
Van Zyl Environmental Consultants cc

2009/073037/23



**Environmental Impact Assessment Process
Final Basic Assessment Report
&
Environmental Management Programme
05/2012**

**The Construction and Operation of a Bulk Water Supply Pipeline and Reservoir
and**

**Associated Infrastructure
ZF Mgcawu District Municipality
//Khara Hais Local Municipality
Northern Cape Province**

September 2014

NC/BA/SIY/KHA/UPI3/2012

NCP/EIA/0000171/2012

Applicant:

DEO GLORIA OLIVE ESTATE (PTY) LTD



Northern Cape Province

**DEPARTMENT OF
ENVIRONMENT & NATURE
CONSERVATION**



**Porofensi Ya Kapa Bokone
LEFAPHA LA BOJANALA
TIKOLOGO LE
SHOMARELO**

BASIC ASSESSMENT REPORT

Project applicant:	Deo Gloria Olive Estate		
Business reg. no./ID. no.:	1998/010126/07		
Contact person:	Mr. J.F.H. van der Westhuizen		
Postal address:	P.O. Box 95207, Waterkloof, 0145		
Telephone:	012 664 0052/61	Cell:	083 272 5153
E-mail:	kobus@proteagroup.co.za	Fax:	012 664 5193

Prepared by:

Environmental Assessment Practitioner/Firm:	Van Zyl Environmental Consultants cc		
Business reg. no./ID. no.:	2009/073037/23		
Contact person:	Irmé van Zyl		
Postal address:	P.O. Box 567, Upington, 8800		
Telephone:	054 338 0722	Cell:	072 222 6194
E-mail:	ibvanzyl@telkomsa.net	Fax:	086 624 0306

(For official use only)

File Reference Number:

Application Number:

Date Received:

BASIC ASSESSMENT REPORT

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

PROJECT DETAILS

FILE NAME: DEO GLORIA PIPELINE
FILE NUMBER: 05/2012
DENC REFERENCE: NC/BA/SIY/KHA/UPI3/2012
NEAS REFERENCE: NCP/EIA/0000171/2012

REPORT: FINAL BASIC ENVIRONMENTAL IMPACT ASSESSMENT REPORT &
ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR: PROPOSED BUILDING AND OPERATION OF A BULK WATER SUPPLY PIPELINE, RESERVOIR & ASSOCIATED
INFRASTRUCTURE NEAR UPINGTON

LOCATION: PARCEL 206 AT VAALKOPPIES SETTLEMENT,
PORTION 68 OF THE FARM VAALKOPPIES NO. 40,
PORTION 78 OF THE FARM 40 (UNDERNEATH THE N10 NATIONAL ROUTE), AND
REMAINDER OF THE FARM VAALKOPPIES NO. 40

FARM PORTIONS: SURVEYOR GENERAL CODE:

Parcel 206, Vaalkoppies Settlement:	C03600190000020600000
Portion 68 of the Farm Vaalkoppies No. 40:	C03600000000004000068
Portion 78 of the Farm Vaalkoppies No. 40	C03600000000004000078 (to be registered)
Note: This is a portion that is in the process to be registered by SANRAL for the N10 road reserve	
Remaining Extent of the Farm Vaalkoppies No. 40:	C03600000000004000000

Note: Parcel 175, Vaalkoppies Settlement has been removed as the pipeline will not cross this property any longer but will follow the boundary within the adjoining Parcel 206. See Appendix A2.

DATED: September 2014

WRITTEN BY: VAN ZYL ENVIRONMENTAL CONSULTANTS CC

Consultant: I.B. Van Zyl
Mobile: 072 222 6194
Telephone: 054 338 0722
Facsimile: 086 624 0306
Email: ibvanzyl@telkomsa.net
Address: P.O. Box 567, UPINGTON, 8800

Sub-Consultants: Ekotrust CC (Ecological Study) – Dr Noel van Rooyen
Dr. Peter Nilssen (Archaeological Impact Assessment)
Dr. John Almond (Palaeontological Exemption Letter)
Terragis (GIS Mapping) – Lourens van Zyl

APPOINTED BY: DEO GLORIA OLIVE ESTATE (PTY) LTD

Contact Person: J.F.H. van der Westhuizen
Mobile: 083 272 5153
Telephone: 012 664 0052/61
Facsimile: 012 664 5193
Email: kobus@proteagroup.co.za
Physical Address: 166 Lenchenstraat (Noord), Lyttelton, Centurion, 0157
Physical Address: P.O. Box 95207, Waterkloof, 0145

Should this report be used as a reference, it should be cited as follows:

Van Zyl Environmental Consultants, 2014. Final Basic Environmental Impact Assessment Report for the Building and Operation of a Bulk Water Supply Pipeline & Reservoir near Upington, Northern Cape

Copyright

This final basic environmental impact assessment report has been produced for Deo Gloria Olive Estate (Pty) Ltd. The intellectual property contained in this report remains vested with Van Zyl Environmental Consultants cc. No part of the report may be reproduced in any manner without written permission from Van Zyl Environmental Consultants cc or Deo Gloria Olive Estate (Pty) Ltd.

PUBLIC PARTICIPATION PROCESS

INVITATION TO COMMENT ON THE FINAL BASIC ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The final basic environmental impact assessment report may be requested from the EAP below.

The availability of the report will be communicated to all registered I&APs. They will be allowed a review period of 21 days from **27 October 2014 to 17 November 2014 (excluding public holidays)**.

Please submit your written comments, including a declaration of any business, financial, personal or other interest you may have in the approval or rejection of this application, via facsimile, email or post to:

FOR ATTENTION:	I.B. van Zyl Environmental Assessment Practitioner Van Zyl Environmental Consultants	Mr. J.J. Mutyorauta Director: Environmental Quality Management Services, Northern Cape Department of Environment and Nature Conservation
Mobile:	072 222 6194	
Telephone:	054 338 0722	053 807 7430
Facsimile:	086 624 0306	053 831 3530
Email:	ibvanzyl@telkomsa.net	
Postal Address:	P.O. Box 567 UPINGTON 8800	Private Bag X 6102 KIMBERLEY 8300
Street Address		Sasko Building Long Street 90 Kimberley 8301

Always cite the reference number in order to ensure that your comments are allocated correctly.

TABLE OF CONTENTS

DENC Application Form Information	i
DENC BAR in terms of NEMA Requirements	ii
Project Details	iii
Invitation to Comment on the Final Basic Environmental Impact Assessment Report	iv
Table of Contents	v
Glossary of Terms	viii
Abbreviations	ix
1. SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT	1
1.1 Background to the Study	1
1.2 Legal Requirements	1
1.2.1 Other Applicable Legislation and Policies	3
1.3 Terms of Reference	6
1.4 Details of the Environmental Assessment Practitioner and Expertise to Conduct the EIA	6
2. APPROACH TO THE ENVIRONMENTAL STUDY	7
2.1 Methodology of the Environmental Impact Assessment	7
2.2 Specialist Studies	7
SECTION A: ACTIVITY INFORMATION	9
1. ACTIVITY DESCRIPTION	9
1.1 The Site	9
1.2 Project description	9
1.3 Construction Phase Activities	9
1.3.1 Surveys	10
1.3.2 Construction of Access and Service Roads	10
1.3.3 Site Preparation and Construction Laydown Areas	10
1.3.4 Transportation of Equipment and Materials to Site	10
1.3.5 Ancillary Infrastructure	10
1.4 Decommissioning of Construction Area after Completion of Construction Work	11
1.5 Operational & Maintenance Phase Activities	11
1.6 Decommissioning Phase Activities	11
2. FEASIBLE AND REASONABLE ALTERNATIVES	12
2.1 Pipeline Location	12
2.2 Water Supply for Agricultural Activities	13
2.3 Power Technology	13
2.4 Trenches	14
2.5 Timing	14
2.6 Resources	14
2.7 Technical Competence	14
2.8 Demand	15
2.9 Operational & Maintenance Phase	15
2.10 'Do Nothing' alternative	15
3. ACTIVITY POSITION	15
4. PHYSICAL SIZE OF THE ACTIVITY	16
5. SITE ACCESS	16
6. SITE OR ROUTE PLAN	16
7. SITE PHOTOGRAPHS	17
8. FACILITY ILLUSTRATION	17
9. ACTIVITY MOTIVATION	17
9(a) Socio Economic Value of the Activity	17
9(b) Need and Desirability of the Activity	17
10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES	19

