the likelihood of the impact actually occurring.

Table 7: Probability rating categories

1	<u>Highly Unlikely/Improbable</u> : The chance of the impact occurring is extremely low (Less than a 20% chance of occurrence).
2	<u>Fairly Unlikely</u> : The chance of the impact occurring is moderately low (Between a 20% and 40% chance of occurrence).
3	<u>Possible</u> : The impact may/could occur and has occurred elsewhere under the same conditions (Between a 40% to 60% chance of occurrence).
4	<u>Probable</u> : The impact will likely occur (Between a 60% to 80% chance of occurrence).
5	<u>Near Definite to Definite</u> : Impact will certainly occur (Greater than an 80% chance of occurrence).

2.2.5 Impact Magnitude Rating

Table 8: Impact magnitude score rating categories

Magnitude Score	Magnitude Rating
5 – 7	Low
8 – 10	Medium-Low
11 – 14	Medium
15 – 17	Medium-High
18 – 20	High

3 ASSESSING IMPACTS ON THE SOCIAL AND SOCIO-ECONOMIC ENVIRONMENT

In contrast to the assessment of the impacts on biophysical systems and components, impacts on socio-economic systems and components are assessed in terms of impacts to the quality of life, health and safety of the people within the social and socio-economic systems affected. Like assessing impact significance for the biophysical environment, the same approach is adopted whereby the value (importance) of a particular social indicator (i.e. quality of life, health and safety) or resource is multiplied by the **magnitude** of the impact on the quality of life, health and safety of the affected people or resource (**Social Value x Impact Magnitude**).

The assessment of impacts on agricultural and cultural resources is also included in this section.

3.1 Social Value

The Social Value expresses the relative importance attributed to an aspect of the social environment by the public, the various levels of government, or any other legislative or regulatory authority. Social Value indicates the public or political desire or will to conserve the integrity or original character of a social aspect. This will is expressed through the legal protection that the social aspect is accorded or by the concern of the local or regional public for the social aspect. The Social Value evaluation is based on information gathered during stakeholder engagement during the public participation process or a social impact assessment.

Agricultural land value has been included due to the recent increased awareness of the loss of agricultural land occurring in South Africa.

Table 9: Social value rating categories

	Social/Socio-Economic Value	Agricultural Land Value
1	<u>Low:</u> Aspect or resource is of little or no concern to the local public and plays a limited role in the social health of communities.	<u>Low:</u> Agricultural land in question is of low agricultural potential as assessed by a qualified agricultural specialist.
2	<u>Medium-Low:</u> Aspect or resource is valued by a small portion of the concerned population and/or plays some role (mildly important) in the social health of communities.	<u>Medium-Low:</u> Agricultural land in question is of medium-low agricultural potential as assessed by a qualified agricultural specialist.
3	<u>Medium:</u> Aspect or resource is valued by an intermediate (moderate) portion of the concerned population and/or plays an intermediate (moderate) role in the social health of communities.	<u>Medium:</u> Agricultural land in question is of medium agricultural potential as assessed by a qualified agricultural specialist.
4	<u>Medium-High:</u> Aspect or resource is valued by a significant portion of the concerned population and/or plays a significant role in the social health of communities (but is not legally protected).	<u>Medium-High:</u> Agricultural land in question is of medium-high agricultural potential as assessed by a qualified agricultural specialist.
5	<u>High:</u> Aspect or resource is the object of legislative and regulatory measures and/or is critical to the health of communities.	<u>High:</u> Agricultural land in question is of high agricultural potential as assessed by a qualified agricultural specialist.

According to these value categories, quality of life is of medium-high value as it plays a significant role in social health. Health and safety are of high value to society as they are integral to social function and the object of legislation. Resources like water sources are valued on a case-by-case basis.

3.2 Impact Magnitude

The impact magnitude score for each identified impact is calculated by the addition of four criteria, namely 'degree of disturbance', 'extent', 'duration' and 'probability'. The range of possible impact magnitude scores is from 4 to 20.

3.2.1 Degree of Disturbance

a. Degree of Disturbance to Social and Socio-Economic Systems/Components:

For the purposes of this study, the 'Degree of Disturbance' to social and socio-economic systems is assessed in terms of the impacts on the quality of life, health and safety of those within the social and economic systems that stand to be affected. This is because it is difficult to value social and socio-economic systems without reference to individual, communal and societal quality of life.

The 'Degree of Disturbance' to social and socio-economic systems and quality of life should be assessed by social scientists and economists. However, the public participation process does present an opportunity for the public to identify and describe impacts on their quality of

life as well as to review the assessment of these impacts in the Environmental Impact Assessment Report.