11.	WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT	20
11(a)	Solid Waste Management	20
11(b)	Liquid Effluent	20
11(c)	Emissions into the Atmosphere	20
11(d)	Generation of Noise	21
12.	WATER USE	21
13.	ENERGY EFFICIENCY	21
SECTION B: SITE/AREA/PROPERTY DESCRIPTION		22
1.	GRADIENT OF THE SITE	23
2.	LOCATION IN LANDSCAPE	23
3.	GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE	23
4.	GROUND COVER	24
5.	LAND USE CHARACTER OF SURROUNDING AREA	24
6.	CULTURAL/HISTORICAL FEATURES	25
SECTION C: PUBLIC PARTICIPATION		26
1.	ADVERTISEMENT	26
2.	CONTENT OF ADVERTISEMENTS AND NOTICES	26
3.	PLACEMENT OF ADVERTISEMENTS AND NOTICES	26
4.	DETERMINATION OF APPROPRIATE MEASURES	27
5.	COMMENTS AND RESPONSE REPORT	27
6.	AUTHORITY PARTICIPATION	27
7.	CONSULTATION WITH OTHER STAKEHOLDERS	28
SECTION D: IMPACT ASSESSMENT		31
1.	ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES	31
2.	IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES	32
2.1	Alternative (preferred alternative) Planning and Design Phase	32
2.2	Alternative (preferred alternative) Construction Phase	33
2.2.1	Water Resources	34
2.2.2	Soil and Agriculture	35
2.2.3	Ecology and Biodiversity	37
2.2.4	Social Environment	40
2.2.5	Visual and Aesthetical Impacts	41
2.2.6	Economic Impacts	42
2.2.7	Noise	42
2.2.8	Air Quality	43
2.2.9	Heritage Resources	43
2.2.10	Impacts on Ecotourism	44
2.3	Alternative (preferred alternative) Decommissioning & Rehabilitation of Construction Areas After Completion of Construction Work	44
2.4	Alternative (preferred alternative) Operational & Maintenance Phase of Infrastructure & Services	45
2.4.1	Water Resources	45
2.4.2	Soil and Agriculture	46
2.4.3	Ecology and Biodiversity	46
2.4.4	Socio Economic Environment	46
2.5	Alternative (preferred alternative) Decommissioning & Closure Phase	47
2.6	Alternative (preferred alternative) "No-Go" Alternative	47
2.6.1	Water Resources	47
2.6.2	Socio Economic Environment	47
3.	ENVIRONMENTAL IMPACT STATEMENT	48
3.1	Potentially Significant Issues Related to the Construction & Operation Phase after Mitigation	48
3.2	No-Go Alternative	48

SECTION E: RECOMMENDATION OF PRACTITIONER	49
REFERENCES	50
FIGURES	
Figure 1: Location Map	8
ADDENDUMS:	
Addendum 1: Pipeline 250 m points of Alternatives	51
SECTION F: APPENDICES	52
Appendix A: Site plan(s)	
Appendix A1: Locality Map	
Appendix A2: Cadastral Map	
Appendix A3: Regional Land Types Map	
Appendix A4: Regional Vegetation Map	
Appendix A5: Climate	
Appendix B: Photographs	
Appendix C: Facility illustration(s)	
C1: Status Quo	
C2: Access Routes (Google Earth)	
Appendix D: Specialist reports (including terms of reference)	
Appendix D1a: ToR Ecology	
Appendix D1b: Ecology Report	
Appendix D2a: ToR AIA	
Appendix D2b: Archaeology Report	
Appendix D2c: Supporting Letter	
Appendix D3a: ToR Palaeontology Studies	
Appendix D3b: Palaeontology LOE	
Appendix E: Comments and Responses Report	
Appendix F: Environmental Management Programme (EMP)	
Appendix G: Other information	
Appendix G1: Communication from DENC	
Appendix G2a: Public Participation Process Phase 1 prior to Application for Authorisation	
G2b: Public Participation Process Phase 2: Notifications	
G2b1: Distribution of Notification Letters to identified I&APs, stakeholders and government	
G2b2: Response Form	
G2b3: Background Information Document (BID)	
G2b4: Proof of Email Notifications	
G2b5: Proof of Distribution of Notification Letters, Response Form, and BID	
G2b6: Comments Received & Responses	
G2b7: Advertisement (Gemsbok) dated 2 November 2012	
G2b8: On Site and other Notices	
G2b9: List of Stakeholders and Registered I&APs	
G2c: PPP Phase 3 Proof Notices to Registered I&APs and Comments Received	
Appendix G3a&b: Water Use Licences (DWA)	
Appendix G3c: Environmental Authorisation dated 15 December 2010	
Appendix G3d&e: Ploughing Certificates	
Appendix G4: Title Deed Information	
Appendix G5: Significance Rating Scale Impact Matrix	
Appendix G6: Van Zyl Environmental Consultants Company Profile etc.	

GLOSSARY OF TERMS

Alternatives:	different options with regard to site or location, type of activity, design or layout, technology, and operational aspects of the activity that could be considered in order to meet the general purpose and requirements of the activity
Aquifer:	a geological formation of porous rock, such as sandstone, that has the ability to store water and may yield water to wells and springs
Cumulative Impact	an impact that is not necessarily significant in itself, but which may become significant when considered in addition to the existing and potential impacts of other similar or diverse activities in the area
Direct Impact	a generally obvious and quantifiable impact, usually associated with the construction, operation or maintenance of an activity, which is caused directly by the activity and generally occurs at the time and place of the activity
'Do-Nothing' Alternative	the option of not undertaking the proposed activity or any of its alternatives, which provides the baseline against which the impacts of other alternatives should be compared
Endangered Species	taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating, including taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction
Endemic	having a distribution restricted to a particular area or region
Environment	all external conditions and factors, living and non-living (chemicals and energy), that affect an organism or other specified system during its lifetime (Miller, 2005: G6)
Environmental Impact Assessment (EIA)	a study of the environmental consequences of a proposed course of action, usually conducted in order to provide information for the consideration of an application for environmental authorisation as defined in NEMA
Environmental Impact	an environmental change caused by a human activity
Environmental Management	addressing environmental concerns in all stages of development, in order to ensure that the development is sustainable and does not exceed the carrying capacity of the environment.
Environmental Management Programme	an operational plan that organises and coordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation
Homogeneous	of the same nature; uniform
Hydrology	the science encompassing the behaviour of atmospheric, surface and ground water
Indigenous	having occurred naturally in the area in question before 1800
Indirect Impact	an impact that occurs at a different time or place to the activity that causes it
Interested and Affected Party (I&AP)	a person, group or organisation interested in or affected by a proposed activity, and any organ of state that may have jurisdiction over any aspect of the activity
Laydown area	an area that has been cleared for the temporary storage of equipment and supplies. Laydown areas are usually covered with rock and/or gravel to ensure accessibility and safe manoeuvrability for transport and off-loading of vehicles
Parameter	a set of measurable factors such as temperature, pressure and pH that define a system and determine its behaviour
Public Participation Process	a process of involving the public in order to identify needs, address concerns, choose options, plan and monitor in terms of a proposed project, programme or development
Red Data Species	a species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or the South African Red Data List
Significant Impact	an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment
Topography	graphic representation of the surface features of a place or region on a map, indicating their relative positions and elevations

ABBREVIATIONS

BEE	Black Economic Empowerment
BID	Background Information Document
CLO	Community Liaison Officer
CO₂	Carbon dioxide
DENC	Department of Environment and Nature Conservation
DEA	Department of Environmental Affairs
DM	District Municipality
DoE	Department of Energy
DR&PW	Provincial Department of Roads and Public Works, Northern Cape
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Programme
GDP	Gross Domestic Product
GG	Government Gazette
GIS	Geographical Information Systems
GN	Government Notice
GPS	Global Positioning System
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
LED	Local Economic Development
MAR	Mean Annual Rainfall
NEMA	National Environmental Management Act
POL	Petrochemicals, Oils and Lubricants
RoD	Record of Decision
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
ToR	Terms of Reference
WMA	Water Management Area

1. SUMMARY AND OVERVIEW OF THE PROPOSED PROJECT

Deo Gloria Olive Estate (Pty) Ltd proposes the construction of a bulk water supply line to supply it with the required amount of water for intensive agricultural activities (Figure 1):

- A pump station with pump to draw water directly from the Orange River.
- A Booster station.
- A pump and filter station.
- A pipeline of approximately 4 km in length that would possibly consist of one 800mm pipe or two 500 mm pipes with valves.
- 65 500m³ reservoir(s) and/or settling dam(s) with the height less than 5 m from the outside toe to the highest part of the dam wall. (The activity R 544 no. 12 has been added to the application and the public has been informed regarding it when the draft BAR was made available for comment.). The dam will be lined with HDPE liner and stone rip rap on outside (wind erosion).

1.1 Background to the Study

Deo Gloria Olive Estate is a company expanding its agricultural activities near Upington and has obtained Water Use Licences (Appendix G3a, G3b) to withdraw water directly from the Orange River and from the canal to supply it with the required amount of water for agricultural purposes on portion 67 and the Remaining Extent of the Farm Vaalkoppies No. 40.

Previously an Environmental Impact Assessment was authorised for the change in land use in terms of the then still applicable Environment Conservation Act, 1989 (Act No. 73 of 1989) for the planting of olive trees and vineyards on Portion 67 and the Remaining Extent of the Farm Vaalkoppies No. 40 (Appendix G3c). Ploughing certificates were also issued for this purpose (Appendix G3d, G3e).

The applicant is of the intention to build and operate the mentioned pipeline system from the Orange River to farm Vaalkoppies No. 40 to pump the water from the river to the farm in order to propagate the trees and vineyards as described above.

1.2 Legal Requirements

Environmental Impact Assessments, when conducted with the purpose of obtaining Environmental Authorisation for a development activity, are regulated. South African Environmental Law is grounded in the Constitution of South Africa (Act No. 108 of 1996). The Bill of Rights states that everyone has a right to a non-threatening environment and requires that reasonable measures are applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development.

The National Environmental Management Act (NEMA, Act 107 of 1998) expands on and specifies these principles. The act states that the principles of Integrated Environmental Management (IEM) should be adhered to in order to ensure sustainable development. Accountability to the various parties that may be interested in and/or affected by the proposed development forms an integral part of the IEM procedure. This procedure requires public participation, starting during the application phase, when the application for authorisation is submitted to the competent authority and continued through the environmental impact assessment decision making phases. The purpose of the IEM procedure is to ensure that the environmental consequences of a development proposal are understood and adequately considered and that negative aspects are resolved or mitigated and positive aspects enhanced.