Quality of life is generally defined as the measure of the social, psychological and physical well being of individuals, communities, cities and societies in terms of the satisfaction and enjoyment derived from life. Quality of life is a complex measure to assess due to the complex ways in which different aspects influence overall quality of life for different individuals.

Thirteen (13) 'determinants of quality of life', based on the major aspects/dimensions of human life, have been identified to make the assessment of changes to quality of life easier and manageable for the purposes of this study. These are (but are not limited to):

1. Access to and quality of housing
2. Access to and quality of basic services e.g. potable water, sanitation, electricity & solid waste
3. Economic well being and employment
4. Quality of employment
5. Physical and psychological health
6. Quality of family and social life
7. Quality of natural environment e.g. air quality
8. Safety and security
9. Quality of recreation and leisure
10. Access to and quality of education, learning and development
11. Access to and quality of social services
12. Community cohesion and involvement
13. Quality of transport and commuting
14. Individual and communal sense of place

It is a lot easier to assess the 'Degree of Disturbance' to one or many of the identified 'determinants of quality of life' above instead of overall quality of life, which is a complex interaction between all these determinants and their relative contribution and importance to overall quality of life.

For the purposes of this study, the 'Degree of Disturbance' to quality of life is calculated as the average of the sum of the 'Degree of Disturbance' to the 'determinants of quality of life' as shown in Table 10 and the relative contribution and importance of the different determinants of quality of life to overall quality of life as shown in Table 11 below.

The 'Degree of Disturbance' to the determinants of quality of life should be assessed using both qualitative and quantitative data from social and economic specialist studies. However, public statistics, the EIA public participation process and individual interviews may also be used if necessary. It is important that reasonable qualitative subjective data is given the same importance as quantitative objective data in the assessment as quantitative objective data often only gives an indication of the ability of people to meet their needs (potential quality of life) instead of giving an indication of whether the needs have actually been met (actual quality of life).

Table 10: Degree of Disturbance rating categories for the 'determinants of quality of life'

Determinants of Quality of Life	
1	<u>Low</u> : Impact alters one or many of the determinants of quality of life in a way that is barely perceptible by those being affected.
2	<u>Medium-Low</u> : Impact results in some (moderately low) deterioration or improvement in one or many of the determinants of quality of life.
3	<u>Medium</u> : Impact results in an intermediate (moderate) deterioration or improvement in one or many of the determinants of quality of life.
4	<u>Medium-High</u> : Impact results in a moderately-high deterioration or improvement in one or many of their determinants of quality of life.
5	<u>High</u> : Impact results in a highly significant (high to very high) deterioration or improvement in one or many of their determinants of quality of life.

The relative contribution and importance of each different ‘determinants of quality of life’ to the overall quality of life of individuals, communities and societies is largely a subjective measure and can only be assessed by collecting qualitative data from the individuals and communities that stand to be affected by the proposed project. However, at a general level, it can be assumed that the greater the value of a specific aspect of social life, the greater that aspect will contribute to overall quality of life. In the absence of qualitative data, quantitative data (e.g. community specific statistics) may be used but this data can only give an indication of the potential quality of life, not the actual quality of life experienced.

Table 11: Relative Contribution and Importance rating categories for the ‘determinants of quality of life’

Relative Contribution/Importance to Quality of Life	
1	<u>Low</u> : The determinant of quality of life is of marginal importance (low contribution) to the overall quality life of those affected.
2	<u>Medium-Low</u> : The determinant of quality of life is of moderately-low importance (moderately-low contribution) to the overall quality life of those affected.
3	<u>Medium</u> : The determinant of quality of life is of intermediate (moderate contribution) importance to the overall quality life of those affected.
4	<u>Medium-High</u> : The determinant of quality of life is of moderately-high importance (moderately-high contribution) to the overall quality life of those affected.
5	<u>High</u> : The determinant of quality of life is of high to critical importance (high to very high contribution) to the overall quality life of those affected.

The ‘Degree of Disturbance’ to health and safety should be assessed using the findings of the health and safety risk assessment studies undertaken for the proposed project and site involved.

Table 12: Degree of Disturbance rating categories for human health and safety

1	<u>Low</u> : Impact results in the marginal increase or decrease in the incidences of near misses and/or has minimal effects on the health of humans who do not require medical treatment.
2	<u>Medium-Low</u> : Impact results in a moderate increase or decrease in the incidences of near misses and/or has some negative or positive effects on the health of humans BUT medical treatment or intervention is not required.
3	<u>Medium</u> : Impact results in the increase or decrease in the incidences of injury to humans requiring some medical treatment and/or some deterioration or improvement in health requiring or reducing the need for medicine/treatment.
4	<u>Medium-High</u> : Impact results in the increase or decrease in the incidences of serious and irreversible injury to humans and/or the deterioration in health of humans requiring hospitalization or the improvement in health reducing the need for hospitalization.
5	<u>High</u> : Impact results in the increase or decrease in the incidences of death to humans.

b. Degree of Disturbance to Agricultural Resources:

The ‘Degree of Disturbance’ to agricultural resources should be assessed using the findings of the agricultural specialist studies undertaken for the proposed project and site involved.