Government Notices R 543 to 546 Government Gazette No. 33306, dated 18 June 2010, in terms of Chapter 5 of the National Environmental Management Act, Act No 107 of 1998 (as amended), contain the EIA Regulations, as well as a schedule of activities that may have substantial detrimental effects on the environment and therefore require authorisation from the competent environmental authority. The listed activities that will be associated with the proposed project include the following:

Notice No	Activity	Description	Project Description:
R544, 18 June 2010	9 (i) (ii)	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water with an internal diameter of 0,36 metres or more, or with a peak throughput of 120 litres per second or more.	The proposed bulk water pipeline will be approximately 4 km long with one 800 mm diameter pipe or two 500 mm diameter pipes alongside each other. Should the pipeline diameter be 800 mm, the peak throughput would be 948 litres per second. This is pertaining to the construction of the facilities or infrastructure exceeding 1000 meters in length for the bulk transportation of water with a peak throughput of 120 litres (948 l/s) per second or more.
R544, 18 June 2010	11 (iv) (xi)	The construction of Dams; infrastructure or structures covering 50 square metres or more; where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse.	Several drainage areas occur on the study area and the pipeline and reservoir structures covering 50 square metres or more in total would be within 32 metres from watercourses.
R544, 18 June 2010	12	The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic metres or more, unless such storage falls	The reservoir/s will have a combined capacity of approximately 65400 cubic meters. The I&APs have been informed regarding the inclusion of this activity when the draft BAR was

		within the ambit of activity 19 of Notice 545 of 2010.	made available for comment.
R544, 18 June 2010	18 (i)	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from: a watercourse.	The possibility exists that materials with a volume of more than 5 cubic metres might be infilled or deposited into (a) watercourse(s), or that soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres might be dredged, excavated, removed or moved from (a) watercourse(s).
R544, 18 June 2010	56	Phased activities for all activities listed in this Schedule, which commenced on or after the effective date of this Schedule, where any one phase of the activity may be below a threshold but where a combination of the phases, including expansion or extensions, will exceed a specified threshold excluding the following activities listed in this Schedule: 2; 11 (i)-(vii); 16 (i)-(iv); 17; 19; 20; 22 (i) & 22 (iii); 25; 26; 27 (iii) & (iv); 28; 39; 45 (i)-(iv) & (vii)-(xv); 50; 51; 53; and 54.	11. The construction of (x) buildings exceeding 50 square metres in size where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse such as the pump housing. 12. The construction of facilities or infrastructure for the off-stream storage of water including dams and reservoirs, with a combined capacity of 50000 cubic metres or more. Reservoirs might be added at a later stage. This activity has been added to provide for phased activities currently not listed but a combination of the phases, including expansion or extensions, could possibly in future exceed a specified threshold.
R546, 18 June 2010	12 (a)	The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004.	From the ecology study it is apparent that the pipeline route covers the Lower Gariep Alluvial Vegetation at the Orange River that is considered as 'endangered' in terms of NEMA:BA (2009). The I&APs have been informed about the addition of the activity in the public participation process on the availability of the draft basic assessment report.
R546, 18 June 2010	16 (iv) (a) ii (dd)	The construction of: Infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse. In the Northern Cape: Outside urban areas, in: Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.	From the ecology study it is apparent that the water pumps and pipeline will be constructed and operated within the water body of the Orange River as well as the Lower Gariep Alluvial Vegetation, sensitive areas identified in the Siyanda (now ZF Mgcawu) District Municipal Environmental Management Framework The I&APs have been informed about the addition of the activity in the public participation process on the availability of the draft basic assessment report.

Activity 9 (ii) of LN R544, 18 June 2010 has been included to the listed activities that will be associated with the proposed project. This is pertaining to the construction of the facilities or infrastructure exceeding 1000 meters in length for the bulk transportation of water with a peak throughout of 120 litres (948 l/s) per second or more. The public, stakeholders and authorities has been notified about this inclusion when the draft report was made available for review. See the letters in Appendix G2.

Activity 11 (iv) of LN R 544, 18 June 2010 has been included to the listed activities that will be associated with the proposed project. The location of the reservoir has been moved since the start of the project and will now be located within 32 metres of a drainage area or watercourse, measured from the edge of a watercourse as can be seen in Appendix C1.

Activity 12 LN R544, 18 June 2010 has been included to the listed activities that will be associated with the proposed project. This is pertaining to the construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic metres (approximately 65400 cubic meters) or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010.

Activity 56 has been added to provide for phased activities currently not listed but a combination of the phases, including expansion or extensions, could possibly in future exceed a specified threshold.

Activity 12(a) of LN R546, 18 June 2010 has been included to the listed activities that will be associated with the proposed project. This is pertaining to the clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA. From the ecology study it is apparent that the pipeline route covers the Lower Gariep Alluvial Vegetation at the Orange River that is considered as 'endangered' in terms of NEMA:BA (2009).

Activity 16 (iv) (a) ii. (dd) of LN R 546, 18 June 2010 has been included to the listed activities that will be associated with the proposed project. This is pertaining to the construction of infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse. From the ecology study it is apparent that the water pumps and pipeline will be constructed and operated within the water body of the Orange River as well as the Lower Gariep Alluvial Vegetation, sensitive areas identified in the Siyanda (now ZF Mgcawu) District Municipal Environmental Management Framework.

An application for environmental authorisation through the execution of a basic EIA process as well as draft environmental basic assessment report has been submitted by the applicant and accepted by the DENC who is the competent authority.

In addition to its function as a decision-making aid in terms of environmental authorisation, an EIA is an effective planning and decision-making tool for the project developer as it allows for the identification and management of potential environmental impacts, as well as the identification of other applicable legislation that must be considered and adhered to.

1.2.1 Other Applicable Legislation and Policies

In section 38 of the **National Heritage Resources Act, Act No. 25 of 1999**, the following is stipulated:

- “(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—*
- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
 - (b) the construction of a bridge or similar structure exceeding 50 m in length;*
 - (c) any development or other activity which will change the character of a site—*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
 - (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
 - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,*
- must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*
- (2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)—*
- (a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or*
 - (b) notify the person concerned that this section does not apply.*

The responsible heritage resources authority in this case is the Northern Cape Provincial Heritage Resources Agency (NCPHRA) and/or the South African Heritage Resources Agency (SAHRA), as well as the Northern Cape Department of Sports, Arts and Culture.

These authorities have been notified about the EIA process. (Appendix G2)

A Phase 1 Archaeological Impact Assessment and exemption from a Palaeontological Assessment are attached in Appendices D2 and D3. Find SAHRA's comment attached in Appendix G2.

Section 5 of the **Conservation of Agricultural Resources Act, Act No. 43 of 1983 (CARA)**, prohibits the spreading of weeds and Section 6 and Regulation 15 and 15 E of GN R 1048 address the implementation of control measures for alien and invasive plant species. This aspect has been addressed in the Environmental Management Program (Appendix F). This act also makes provision for the conservation of natural agricultural resources by the maintenance of the production potential of the land, by combating and prevention of erosion and weakening or destruction of the water resources, and by protecting the vegetation and combating weeds and invader plants (Van Rooyen, 2012).

The Department of Agriculture, Land Reform and Rural Development is guided by this act. With the development of the mentioned activities the developer must take care of the following:

Article 7.(3)b of Regulation 9238: Conservation of Agriculture Resources, 1983 (Act 43 of 1983) states as follow:

Utilisation and protection of vlei, marshes, water sponges and water courses

7.(1) “...no land user shall utilize the vegetation in a vlei, marsh or water sponge or within the flood area of a water course or within 10 metres horizontally outside such flood area in a manner that causes or may cause the deterioration of or damage to the natural agricultural resources.”

(3) “Except on authority of a written permission by the executive officer, no land user shall

(b) cultivate any land on his farm unit within the flood area of a water course or within 10 metres horizontally outside the flood area of a water course.”

Subdivision of Agricultural Land Act, Act 70 of 1970 control the subdivision and, in connection therewith, the use of agricultural land.

The applicant needs to register a servitude for the pipeline as well as apply to the Straussburg Irrigation Council to cross the canal near the river.

The town and regional planner, Makroplan, indicated that a rezoning application would not be required in this instance and that a servitude would be registered on the applicable properties.

Lutz & Van Zyl Land Surveyors confirmed (Appendix G2c):

1. Rezoning does not take place when a servitude is registered on a property.
2. In this case the following properties are being affected:
 - a. Parcel 206 Vaalkoppies Settlement
 - b. Portion 68 of the farm Vaalkoppies No. 40
3. Both are agricultural properties and its status will be unchanged despite the servitudes that will be registered.
4. The land surveyor accepted that the width of the servitude will be smaller than 15 meters therefore permission does not have to be obtained from the DAFF (Agriculture) in terms of Act 70 of 1970.
5. He has never previously surveyed a servitude that has been registered with the Deeds Office that needed rezoning of the section where the servitude crosses the property.
6. When the pipe/s have been placed underneath the soil, the area can be used again for grazing.

Section 9 of the **Advertising on Roads and Ribbon Development Act, Act No 21 of 1940**, states that

*"no person shall erect or permit the erection of any structure or any other thing which is attached to the land on which it stands, even though it does not form part of that land, or construct or lay or permit the construction or laying of anything under or below the surface of any land within a distance of **95 meters from the centre line of a building restriction road**, provided that the preceding provisions of this section shall not apply in connection with –*

- (d) *an enclosure, a fence or a wall which does not rise higher than one comma six metres above the surface of the land on which it stands;*
- (e) *a water work as defined in Section 1 of the Water Act, 1956 (Act No 54 of 1956) (repealed), a farm dwelling-house or any other structure or thing on a farm intended to be used in connection with bona fide farming operations;*

and provided, further, that any permission granted under this section shall not legalize the doing of anything which is unlawful under any other law.

It also needs to apply to SANRAL for a wayleave to cross the N10 National Route according to **The South African National Roads Agency Limited and national Roads Act, 1998, Act 7 of 1998**.

The pipeline will also cross underneath a Telkom and Eskom lines. Telkom and Eskom needs to indicate if any applications should be submitted in order to obtain authorisation to cross beneath these lines. See Appendix C.

These institutions have all been notified about the EIA process (Appendix G2).

National Forests Act, Act No. 84 of 1998 (NFA) and Regulations, Section 7: No person may cut, disturb, damage or destroy any indigenous, living tree in a natural forest, except in terms of a licence issued under Section 7(4) or Section 23; or an exemption from the provisions of this subsection published by the Minister in the Gazette. Sections 12-16 (read with S 62(2)(c)) deal with protected trees, with the Minister having the power to declare a particular tree, a group of trees, a particular woodland, or trees belonging to a certain species, to be a protected tree, group of trees, woodland or species. In terms of Section 15, no person may cut, disturb, damage, destroy or remove any protected tree; or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister. The list of protected tree species was published in GN 716 of 7 September 2012.

NB: A single individual of *Acacia erioloba* was recorded near the Orange River that must be avoided (Appendix D1b).

The Branch: **Forestry** and Natural Resource Management, DAFF, is mainly concerned about the potential impacts on protected tree species. See the National Forests Act, Act 84 of 1998 (NFA) as amended, section 12(1)(d) read with s15(1) and s62(2)(c). The list of protected tree species was published in GN 877 of 22 November 2013. **No protected tree may be cut, removed, damaged, disturbed or destroyed without a valid Forest Act License.**

Environmental approvals in terms of other applicable legislation do not exempt the developer from complying with the NFA.

National Veld and Forest Fire Act No.101 of 1998 (NVFFA) regulate Fire Protection Associations and the building of fire breaks. The competent authority is the Department of Agriculture, Forestry and Fisheries. Please take note of roles and responsibilities in terms of the NVFFA.

Section 17 of the **Fencing Act, Act No. 31 of 1963**, states that any person erecting a boundary fence may clean any bush along the line of the fence up to 1.5 metres on each side thereof and remove any tree standing in the immediate line of the fence. However, this provision must be read in conjunction with the environmental legal provisions relevant to protection of flora.

Sections 9-11 of the **National Environmental Management: Air Quality act, Act No. 39 of 2004 (NEM:AQA)**, regulates national, provincial and local ambient air quality standards. Activities are addressed in Section 21. Section 22 addresses atmospheric emissions licenses.

The national dust control regulations were published on 1 November 2013 in Government Gazette No. 36974, Government Notice No. R. 827 and the purpose of the regulations is to prescribe general measures for the control of dust in all areas.

The **National Environmental Management: Biodiversity Act, Act No. 10 of 2004** provides for the MEC/Minister to list ecosystems that are threatened and in need of protection (Section 52) and to identify any process or activity in such a listed ecosystem as a threatening process (Section 53). A list of threatened and protected species has been published in terms of Section 56 (1) GG 29657 GN R 151 and GN R 152, Threatened or Protected Species Regulations.

The act also deals with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to listed invasive species.

The threatened status of the Lower Gariep Alluvial Vegetation, where the pump station, control station and a small section of the pipeline will be situated, is considered as 'endangered'.

The **National Environmental Management Waste Act, Act No. 59 of 2008** reforms the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The **National Environmental Management Act: Protected Areas Act (Act No. 57 of 2003) (NEM:PAA)** provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; and for matters in connection therewith.

Section 28 of the **National Environmental Management Act, Act No. 107 of 1998** requires duty of care where reasonable measures are taken to prevent pollution or degradation from occurring, continuing or recurring, or, where this is not possible, to minimise and rectify pollution or degradation of the environment. Section 29 addresses the protection of workers refusing to do environmentally hazardous work. Section 30 addresses procedures to be followed in the event of an emergency incident which may impact on the environment. Access to environmental information and protection of whistle blowers are addressed in Section 31.

In terms of the definitions contained in Section 1 of the **National Water Act, Act No. 36 of 1998**, a "water resource" includes a watercourse, surface water, estuary, or aquifer. "Aquifer" means a geological formation which has structures or textures that hold water or permit appreciable water movement through them. "Watercourse" means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

Furthermore, in terms of the definitions contained in Section 1 of the National Water Act, waste "includes any solid material or material that is suspended, dissolved or transported in water (including sediment) and which is spilled or deposited on land or into a water resource in such volume, composition or manner as to cause, or to be reasonably likely to cause, the water resource to be polluted".

The Minister of Water and Environmental Affairs is allowed to regulate activities which have a detrimental impact on water resources by declaring them to be controlled activities. No person may undertake a controlled activity unless such person is authorised to do so by or under this Act.

Duty of Care to prevent and remedy the effects of pollution to water resources is addressed in Section 19. Section 20 addresses the procedures to be followed, as well as control of emergency incidents which may impact on a water resource.

Recognised water uses are addressed in terms of Section 21 and the requirements for registration of water uses are stipulated in Section 26 and Section 34.

A water use application was submitted to DWA regarding the water abstraction (S 21 (a) & (b)) by the applicant and a licence has been issued (Appendix G3a).

NB: A water use application in terms of S 21 (c) (impeding or diverting the flow of water in a watercourse) and (i) (altering the bed, banks, course or characteristics of a watercourse) should be submitted to DWA for the abstraction point, pipeline and reservoir.

Section 25 of the **Environment Conservation Act, Act No. 73 of 1989**, as well as the National Noise Control Regulations GN R 154 dated 10 January 1992, regarding noise, vibration and shock, is applicable.

Should the developer wish to obtain sand for the bedding required for the pipeline rather than outsourcing the supply of sand, the **Minerals and Petroleum Resources Development Act, Act No. 28 of 2002** may become directly applicable. If the sand supply is outsourced, the developer has an obligation to ascertain that the contractor supplying the sand complies with the relevant legislation by only sourcing sand from permitted areas.

The **Occupational Health and Safety Act, Act No. 85 of 1993** GN. R. 2281 of 1987 – 10-16: Environmental Regulations for Workplaces are applicable.

The **Northern Cape Nature Conservation Act, Act No. 9 of 2009** addresses protected species in the Northern Cape and the permit application processes related thereto.

NB: Any permits required should be obtained prior to start of construction activities. This department does not process permit applications without the relevant environmental authorisations. Therefore this permit should be applied for after the DENC has made and issued a decision on the final BAR.

The Act lists different categories of flora and is addressed in Schedules 1, 2, 3 and 6, and the fauna in Schedules 1, 2, 3, 4, 5 and 6. The ecologist consulted the lists of fauna and flora in the Act and compared it with the fauna and flora found on site (see Chapters 5, 6 & 7 and Appendices A, B & E of the ecology report). (Appendix D1b) One of the provisions in the Act is that no person may, without a permit, pick, import, export, transport, possess, cultivate or trade in a specimen of a specially protected plant or a protected plant species. (Van Rooyen, 2012)

The **South African Civil Aviation Regulation Act, Act 13 of 2009** controls markings of structures that may influence aviation through the Civil Aviation Technical Standard, SA-CATS-AH 139.01.33 Obstacle Limitations and Markings outside Aerodrome or Heliports.

It states that any structure exceeding 45 m above ground level, or structures where the top of the structure exceeds 150 m above the MEAN ground level, like on top of a hill, the mean ground level considered to be the lowest point in a 3 km radius around such structure. Structures lower than 45 m, which are considered as a danger or a potential danger to aviation, shall be marked as such when specified. Overhead wires, cables, etc., crossing a river, valley or major roads shall be marked and in addition, their supporting towers marked and lighted if an aeronautical study indicates that it could constitute a hazard to aircraft.

The highest structures that would be constructed during this proposed development would be the dam walls, which would have a height of less than 5 m.

Promotion of Access to Information Act, Act No 2 of 2000. To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights; and to provide for matters connected therewith. This act gives the requester a right to lodge a request from the information officer of a public or private body.

1.3 Terms of Reference

Van Zyl Environmental Consultants has been appointed by the applicant, Deo Gloria Olive Estate (Pty) Ltd, as the independent Environmental Assessment Practitioner (EAP) to manage the Environmental Assessment Process including the Public Participation Process as stipulated in Government Notice R 543 to 546 Government Gazette No. 33306, dated 18 June 2010, in terms of Chapter 5 of the National Environmental Management Act, Act No 107 of 1998 (as amended) for the proposed project. Neither Van Zyl Environmental Consultants nor any of its specialist sub-consultants on this project are subsidiaries of or are affiliated to Deo Gloria Olive Estate (Pty) Ltd.

Van Zyl Environmental Consultants does not have any interest in secondary developments that may arise from the authorisation of the proposed project.

1.4 Details of the Environmental Assessment Practitioner and Expertise to Conduct the EIA

Van Zyl Environmental Consultants is an environmental consulting firm providing environmental management services, including environmental impact assessments and planning to evaluate risk and ensure compliance of proposed developments, as well as the implementation of environmental management tools.

Irmé van Zyl conducted the basic environmental impact assessment process and compiled the environmental management programme. She is the sole member of Van Zyl Environmental Consultants and is fulfilling the duties as EAP.