Table 13: Degree of Disturbance rating categories for agricultural resources

1	<u>Low</u> : Impact results in an impact on agricultural land that has a marginal/limited effect on the productivity of the land and/or ability of the farmer(s) to harvest land profitably.
2	<u>Medium-Low</u> : Impact results in an impact on agricultural land that has some effect on the productivity of the land and/or the ability of the farmer(s) to harvest the land profitably.
3	<u>Medium</u> : Impact results in an impact on agricultural land that has an intermediate effect on the productivity of the land and/or the ability of the farmer(s) to harvest the land profitably.
4	<u>Medium-High</u> : Impact results in an impact on agricultural land that has a serious effect on the productivity of the land and/or the ability of the farmer(s) to harvest the land profitably.
5	<u>High</u> : Impact results in an impact on agricultural land that results in the total loss of productivity of the land and/or the ability of the farmer(s) to harvest the land profitably is highly unlikely to impossible. Impact may also result in the permanent loss of agricultural land to another land use making further farming of the land impossible.

c. Degree of Disturbance to Cultural Heritage Resources:

The 'Degree of Disturbance' to cultural heritage resources should be assessed using data from cultural heritage specialist studies undertaken for the proposed site involved.

Table 14: Degree of Disturbance rating categories for cultural heritage resources

1	<u>Low:</u> Impact affects the quality, use and integrity of cultural items in a way that is barely perceptible.
2	<u>Medium-Low:</u> Impact alters the quality, use and integrity of cultural items but the cultural items still continue to function in a slightly modified way and original integrity is maintained.
3	<u>Medium:</u> Impact alters the quality, use and integrity of cultural items but the cultural items still continue to function in a modified way and maintain most of integrity.
4	<u>Medium-High:</u> Impact results in serious damage to cultural items and the quality, use, and integrity of the cultural items temporarily cease.
5	<u>High:</u> Impact results in irreparable damage to cultural items and the quality, use, integrity of the cultural items permanently ceases and is irreversibly impaired.

3.2.2 *Impact Extent*

The Extent of the impact generally expresses the spatial influence of the effects produced by a disturbance to an environmental system or component. However, although this definition is appropriate for an assessment of impacts of a biophysical nature, often the spatial extent in m² or km² is not appropriate for the assessment of impacts of a social and socio-economic nature. Rather the extent of social and socio-economic impacts is often better measured by the number of people that stand to be affected by a proposed activity as shown in Table 15 below.

Table 15: Extent rating categories

<u>B: Socio-economic Impacts</u>	
1	<u>Low:</u> Less than 20 people stand to be affected by the impact.
2	<u>Medium-Low:</u> Between 20 and 50 people stand to be affected by the impact.
3	<u>Medium:</u> Between 50 and 100 people stand to be affected by the impact.
4	<u>Medium-High:</u> Between 100 and 1000 people stand to be affected by the impact.
5	<u>High:</u> Greater than 1000 people stand to be affected by the impact.

With regards to agricultural resources, the extent should be rated according to Table 5 above.

3.2.3 *Impact Duration*

The *Duration* of the impact describes the period of time during which a social/socio-economic system or component is changed by the impact.

Table 16: Duration rating categories

1	<u>Short-term:</u> The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	<u>Medium-Short:</u> The impact and its effects will continue or last for the period of a relatively long construction period and/or a limited recovery time after this construction period, thereafter it will be entirely negated (2 – 5 years).
3	<u>Medium-term:</u> The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (5 – 15 years).
4	<u>Long-term:</u> The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (15 – 50 years).
5	<u>Permanent:</u> The only class of impact that will be non-transitory. Mitigation either by man or

	natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
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3.2.4 Impact Probability

The probability of the impact describes the likelihood of the impact actually occurring.

Table 17: Probability rating categories

1	<u>Unlikely</u> : The chance of the impact occurring is extremely low (Less than a 20% chance of occurrence).
2	<u>Fairly Unlikely</u> : The chance of the impact occurring is moderately low (Between a 20% to 40% chance of occurrence).
3	<u>Possible</u> : The impact may occur (Between a 40% to 60% chance of occurrence).
4	<u>Probable</u> : The impact will likely occur (Between a 60% to 80% chance of occurrence).
5	<u>Definite</u> : Impact will certainly occur (Greater than an 80% chance of occurrence).