Irmé van Zyl completed a Master's Degree in Environmental Management obtained from the University of the Free State and has been working in the environmental management field for 17 years. She has conducted processes for environmental impact assessment applications, waste licence applications, S24G applications, compilation of EMPs, prospecting applications, mining permit applications, public participation processes, acting as environmental control officer, screenings as well as advice to developers on a wide range of projects in the Northern Cape. These include a butchery, a meat processing plant, residential developments, establishment of a new cemetery and closure of an old cemetery (including management plans for cemeteries), bridges, tourism industry (caravan parks, chalets etc.), wastewater treatment works, a medical care waste treatment facility, illegal disposal of medical waste, a waste site, PV power stations, a runway, pipelines, borrow pits, roads, a reverse osmosis water purification and brine treatment plant as well as an eco-estate development. (Appendix G6)

2. APPROACH TO THE ENVIRONMENTAL STUDY

An investigation with regard to the environmental impacts associated with the proposed development is being conducted in compliance with the Environmental Impact Assessment Regulations published in Government Notices R 543 to R 546, promulgated on 2 August 2010 in terms of the National Environmental Management Act (Act No. 107 of 1998) (as amended).

The Environmental Impact Assessment Process is being conducted by identifying the scope and conducting an Environmental Impact Assessment (EIA), including an Environmental Management Programme (EMP).

2.1 Methodology of the Environmental Impact Assessment

The study describes the preliminary decision-making processes with regard to the project, including the investigation of development alternatives and the selection of preferred alternatives. The specific activities expected to form part of the proposed development are also described.

The study provides a description of the receiving environment and investigates how this environment may be directly, indirectly and cumulatively affected by the proposed development. Potentially significant impacts (both social and biophysical) that may result from the construction, operation and maintenance phases of the proposed development are identified.

An Impact Matrix (Appendix G5) is used to determine any positive and/or negative impacts, whether direct, indirect or cumulative, that the proposed activities and development in this area may pose to the environment and people in the vicinity. Proposed mitigation through design and/or operational changes, as well as the significance of the impact thereafter is being investigated.

The nature of the activity, extent, duration, intensity, and probability of the direct, indirect and cumulative identified impacts are assessed. These parameters are used to establish the significance of the impact of an activity that will take place or is already taking place. The parameters are then compared to the level of significance in the Significance Rating Scale.

The EIA phase provides an overall social, economic and biophysical assessment of the environment surrounding the proposed development, as well as a detailed assessment of the site for development, in terms of environmental criteria. It also provides a discussion of alternatives to the proposal should any be available, which would meet the stated need for the activity, and ways to reduce the impact of the project by imposing mitigating measures. Significant impacts identified are rated and appropriate mitigation measures for potentially high environmental impacts are recommended in the EMP.

The objective of the EIA is to provide environmental authorities with sufficient relevant and objective environmental information to make an informed decision regarding the proposed project.

The Public Participation Process will be continued in order to ensure that I&AP issues and concerns are documented and addressed during the EIA process. This process also enables I&APs and stakeholders to review the basic assessment report and to verify that the issues they have raised to date have been captured and adequately considered. Three phases of the participatory and transparent Public Participation Process have been conducted (Appendix G2).

The basic assessment report phase is based on the Application for Environmental Authorisation filed with the Provincial Department of Environment and Nature Conservation (DENC) for the proposed development. It was accepted. As indicated in point 1.2, an amendment to the application is being applied for to add activity 12 (a) and 16 (iv) (a) ii (dd) of R 546. From the ecology study it is apparent that the pipeline route covers the Lower Gariep Alluvial Vegetation at the Orange River that is considered as 'endangered' in terms of NEMA:BA (2009). (Appendix D1b)

2.2 Specialist Studies

Specialist studies were conducted at the study area and are attached in Appendix D. It comprised of:

- A ecology impact study by Ekotrust CC (Dr Noel van Rooyen);
- An archaeological impact study by Dr. Peter Nilssen; and
- A Palaeontology Exemption letter by Dr John Almond.

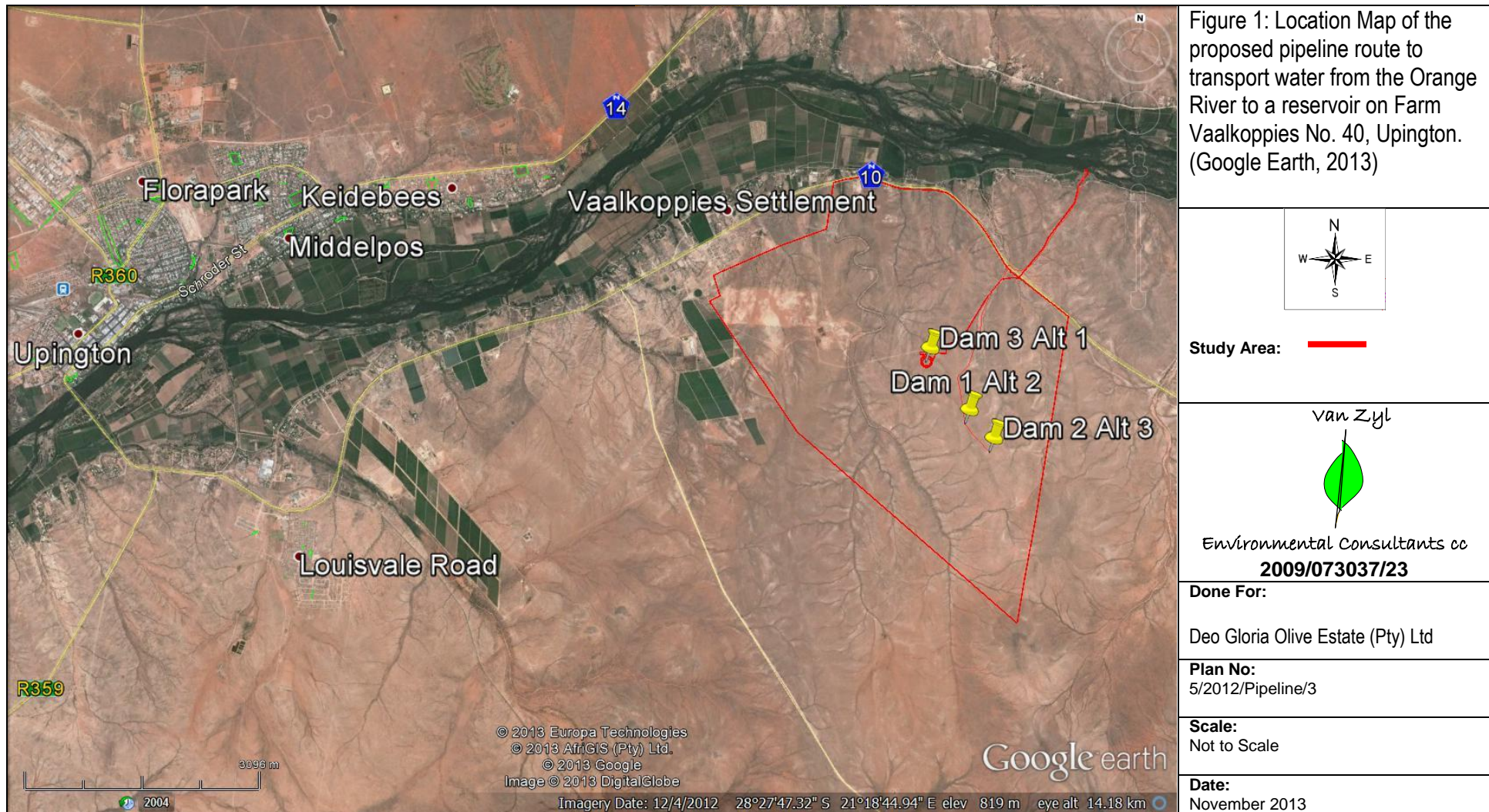
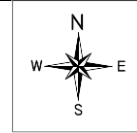


Figure 1: Location Map of the proposed pipeline route to transport water from the Orange River to a reservoir on Farm Vaalkoppies No. 40, Upington. (Google Earth, 2013)



Study Area: 

van Zyl



Environmental Consultants cc
 2009/073037/23

Done For:

Deo Gloria Olive Estate (Pty) Ltd

Plan No:

5/2012/Pipeline/3

Scale:

Not to Scale

Date:

November 2013

SECTION A: ACTIVITY INFORMATION

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

YES	NO
-----	----

If YES, please complete the form entitled "Details of specialist and declaration of interest"

for appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in **Appendix D**.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail¹:

1.1 The Site

The proposed site for development is situated near Ntsikilelo (Vaalkoppies) Settlement South East of Upington within the boundaries of the ZF Mgcawu District Municipality and //Khara Hais Local Municipality in the Northern Cape.

The development of the pipeline of approximately 4 km is proposed with the abstraction point on the southern bank of the Orange River. The pipeline will cross over parcel 206 at Vaalkoppies Settlement, portion 68, 78 (to be registered), underneath the N10 national route and over the remainder of the farm Vaalkoppies No. 40. A reservoir will be constructed and operated on the remainder of the farm Vaalkoppies No. 40 (Figure 1).

The surrounding area has a rural, agricultural character and land is mostly used for stock farming and agricultural cultivation with agricultural cultivation expanding in the areas near the Orange River.

The site is accessible from gravel roads off the N10 with Upington to the West and Groblershoop to the East. (Appendix C)

1.2 Project Description

Deo Gloria Olive Estate (Pty) Ltd proposes the construction of a bulk water supply line and associated activities to supply Deo Gloria Olive Estate with the required amount of water for intensive agricultural activities (Figure 1):

- A pump station with pump(s) to draw water directly from the Orange River.
- A Booster station.
- A pump and filter station.
- Control station.
- A pipeline of approximately 4 km in length that would possibly consist of one 800mm pipe or two 500 mm pipes with valves.
- 65 500m³ reservoir(s) and/or settling dam(s) with the height less than 5 m from the outside toe to the highest part of the dam wall. (The activity R 544 no. 12 has been added to the application and the public has been informed regarding it when the draft BAR was made available for comment.). The dam will be lined with HDPE liner and stone rip rap on outside (wind erosion).

1.3 Construction Phase Activities

Construction phase activities would include the following activities:

- Preparation of construction lay down areas for storage and assembly.
- Preparation and construction of service roads.
- Delivery of material and equipment.
- Site clearing and site preparation for pump station, filter station, control station, pipeline, reservoir and settling dam.
 - Clear plant material (including clear, remove, sort, separate, chop, dispose & transport)
- Earthworks & excavation of trenches (pump station, filter station, control station, pipeline, reservoir and settling dam)
 - Excavate, blast, cut, fill, slope, source, backfill, level, compact, remove & transport (incl. bedding & backfill material).
- Concrete works
 - Supply, deliver, pre-mix, mix, cast, construct, finish-off & cure pump station, control station, manholes for air, scour and other valves, emergency reinforced concrete spillway & filter station floor.
- General building works
 - Supply, deliver, mix, build, construct, install & finish-off pump station, control station, filter station, manholes for air, scour and other valves as well as settling dam.
- Structural steel works
 - Supply, deliver, cut, weld, drill, assemble, install & construct steel sections, frameworks & platforms for pump securing, installation & removal (maintenance) purposes.
- Pumps, motors & filter bank
 - Supply, deliver, handle, couple & install the following items to be operational:
 - Lifter pump
 - Booster pumps

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

- Filter bank (to be installed at reservoir)
- Mechanical equipment & accessories
 - Supply, deliver, handle, couple, weld, assemble & install column assey, steel pipes, rubber suction hoses, valves, reducers, flow meters, etc.
- Electrical equipment, control & accessories (reticulation)
 - Supply, deliver, handle, connect, assemble & install complete according to specifications
- Main pipeline (1x 800mm or 2x 500 mm)
 - Supply, deliver, handle, install, lay, cut, bed and test the mPVC pipes complete according to specifications.
- Reservoir & possibly settling dam
 - HDPE liner
 - Supply, deliver, handle, cut, place, install, join, and overlap liner on top of bedding layer according to specifications.
 - Stone rip rap on outside (wind erosion)
 - Supply, source, load, transport, dump, level rip rap erosion cover layer according to specifications.
- Testing and commissioning of pipeline
- Start of operation of pipeline

1.3.1 Surveys

Before construction can commence, a number of surveys might be required including, but not limited to, a geotechnical survey, a site survey to confirm and delineate the footprint of the pump -, filter – and control stations, the pipeline and road servitudes, the crossing of the N10 according to the SANRAL authorisation, reservoir and possibly a settling dam. This will be done by a land surveyor that will also apply for the servitude for the pipeline and service road.

An application would be submitted to the DENC for the removal of the plants protected in terms of the Northern Cape Nature Conservation Act (Act No. 9 of 2009). Should it be issued, protected plants will be removed within the delineated areas as mentioned above prior to the commencement of any construction activities. This aspect has been addressed in the Pre-Construction Phase section of the EMP (Appendix F). No go areas as well as plants and trees to be conserved, should there be any, will also then be marked and delineated as stipulated in the Environmental Management Program (EMP) attached in Appendix F.

1.3.2 Construction of Access and Service Roads

The N10 national route provides access to the area, with Groblershoop to the east and Upington to the west.

There are several farm tracks in the area that provides access to the pipeline route. The service track, a gravel track road, alongside the pipeline will be constructed during the construction phase and continued to be used during the operational phase. It is not anticipated that road building material would be used for the service track.

1.3.3 Site Preparation and Construction of Laydown Areas

The lay down area is an area on site which has been cleared for the temporary storage of equipment and supplies. Laydown areas are covered with rock and/or gravel to ensure accessibility and safe manoeuvrability for transport and off-loading of vehicles should it be needed. This should be sited on an area readily accessible and preferably already disturbed and previously used for such a purpose.

Activities would include the removal of vegetation and levelling of the laydown and storage areas for the construction equipment. The topsoil would be stripped and stockpiled, backfilled and/or spread on the site where needed. A construction camp as well as an area for the storage and use of petrochemicals, oils and lubricants (POL), and a storage area for construction equipment and infrastructure, machinery and vehicles would be established should it be needed as this is a small project. Temporary ablution facilities for workers on site would be implemented and a waste storage area would be implemented to be removed weekly.

1.3.4 Transportation of Equipment and Materials to Site

Equipment and materials required for the construction of the pipeline would be transported to the site by means of national and provincial roads as well as the farm tracks.

Civil construction equipment would need to be brought to the site. These could include, among other types of equipment, excavators, trucks, graders, compaction equipment, and cement trucks.

This project is very small and would not significantly influence peak traffic volume during construction.

1.3.5 Ancillary Infrastructure

A **workshop** is not planned at site, as only general and emergency maintenance will be done at site. Vehicles and machinery would be moved to the nearest workshop to be repaired.

Temporary water usage during construction phase might be needed for the cement and concrete mixing but would be low. The Straussburg Irrigation Council will be consulted by the developer for possible water supply during the construction phase.

The total amount of water is mainly determined by the total amount of concrete. The total amount of concrete depends on the selected technology.

Potable **water** would be supplied on site where personnel are working.

The developer or contractor will be responsible to make available and operate/maintain chemical **toilets** during construction.

The contractor is also responsible for the frequent (weekly or more frequent) removal of **general waste** according to legislation. **Hazardous waste** would be stored at a secure area at site until collection from a certified company.

Generators would most likely be used for power supply.

1.4 Decommissioning of Construction Areas after Completion of Construction Work

Construction rubble that cannot be re-used would be disposed of at the closest municipal waste site or used for infilling towards the rehabilitation of the nearest possible abandoned old quarry pit, provided that the owner of the quarry and/or the land approves of such infilling. This is a use/reuse matter and is usually the most cost-effective as well.

Construction waste would be removed to the nearest general waste site. The construction camp, infrastructure, equipment, machinery and vehicles that would not be used during the operation and maintenance phase would be removed. Compacted areas would be ripped where necessary. Topsoil would be replaced in areas where the operational phase would not continue and rehabilitated where practical and reasonable.

1.5 Operational & Maintenance Phase Activities

After the pipeline has been tested and commissioned, the operation and maintaining of the pipeline will commence. The pipeline will be inspected from time to time for leaks and faults. The gravel track will be kept and maintained during this phase to ensure its continuous use and prevention of erosion.

The waste generated by the maintenance activities will be removed to a municipal waste disposal facility.

1.6 Decommissioning Phase Activities

The developer intends to operate this pipeline for an indefinite period and should it become too old for maintenance it would be replaced. The then EIA regulations and stipulations will then be followed.

In case the plant would be decommissioned the site would be returned to a state similar to its original state and conditions. The components that could be feasibly removed will then either be re-used and other obsolete material & spoil will be removed to the local municipal waste disposal facility. Furthermore, the soil will be inspected for any industrial waste or other remaining contamination. Such parts will be decontaminated and cleaned. Compacted areas would be contoured and ripped. If plant growth should not establish naturally within one season, active seeding and planting of vegetation would be conducted.

2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

2.1 Pipeline Location

The object of the selection process for the location of the pipeline was to match as many of the ideal criteria regarding infrastructure that would be needed and the related costs.

The pipeline therefore has to follow the shortest route from the Orange River to the Farm Vaalkoppies No. 40 where the agriculture development is being planned. It also has to follow as level and flat route as possible to limit piping and pumping that will need to be conducted to abstract the water from the Orange River and supply it at the reservoir.

The developer therefore chose to follow near to the natural drainage lines as much as possible.

Based on the aforementioned aspects, Deo Gloria considers the planned route for the pipeline to be highly suitable and prefer this route (Appendix A & C). The route has two places where it has a preferred alternative due to the lay of the land as well as infrastructure.

At the North, near the river and abstraction pump, the surveyor indicated that it would be better to pass a koppie on the western side as it is lower and terrain better suited than to the eastern side where the two koppies forms a neck. Environmentally it would be preferred to pass the koppie to the western side. (Appendix C)

To the South, at the N10 crossing, there are two places where the pipeline could cross. The eastern crossing is preferred as the culvert is much eroded. The developer and SANRAL are negotiating regarding the repair of the culvert. The developer undertook to repair the culvert at its own cost should SANRAL allow it to pass underneath the culvert. Due to the erosion it would not entail much excavation to implement the pipe underneath it. This would be environmentally the preferred option as less drainage areas have to be crossed and less protected plants occur here. (Appendix C)

Should SANRAL not approve the use of the culvert the pipe jacking method would be a feasible alternative as the pipeline could then be implemented without closing the N10 route for excavations and the road surface would not be damaged. Pipe jacking entails the implementation of a piped sleeve underneath the road by using a horizontal drill method.

Reservoir Location

As alternatives two locations were indicated where the reservoir would be situated as high as possible on the remaining extent of the Farm Vaalkoppies No. 40 to enable the developer to gravity feed the water to agricultural development to curb on pumping costs and the related electricity usage associated with it. (Appendix C)

However after Andrag, planning the pipeline, reservoir and agricultural development, did the surveys of the pipeline and the location of the reservoir, another preferred location was added where the reservoir would be located on a flatter area. (Appendix C) The reason being that the pipeline would be shorter and flatter thereby also curbing on installation (construction & maintenance phase) as well as pumping costs (O&M phase).

Dam one and two is located high within the hilly area while dam three is located on flatter area away from the hilly areas. The alternative route to dam three is also following an existing road through a neck of the mountain range. In the area where dam three is proposed, there are less protected plants and sensitive areas than where dam one and two are proposed. Dam three is therefore the preferred alternative location. (Appendix C)

Availability of Land

The pipeline has to cross parcel 206 and portions 68 and 78 of the Farm Vaalkoppies No. 40 that is owned by persons other than the applicant. Deo Gloria is in process to come to an agreement with respective land owners regarding a servitude for the pipeline and service road.