3.2.5 Impact Magnitude Rating

Table 18: Impact magnitude score rating categories

Magnitude Score	Magnitude Rating
5 – 7	Low
8 – 10	Medium-Low
11 – 14	Medium
15 – 17	Medium-High
18 – 20	High

4 DETERMINING IMPACT SIGNIFICANCE

The overall significance score for each identified impact is calculated by multiplying **impact magnitude** by **environmental value or social value**. The range of possible impact significance scores is from 4 to 100. Possible significance scores are classified into seven rating classes as shown in Table 19 below.

For the purpose of this assessment, a significance score of 39 to 44 (**medium-low**) is considered '**acceptable but undesirable**' to society. Undesirable impacts are not recommended and should be mitigated, but they may be offset by significant gains (>44+) in other aspects of the environment. A significance score of 45 to 59 (**medium**) and 60 to 72 (**medium-high**) is considered '**generally unacceptable**' to society and only high gains (>72+) in other aspects of the environment can or should offset this impact. However, tradeoffs between 'generally unacceptable' and 'highly beneficial' impacts should be avoided where possible in line with the principles of sustainability. A significance score of over 72 (**high to very high**) is considered '**totally unacceptable**' to society and no gains in other aspects of the environment can or should offset this impact.

It is important to note, however, that this rating system is not prescriptive and its aim is to aid and inform decision making. The method and ratings are there to guide the assessment of significance and all significance ratings will need to be interpreted realistically by the practitioner involved. In the end the decision to authorise this activity is the responsibility of the Department of Agriculture, Environmental Affairs & Rural Development (DAEA&RD).

Table 19: Significance score rating categories

Significance Score	Significance Rating	Significance Interpretation	
		Negative	Positive
4 – 17	Very Low	Acceptable	Limited Importance
18 – 31	Low	Acceptable	Limited Importance
32 – 38	Medium-Low	Acceptable	Mildly Important
39 – 44	Medium-Low	Acceptable But Undesirable	Moderately Important/Beneficial
45 – 59	Medium	Generally Unacceptable	Important/Beneficial
60 – 72	Medium-High	Generally Unacceptable	Very Important/Beneficial
73 – 86	High	Totally Unacceptable	Highly Important/Beneficial
87 – 100	Very High	Totally Unacceptable	Critically Important/Beneficial

5 REFERENCES

Lawrence, D. P. 2007. Impact significance determination - Designing an approach. *Environmental Impact Assessment Review* 27 (2007) 730 - 754.



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Appendix G
**ENVIRONMENTAL IMPACT SIGNIFICANCE
ASSESSMENT**

Reference: Environmental Impact Significance Assessment Method (Ryan Edwards, SiVEST, August 2010), attached below with this document.

ENVIRONMENTAL IMPACT SIGNIFICANCE ASSESSMENT OF THE PREFERRED PIPELINE ROUTE, THE ALTERNATIVE PIPELINE ROUTE ON THE SAME SITE, AND NO-GO OPTION OF THE PROPOSED WATER PIPELINE IN DRIEFONTEIN, LADYSMITH

1. Preferred Alternative S1: The route of the pipe line preferred by the Applicant and the Vegetation and Wetland Specialist is illustrated in the site plan in Appendix A.

The following table evaluates the environmental impacts and mitigation measures associated with the preferred Alternative S1. Please note that the final score provided is for the significance of the impacts pre-mitigation as described in Section 3 of the BA report.

Table 1: Summary of the impacts significance and rating before mitigation associated with the preferred option

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
BIOPHYSICAL IMPACTS											
Wetlands	Loss of wetlands. However the wetlands along the proposed route of Alternative 1 are fairly disturbed.	3	3	3	3	3	3	4	13	39 Medium-Low	Acceptable but Undesirable (-)
Subsoil Seepage	Pollution impacts on the seepage by materials and labour during construction.	3	3	3	3	3	3	4	13	39 Medium-Low	Acceptable but Undesirable (-)
	Possible flow of wet sands flowing from the trench side walls.	3	3	3	3	3	3	4	13	39 Medium-Low	Acceptable but Undesirable (-)
Vegetation	Loss of red data and protected species.	4	3	3.5	3	3	3	3	12	42 Medium-Low	Acceptable (-)but Undesirable
	Introduction of new alien invasive plants from construction activities further displacing indigenous vegetation on site.	4	3	3.5	3	3	4	3	13	45.5 Medium	Generally Unacceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
Biodiversity	Loss of general biodiversity.	4	4	4	3	4	4	3	14	56 Medium	Generally Unacceptable (-)
Impact on Fauna	Construction activities can cause harm to game and livestock.	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)
Soil and Water Pollution	Construction activities can result in soil and water pollution.	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)
Infrastructure Provision	Presence of seepage during construction may make the trenching process and bringing construction vehicles onto the site challenging.	3	4	3.5	3	1	3	3	10	35 Medium-Low	Acceptable (-)
	Seasonal weather has implications on the control of storm water on site. Choice of season for commencement of construction is crucial.	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)
SOCIAL AND SOCIO—ECONOMIC IMPACTS											
Improved Infrastructure	Potable water will be supplied to the Driefontein Area. This will improve the basic services provided to the area, and quality of life for the community.	5	5	5	4	3	4	4	15	75 High	Highly Important/Beneficial (+)
Private Landowners	Construction and operational activities can impact negatively on landowners.	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
Air Pollution	Sources of air pollution include dust generated by the stockpiling of soils; dust from exposed/cleared surfaces and; construction vehicles.	3	4	3.5	3	2	2	3	10	35 Medium-Low	Acceptable (-)
Noise Pollution	Noise generated by delivery vehicles, earth moving machinery, piling works and the workforce have the potential to impact negatively on people living along the property boundaries and in relatively close proximity to the proposed development.	-	4	-	3	2	2	3	10	40 Medium-Low	Acceptable but Undesirable(-)
Health and Safety	Construction activities are by their very nature dangerous. <ul style="list-style-type: none"> ▪ Open fires could result in accidents. ▪ Poor waste management practices and unhygienic conditions at temporary ablution facilities could cause diseases. ▪ Standing water due to inadequate storm 	4	5	4.5	4	2	3	3	12	54 Medium	Generally Unacceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	water drainage systems and waste management practices; pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies and snails.											
Cultural Resources	Damage to cultural sites from construction activities.	4	4	4	4	3	4	3	14	56 Medium	Generally Unacceptable (-)	
Employment Generation	The development will provide employment opportunities for local people during construction.	-	4	-	2	1	1	5	9	36 Medium-Low	Mildly Important (+)	
	Expectations regarding new employment especially among the unemployed individuals in the area.	-	3	-	2	2	2	4	10	30 Low	Limited Importance (+)	
	The training of unskilled or previously unemployed persons will add to the skills base of the area.	-	4	-	2	2	3	3	10	40 Medium-Low	Mildly Important (+)	
CUMULATIVE IMPACTS												
Biodiversity	The disturbance or loss vegetation species can have an impact on the overall biodiversity of the area. However as the preferred route avoids sensitive area's	3	4	3.5	3	2	3	3	11	38.5 Medium-Low	Acceptable but Undesirable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	it is unlikely that the impact will be significant.											
Disposal at Landfill	Disposal of construction and decommission waste at a waste disposal site has implications on its capacity to hold additional waste to be produced by the proposed activity. The activity is however low scale and large amounts of waste is expected to be produced.	4	4	4	3	3	3	3	12	48 Medium	Generally Unacceptable (-)	

Table 2: Summary of the impacts significance and rating post mitigation associated with the preferred option