Parcel 206, Vaalkoppies Settlement (Land Use Zoning: Institutional)

Portion 68 of the Farm Vaalkoppies No. 40 (Land Use Zoning: Agriculture)

Portion 78 of the Farm Vaalkoppies No. 40 (in process of registration) N10 National Route (Land Use Zoning: servitude)

Remaining Extent of the Farm Vaalkoppies No. 40 (LUZ: Agriculture)

The land owners have been informed regarding the intended EIA, during the first public participation process conducted and the draft Basic EIA Report has been made available to these persons and entities. (Appendix G2)

Site Access

The pipeline can be accessed via existing gravel roads off the N10 national route (Figure 1).

Availability and Accessibility of Electricity (Connection to the Eskom)

Eskom infrastructure is available at the Orange River and on the Farm Vaalkoppies No. 40. Deo Gloria will submit applications to Eskom for possible connection points to the Eskom electricity network at these points. Electricity will be reticulated below ground along the pipeline during the construction phase. Infrastructure and technical competence can easily be imported from Upington.

Environmental Acceptability

The proposed pipeline route covers a small section of the Lower Gariep Alluvial Vegetation type at the Orange River categorised as 'endangered' and the Kalahari Karroid Shrubland vegetation type categorised as 'least threatened' to the south. (Appendix D1). (Van Rooyen, 2012). Dr van Rooyen has stipulated measures that should be implemented to minimise the impact on the natural vegetation in Chapter 11 of the Ecology report (Appendix D1b). This has been incorporated into the EMP (Appendix F).

2.2 Water Supply for Agricultural Activities

Deo Gloria has a water use authorisation from the canal for approximately 14 ha. Boreholes have also been tested by SRK for either agricultural use or potable use. As there was not any water available from the canal to expand the agricultural activities as planned, a water use application was submitted to DWA and granted to Deo Gloria with stipulations. Due to the fact that the water use from the Orange River was authorised, Deo Gloria took the decision to build a pipeline from the river to the farm Vaalkoppies No. 40 to further the agricultural development on the farm and to use the boreholes as a potable water source and develop the eastern section of the farm as an eco-estate.

2.3 Power Technology

The pipeline will be powered by **Eskom** and in future possibly also wind and/or solar power such as photovoltaic technologies should it become viable. It would however be imperative for Deo Gloria to be connected to the Eskom grid as the power requirement would need to be stable and available during periods that wind and solar energy might not be sufficient to operate the water pumps. The power supplied by Eskom however is derived from coal power plants that have high CO₂ emissions with high water requirements to generate steam. It is also becoming more costly.

Wind Energy

Advantages:

- No water requirements during operation
- Cost of electricity cheaper than solar energy
- Possibility of combination of agriculture and energy production
- Possibility of increasing power output
- No CO₂ emissions
- Construction time is relatively low
- Proven technology installed in numerous different areas worldwide

Disadvantages:

- Topography is important as it affects wind resource
- Higher dependence on wind resource than solar energy on solar irradiation
- Higher operational and maintenance costs
- Deep foundation for wind turbines
- Much higher visual impact

Photovoltaic Technologies

Solar energy power plants use energy from the sun to generate electricity through a process known as the Photovoltaic Effect. This is achieved through the use of a PV cell that is made of silicone, which acts as a semiconductor. The cell absorbs solar irradiation, which energises the electrons inside the cells and produces electricity. PV cells are linked and placed behind a protective glass sheet to form a PV module. As a single cell produces a small amount of electricity, the proposed activity would require numerous cells arranged in arrays that would be fixed to a support structure.

Insolation is a term for incident solar radiation from sunrays. It is the amount of solar radiation energy received on a given surface during a given time, usually measured in kWh/m²/day or kWh/m²/year. Vapour or dust particles in the air can scatter the sunrays before reaching the earth's surface (diffuse irradiation).

Advantages:

- Low operational and maintenance cost
- No water requirements during operation

- Variability in size (from 10 kW to 100 MW) and installation possible on rooftops
- Simple and fast construction
- Topography is not important (can be built on gentle slopes as well as flat areas)
- Does not need advanced technical skills to operate and maintain
- Low visual impact
- No CO₂ emissions
- Established technology installed in numerous areas worldwide
- No noise
- Does not interfere with aircraft operations
- Feasible from as small as 0.5 MW
- Safe technology and no hazardous materials
- Combination of energy production and agriculture possible

Disadvantages:

- Cost of technology
- No production at night time
- No storage
- Suitable only in sunny areas
- Land disturbance/land use impacts

Preferred Alternative

In the short term Deo Gloria will apply to Eskom for a connection to the electricity grid but in the long term it might become feasible to implement either wind or solar power or a combination thereof.

2.4 Trenches

The dimensions of the trenches would have an approximate width of 0.6 to 1 m and a maximum depth of 1.10 m to accommodate either one 800mm or two 500mm mPVC pipes alongside each other. Trenches are usually excavated by means of a TLB or specialist trenching machines. The bedding material is sand or similar material. If the material in the trench is not suitable for bedding, material would be sourced from local legal commercial sources. The trenches would then be backfilled using material excavated from the trench. Trenches crossing roads and drainage areas would be properly protected in order to prevent degradation due to vehicular traffic and water scouring.

2.5 Timing

Deo Gloria would want to have all the planning and permitting completed as soon as possible to be able to build the pipeline and start with agricultural activities.

The following processes also influence the timeframe of the proposed project:

- the EIA Phases and outcomes from these phases, which are to inform the planning, construction, operation and maintenance phases of the project;
- land availability agreements and addendums;
- the registration of a servitude;
- authorisation from SANRAL to cross the N10;
- protected plant removal permits from DENC;
- application to the Straussburg Irrigation Council to cross the canal (authorised with stipulations);
- applications to Telkom and Eskom to cross underneath infrastructure and possibly servitudes;
- application to the responsible authority regarding the Lower Gariep Alluvial Vegetation (NEM:BA)
- application to Eskom to tie into the grid;
- S 21 (c) and (i) (bed and banks) application to DWA; and
- sources of bedding sand.

2.6 Resources

The following types of resources are to be obtained:

- financial resources to drive the process;
- high quality, financially viable resources/suppliers for the infrastructure; and
- resources such as sand and water for the concrete and cement mixing.

2.7 Technical Competence

Technical competence is needed from the planning to the operational and maintenance phases of the project. In some cases it might be viable to import competent technicians in the short term especially during the construction phase. The project could, especially during the operational phase, add future socio-economic value to the area as it could be regarded as an opportunity to further train and educate persons. Local or regional construction companies could be involved in the construction process.

2.8 Demand

Agriculture forms an integral part of development and progress and, as communities in South Africa is uplifted, the food security demand are growing. A decrease in the food security demand is therefore not foreseen in any part of the country and could therefore not be considered as an alternative in this study.

2.9 Operational & Maintenance Phase

The operational phase includes all operations that are necessary to maintain the pipeline in a fully operational mode and provide water on a continuous basis. The traffic generated to operate and maintain the pipeline would be negligible. Electrical and mechanical maintenance of the pipeline, pumps and ancillary infrastructure would take place as and when necessary.

The pumps will consume **power** during the operation that will be supplied by Eskom and possibly in the long term also wind or solar energy.

The pipeline would not use much water to operate other than some concrete or cement that might be needed for repairs. Not any general waste or sewage will be generated.

Disposal of used parts from pumps and filters should be taken into consideration due to the properties of the material. It should either be disposed of at a general municipal waste disposal facility or at a hazardous waste disposal facility should it not be possible to re-use or recycle the material.

2.10 'Do Nothing' Alternative

The 'do nothing' alternative is the option of not undertaking the development of the pipeline. Should this alternative be selected, it would have local and broader impacts.

The identified site, at a local level, would not be impacted on from an environmental perspective and would continue to be utilised for agricultural activities on marginal agricultural land. Less water and electricity would also be used.

Deciding not to proceed with the development would have a negative impact on the socio-economic development of the area. The job creation and poverty alleviation that would have occurred due to the development, would not take place.

In order to develop sustainably whilst preparing for growing food security demands, South Africa's future agricultural development must be diversified.

This development potentially offers socio-economic benefits for the local area. It may also assist in ensuring increased food security.

The 'do nothing' alternative is not a preferred alternative in this application.

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

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable. **Note: Refer to Appendix C1 and Addendum 1**

Alternative Locations for the Reservoirs:

Alternative S1² (preferred/only site alternative) **Dam 3**

Alternative S2 (if any) **Dam 1**

Alternative S3 (if any) **Dam 2**

Latitude (S):		Longitude (E):	
28°	27.318'	21°	21.419'
28°	27.740'	21°	21.758'
28°	27.932'	21°	21.965'

In the case of linear activities:

Alternative:

Alternative S1 (preferred or only route alternative)

- Starting point of the activity
- Middle/Additional point of the activity (2250m)
- End point of the activity (3475m)

Latitude (S):		Longitude (E):	
28°	25.867'	21°	22.655'
28°	26.963'	21°	21.807'
28°	27.321'	21°	21.464'

Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity (2250m)
- End point of the activity (4000m)

28°	25.867'	21°	22.655'
28°	26.847'	21°	22.896'
28°	27.740'	21°	21.758'

Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity (2250m)
- End point of the activity (4620m)

28°	25.867'	21°	22.655'
28°	26.847'	21°	22.896'
28°	28.000'	21°	21.987'

² "Alternative S.." refer to site alternatives.