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
BIOPHYSICAL IMPACTS											
Wetlands	Loss of wetlands. However the wetlands along the proposed route of Alternative 1	3	3	3	2	1	2	3	8	24 Low	Acceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	are fairly disturbed.											
Subsoil Seepage	Pollution impacts on the seepage by materials and labour during construction.	3	3	3	2	2	2	2	8	24 Low	Acceptable (-)	
	Possible flow of wet sands flowing from the trench side walls.	3	3	3	1	1	2	2	6	18 Low	Acceptable (-)	
Vegetation	Loss of red data and protected species.	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)	
	Introduction of new alien invasive plants from construction activities further displacing indigenous vegetation on site.	3	3	3	2	1	3	2	8	24 Low	Acceptable (-)	
Biodiversity	Loss of general biodiversity.	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)	
Impact on Fauna	Construction activities can cause harm to game and livestock.	3	3	3	2	1	3	2	8	24 Low	Acceptable (-)	
Soil and Water Pollution	Construction activities can result in soil and water pollution.	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)	
Infrastructure Provision	Presence of seepage during construction may make the trenching process and bringing construction vehicles onto the site challenging.	2	3	2.5	2	1	2	2	7	17.5 Low	Acceptable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
	Seasonal weather has implications on the control of storm water on site. Choice of season for commencement of construction is crucial.	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)
SOCIAL AND SOCIO—ECONOMIC IMPACTS											
Improved Infrastructure	Potable water will be supplied to the Driefontein Area. This will improve the basic services provided to the area, and quality of life for the community.	5	5	5	4	3	4	4	15	75 High	Highly Important/Beneficial (+)
Private Landowners	Construction and operational activities can impact negatively on landowners.	2	3	2.5	2	1	2	2	7	17.5 Low	Acceptable (-)
Air Pollution	Sources of air pollution include dust generated by the stockpiling of soils; dust from exposed/cleared surfaces and; construction vehicles.	2	3	2.5	2	1	2	2	7	17.5 Low	Acceptable (-)
Noise Pollution	Noise generated by delivery vehicles, earth moving machinery, piling works and the workforce have the potential to impact negatively on people living along the property boundaries and in relatively close	-	3	-	1	1	1	2	5	15 Very Low	Acceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	proximity to the proposed development.											
Health and Safety	<p>Construction activities are by their very nature dangerous.</p> <ul style="list-style-type: none"> ▪ Open fires could result in accidents. ▪ Poor waste management practices and unhygienic conditions at temporary ablution facilities could cause diseases. ▪ Standing water due to inadequate storm water drainage systems and waste management practices; pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies and snails. 	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)	
Cultural Resources	Damage to cultural resources.	-	3	-	2	2	2	2	6	18 Low	Acceptable(-)	
Employment Generation	The development will provide employment opportunities for local people during construction.	-	4	-	2	1	1	5	9	36 Low	Marginally Positive (+)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
	Expectations regarding new employment especially among the unemployed individuals in the area.	-	3	-	1	2	1	4	8	24 Low	Marginally Positive (+)
	The training of unskilled or previously unemployed persons will add to the skills base of the area.	-	3	-	1	1	2	4	8	24 Low	Marginally Positive (+)
CUMULATIVE IMPACTS											
Biodiversity	The disturbance or loss vegetation species can have an impact on the overall biodiversity of the area. However as preferred route will avoid sensitive areas it is unlikely that the impact will be significant.	3	3	3	2	2	2	2	8	21 Low	Acceptable (-)
Disposal at Landfill	Disposal of construction and decommission waste at a waste disposal site has implications on its capacity to hold additional waste to be produced by the proposed activity. The activity is however low scale and large amounts of waste is expected to be produced.	3	3	3	2	1	2	2	7	21 Very Low	Acceptable (-)

2. Alternative S2: Alternative pipe line Route Identified prior to Assessment

The following table evaluates the environmental impacts and mitigation measures associated with the Alternative S2. Please note that the final score provided is for the significance of the impacts post-mitigation as described in Section 3 of the BA report.

Table 3: Summary of the impacts significance and their rating before mitigation in comparison with the preferred alternative above

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
BIOPHYSICAL IMPACTS											
Wetlands	Loss of wetlands	4	4	4	4	3	3	4	14	56 Medium	Generally Unacceptable (-)
Subsoil Seepage	Pollution impacts on the seepage by materials and labour during construction.	4	4	4	3	3	3	3	12	48 Medium	Generally Unacceptable (-)
	Possible flow of wet sands flowing from the trench side walls.	3	3	3	3	3	3	4	13	39 Medium-Low	Acceptable but Undesirable (-)
Vegetation	Loss of red data and protected species.	4	4	4	3	3	3	3	12	48 Medium	Generally Unacceptable (-)
	Introduction of new alien invasive plants from construction activities further displacing indigenous vegetation on site.	4	3	3.5	3	3	4	3	13	45.5 Medium	Generally Unacceptable (-)
Biodiversity	Loss of general biodiversity. As the	4	4	4	3	4	4	3	14	56 Medium	Generally Unacceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	route will cross through some highly sensitive areas it is likely that a number of protected species will be lost.)
Impact on Fauna	Construction activities can cause harm to game and livestock.	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)	
Soil and Water Pollution	Construction activities can result in soil and water pollution.	3	4	3.5	3	1	3	3	10	35 Medium-Low	Acceptable (-)	
Infrastructure Provision	Presence of seepage during construction may make the trenching process and bringing construction vehicles onto the site challenging.	3	4	3.5	3	1	3	3	10	35 Medium-Low	Acceptable (-)	
	Seasonal weather has implications on the control of storm water on site. Choice of season for commencement of construction is crucial.	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)	
SOCIAL AND SOCIO—ECONOMIC IMPACTS												
Improved Infrastructure	Potable water will be supplied to the Driefontein Area. This will improve the basic services provided to the area, and quality of life for the community.	5	5	5	4	3	4	4	15	75 High	Highly Important/Beneficial (+)	
Private Landowners	Construction and operational activities	4	5	4.5	3	2	3	2	10	45 Medium	Generally Unacceptable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	can impact negatively on landowners.)
Air Pollution	Sources of air pollution include dust generated by the stockpiling of soils; dust from exposed/cleared surfaces and; construction vehicles.	3	4	3.5	3	2	2	3	10	35 Medium-Low	Acceptable (-)	
Noise Pollution	Noise generated by delivery vehicles, earth moving machinery, piling works and the workforce have the potential to impact negatively on people living along the property boundaries and in relatively close proximity to the proposed development.	-	4	-	3	2	2	3	10	40 Medium-Low	Acceptable but Undesirable(-)	
Health and Safety	Construction activities are by their very nature dangerous. <ul style="list-style-type: none"> ▪ Open fires could result in accidents. ▪ Poor waste management practices and unhygienic conditions at temporary ablution facilities could cause diseases. 	4	5	4.5	4	2	3	3	12	54 Medium	Generally Unacceptable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	<ul style="list-style-type: none"> Standing water due to inadequate storm water drainage systems and waste management practices; pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies and snails. 											
Cultural Resources	Damage to cultural resources.	-	4	-	3	2	2	3	10	40 Medium-Low	Acceptable but Undesirable(-)	
Employment Generation	The development will provide employment opportunities for local people during construction.	-	4	-	2	1	1	5	9	36 Medium-Low	Mildly Important (+)	
	Expectations regarding new employment especially among the unemployed individuals in the area.	-	3	-	2	2	2	4	10	30 Low	Limited Importance (+)	
	The training of unskilled or previously unemployed persons will add to the skills base of the area.	-	4	-	2	2	3	3	10	40 Medium-Low	Mildly Important (+)	
CUMULATIVE IMPACTS												
Biodiversity	The disturbance or loss of vegetation species can have an impact on the overall biodiversity of the area. As the route will cross	4	4	4	3	3	3	3	12	48 Medium	Generally Unacceptable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE PRE MITIGATION					IMPACT SIGNIFICANCE PRE MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	through some highly sensitive areas it is likely that a number of protected species will be lost.											
Disposal at Landfill	Disposal of construction and decommission waste at a waste disposal site has implications on its capacity to hold additional waste to be produced by the proposed activity. The activity is however low scale and large amounts of waste is expected to be produced.	4	4	4	3	3	3	3	12	48 Medium	Generally Unacceptable (-)	

Table 4: Summary of the impacts significance and their rating post mitigation in comparison with the preferred alternative above.

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
BIOPHYSICAL IMPACTS											
Wetlands	Loss of Wetlands	4	4	4	3	3	3	3	12	48 Medium	Generally Unacceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
Subsoil Seepage	Pollution impacts on the seepage by materials and labour during construction.	3	3	3	2	2	2	2	8	24 Low	Acceptable (-)
	Possible flow of wet sands flowing from the trench side walls.	3	3	3	1	1	2	2	6	18 Low	Acceptable (-)
Vegetation	Loss of Red Data and protected species.	3	3	3	2	1	3	2	8	24 Low	Acceptable (-)
	Introduction of new alien invasive plants from construction activities further displacing indigenous vegetation on site.	3	3	3	2	1	3	2	8	24 Low	Acceptable (-)
Biodiversity	Loss of general biodiversity. As the route will cross through some highly sensitive areas it is likely that a number of protected species will be lost.	3	4	3.5	3	2	2	3	10	35 Medium-Low	Acceptable (-)
Impact on Fauna	Construction activities can cause harm to game and livestock.	3	3	3	2	1	3	2	8	24 Low	Acceptable (-)
Soil and Water Pollution	Construction activities can result in soil and water pollution.	3	3	3	2	1	3	2	8	24 Low	Acceptable (-)
Infrastructure	Presence of seepage during construction	2	3	2.5	2	1	2	2	7	17.5 Low	Acceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
Provision	may make the trenching process and bringing construction vehicles onto the site challenging.											
	Seasonal weather has implications on the control of storm water on site. Choice of season for commencement of construction is crucial.	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)	
SOCIAL AND SOCIO—ECONOMIC IMPACTS												
Improved Infrastructure	Potable water will be supplied to the Driefontein Area. This will improve the basic services provided to the area, and quality of life for the community.	5	5	5	4	3	4	4	15	75 High	Highly Important/Beneficial (+)	
Private Landowners	Construction and operational activities can impact negatively on landowners.	2	3	2.5	2	1	2	2	7	17.5 Low	Acceptable (-)	
Air Pollution	Sources of air pollution include dust generated by the stockpiling of soils; dust from exposed/cleared surfaces and; construction vehicles.	2	3	2.5	2	1	2	2	7	17.5 Low	Acceptable (-)	
Noise Pollution	Noise generated by delivery vehicles, earth moving machinery, piling works and the workforce have the	-	3	-	1	1	1	2	5	15 Very Low	Acceptable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)		
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability	
	potential to impact negatively on people living along the property boundaries and in relatively close proximity to the proposed development.											
Health and Safety	<p>Construction activities are by their very nature dangerous.</p> <ul style="list-style-type: none"> ▪ Open fires could result in accidents. ▪ Poor waste management practices and unhygienic conditions at temporary ablation facilities could cause diseases. ▪ Standing water due to inadequate storm water drainage systems and waste management practices; pose a health hazard by providing breeding grounds for disease vectors such as mosquitoes, flies and snails. 	3	3	3	2	1	2	2	7	21 Low	Acceptable (-)	
Cultural Resources	Damage to cultural resources.	-	4	-	2	1	1	5	9	36 Low	Acceptable (-)	

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
Employment Generation	The development will provide employment opportunities for local people during construction.	-	4	-	2	1	1	5	9	36 Low	Marginally Positive (+)
	Expectations regarding new employment especially among the unemployed individuals in the area.	-	3	-	1	2	1	4	8	24 Low	Marginally Positive (+)
	The training of unskilled or previously unemployed persons will add to the skills base of the area.	-	3	-	1	1	2	4	8	24 Low	Marginally Positive (+)
CUMULATIVE IMPACTS											
Biodiversity	The disturbance or loss vegetation species can have an impact on the overall biodiversity of the area. As the route will cross through some highly sensitive areas it is likely that a number of protected species will be lost.	3	4	3.5	3	2	2	3	10	35 Medium-Low	Acceptable (-)
Disposal at Landfill	Disposal of construction and decommission waste at a waste disposal site has implications on its capacity to hold additional waste to be produced by the proposed activity. The activity is however low	3	3	3	2	1	2	2	7	21 Very Low	Acceptable (-)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS (Pre Mitigation)	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE POST MITIGATION					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score and Rating	Acceptability
	scale and large amounts of waste is expected to be produced.										

Table 5: Summary of the significance of impacts of not development (No-go Option) and the significance rating on assumption that no interventions will be forthcoming to improve/change the status quo.

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASEPECT			IMPACT MAGNITUDE					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score	Acceptability
Wetland Areas	The wetlands on the site will not be impacted on. In addition, there will be no potential for soil erosion to occur from construction activities. However, if the preferred route is chosen very few sensitive areas should be affected. By avoiding sensitive areas and ensuring the site is rehabilitated correctly after construction is complete the impact should be very low.	3	3	3	3	1	3	3	10	30 Low	Limited Importance (+)
Vegetation	The vegetation on the	3	3	3	4	1	4	3	12	36	Mildly Important

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASEPECT			IMPACT MAGNITUDE					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score	Acceptability
			site will not be impacted on and no vegetation species will be lost. In addition, there will be no potential for soil erosion to occur from construction activities and the possibility for alien vegetation encroachment will be reduced. However, if the preferred route is chosen very few sensitive areas should be affected. By avoiding sensitive areas and ensuring the site is rehabilitated correctly after construction is complete the impact should be very low.								
No improved infrastructure	The current infrastructure for water supply will remain as is. Hence the need to increase the number of people who receive potable water in the Driefontein area will not be achieved.	5	5	4.5	4	2	5	5	16	72 Medium-High	Totally Unacceptable (-)
CUMULATIVE IMPACTS											
Impact on Biodiversity	The biodiversity status quo of the site will remain as is and no species will be lost. However, as the site in	3	5	4	1	2	4	1	8	32 Medium-Low	Mildly Important (+)

ENVIRONMENTAL COMPONENT /ASPECT	IDENTIFIED IMPACTS	ENVIRONMENTAL/SOCIAL VALUE OF THE COMPONENT/ ASPECT			IMPACT MAGNITUDE					IMPACT SIGNIFICANCE POST MITIGATION (Value x Magnitude)	
		Ecosystem goods and services Value	Conservation/ Social Value	Average Value	Disturbance Value	Impact Extent	Impact Duration	Impact Probability	SUM	Score	Acceptability

general is already disturbed and impacted on daily by human activities, it is highly unlikely that the current environment will recover to a degree where it can sustain a healthy population of diverse species without serious rehabilitation and intervention. Areas of high sensitivity will be avoided by the preferred route. In addition, with mitigation measures, the short term construction activities are unlikely to have a high impact on the biodiversity of the site.