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment. **Note: Find the points attached in Addendum 1**

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	Note:	Size of the activity:
Alternative A1 ³ (preferred activity alternative)	< 5 ha	45 000 m ²
Alternative A2 (if any)		45 000 m ²
Alternative A3 (if any)		45 000 m ²
or, for linear activities:		
		Length of the activity:
Alternative A1 (preferred activity alternative)		3 500 m
Alternative A2 (if any)		4 000 m
Alternative A3 (if any)		4 620 m

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

Alternative:	Size of the site/servitude:
Alternative A1 (preferred activity alternative)	< 50 000 m ²
Alternative A2 (if any)	< 50 000 m ²
Alternative A3 (if any)	< 50 000 m ²

5. SITE ACCESS

Does ready access to the site exist?

YES	NO
~5 000 m	

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

Note: A service road will be constructed alongside the pipeline.

Describe the type of access road planned:

The N10 national route provides access to the area, with Groblershoop to the east and Upington to the west.

There are several farm tracks in the area that provides access to the pipeline route. The service track, a gravel track road, alongside the pipeline will be constructed during the construction phase and continued to be used during the operational phase. It is not anticipated that road building material would be used for the service track. (Appendix C2)

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

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;

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

- areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 the positions from where photographs of the site were taken. (**Appendix B**)

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

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

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

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

~R 12 000 000
2014-2015 ~R 5.6 m 2016-2017 ~R 275.6 m
YES NO
YES NO
~294
2015-2016: ~R: 2.3 m 2017-2018: ~R 3.85 m
~ 100 %
Current = 24
~ R 5.97 m
~ 100 %

9(b) Need and desirability of the activity

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

The agricultural development on portion 67 and the Remaining Extent of the Farm Vaalkoppies No. 40 as well as all the plough and water authorisations related to it has been granted. This development would constitute an intensive agricultural development that is also investing heavily in the community. The development depends entirely on the availability of water. It is currently planned to obtain the water from the Orange River that will be transported to the farm via the pipeline applied for in this application. Without this pipeline other means to obtain water for the development will have to be established. This pipeline is therefore currently of integral importance to the development

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

The activity may be of importance to the general society regarding the positive contribution it will have on food security and the socio-economic value for the region.

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

The local community will benefit directly and indirectly as a result of the activity through employment opportunities and business opportunities.

NEED:			
1.	Was the relevant provincial planning department involved in the application? Note: The communication to this department is part of the public participation of the EIA.	YES	NO
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES	NO
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO
6.	Will the proposed land use / development set a precedent?	YES	NO
7.	Will any person's rights be affected by the proposed land use / development? Note: Possibly	YES	NO
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation. The pipeline will be situated on properties belonging to other entities. A servitude at the properties, and wayleave at the N10 will have to be registered, authorisation to cross beneath the Telkom and Eskom lines, authorisation to access bed and banks at the river, authorisation to cross the canal and reasonable and regular access to the pipeline would be needed. Some land owners might feel that their rights would be affected. The developer is in the process of communication and negotiations with these parties as well as all the legalities regarding it are being addressed by the developer.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	NO
2.	Explain: Economic Factors The implementation of the proposed pipeline would result to: <ul style="list-style-type: none"> • promote local economic development; • create new job opportunities; • contribute to the import and later possibly export of know-how; and • promote food security. Industry Development The development would require industrial capacity: raw material providers; machinery and equipment providers; installers; and other services linked to it. This generates added value for the community; not only in terms of jobs, but also in terms of industrial development, and business generation. Food Security The development of the pipeline would result in high intensive agriculture activities on land that previously had a low carrying capacity. It would therefore contribute to the very important food security of the region.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO
4.	Explain: Social Factors <ul style="list-style-type: none"> • Creates employment opportunities • Promotes the sustainable development of the region • Uses local resources • Safe technology • Stable technology • Produces no dangerous waste Employment This development would create employment along the entire value chain, from the production of products and equipment needed, through the development and installation of the pipeline, the financing, operation and maintenance of the pipeline. While manufacturing jobs are concentrated in production hubs, the downstream jobs (related to installation, operation and maintenance, financing and produce sales) would be mainly local. During the construction, operational and maintenance phases the local economy would be stimulated and job opportunities created. Local resources would, where possible, be utilised from the planning through the construction, operational and maintenance phases.		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
Constitution of the Republic of South Africa (Act No 108 of 1996)	National Government	1996
National Environmental Management Act (Act 107 of 1998)	National and Provincial Department of Environmental Affairs	1998
National Environmental Management: Waste Act (Act No 59 of 2008)	Department of Environmental Affairs	2008
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Department of Environmental Affairs	2004
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	Department of Environmental Affairs	2004
Environment Conservation Act (Act No 73 of 1989)	Department of Environmental Affairs	1989
National Water Act (Act No 36 of 1998)	Department of Water Affairs	1998
National Heritage Resources Act (Act No 25 of 1999)	South African Heritage Resources Agency	1999
Conservation of Agricultural Resources Act (Act No 43 of 1983)	National Department of Agriculture (DAFF)	1983
National Veld and Forest Fire Act (Act No 101 of 1998)	National Department of Agriculture, Forestry and Fisheries (DAFF)	1998
National Forests Act (Act No 84 of 1998)	DAFF	1998
Northern Cape Nature Conservation Act(Act No 9 of 2009)	Northern Cape Department of Environment and Nature Conservation	2009
Promotion of Access to Information Act (Act No 2 of 2000)	National Department of Environmental Affairs	2000
Advertising on Roads and Ribbon Development Act (Act No 3 of 1940)	Department of Roads and Public Works	1940
Subdivision of Agricultural Land Act (Act 70 of 1970)	DAFF, Local Authorities	1970
Fencing Act (Act No 31 of 1963)	DAFF	1963
Promotion of Administrative Justice Act, (Act 96 of 2000)	Justice Department	2000
The south African National Roads Agency Limited and National Roads Act (Act No 7 of 1998)	SANRAL	1998

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

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

YES	NO
~ 10 m ³	

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

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

By truck

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

The general construction waste, which cannot be re-used or re-cycled, would most probably be disposed of at the Upington Local Municipality Waste Disposal Site.

Will the activity produce solid waste during its operational phase?

YES	NO

Note: The amount of waste will be negligible due to maintenance activities on pumps, valves and pipeline itself.

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

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

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

NA

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

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO
-----	----

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

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

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

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
m ³	
YES	NO

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

Will the activity produce any effluent that will be treated and/or disposed of on site?

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO
-----	----

If yes, provide the particulars of the facility:

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

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

NA

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO
YES	NO

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

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

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

During construction the only emissions would be that from vehicles and machinery. This is controlled by legislation. During the operational phase it does not emit any emissions into the air at source as electricity supplied by Eskom would be used to drive pumping stations. The cumulative impact to the Eskom generating plants would be minimal.

11(d) Generation of noise

Will the activity generate noise?

YES	NO
YES	NO

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

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

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

During construction noise will be generated by vehicles and construction machinery during working hours.
 During operational phase noise will be generated by the pumping stations.

12. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
----------------------	--------------------	------------------------	-----------------------------------	------------------	--

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

7 00 000 litres	
YES	NO

Does the activity require a water use permit from the Department of Water Affairs?

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

Note: The pipeline will pump water from the Orange River. This use has already been authorised (Appendix G3a).

The developer must submit an application for S 21 c & i (bed en banks) in terms of NWA to DWA for the installation of the pumps within the river.

Water will most probably be obtained from the canal for the water use requirements during the construction phase such as dust suppression, concrete and cement mixing. The Strausburg Irrigation Council is the responsible authority and a small temporary water use may be applied for by Deo Gloria. Otherwise the current allocation for agriculture purposes for 14 ha may be explored (Appendix G3b). It might be a requirement that the water allocation be temporarily transferred to industrial use should this option be explored. During the operation phase the pipeline will pump water but would most probably use very little water for operation & maintenance purposes.

13. ENERGY EFFICIENCY

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

Currently it is planned to obtain electricity from Eskom and a connection application has been/will be submitted by Deo Gloria. However it might become viable in future to also use wind and solar energy on a small scale.

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

None

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

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

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

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

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

YES	NO
-----	----

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed: **Note: The details of the specialists and declaration of interests are attached to their reports.**

All specialist reports must be contained in **Appendix D**.

Property description/physical address:	Parcel 206, Vaalkoppies Settlement:	C03600190000020600000
	Portion 68 of the Farm Vaalkoppies No. 40:	C03600000000004000068
	Portion 78 of the Farm Vaalkoppies No. 40:	C03600000000004000078 (to be registered)
	Remaining Extent of the Farm Vaalkoppies No. 40:	C03600000000004000000

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

//Khara Hais Local Municipality, Upington
ZF Mgcauw District Municipality (Main offices situated in Upington)

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:	Parcel 206, Vaalkoppies Settlement:	Institutional
	Portion 68 of the Farm Vaalkoppies No. 40:	Agriculture
	Portion 78 of the Farm Vaalkoppies No. 40:	(to be registered)
	Remaining Extent of the Farm Vaalkoppies No. 40:	Agriculture

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

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

YES	NO
-----	----

Note: Deo Gloria is in the process to communicate and negotiate with land owners in order to register a servitude. This is a parallel process to the EIA.

- Must a building plan be submitted to the local authority?

YES	NO
-----	----

Note: The Local authority is a stakeholder and will receive a copy of the report. It can then confirm if a building plan should be submitted to it.

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

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

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

Alternative S2 (if any):

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

Alternative S3 (if any):

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

2. LOCATION IN LANDSCAPE

Note: The landform(s) of the pipeline has been discussed within the Ecological Report attached in Appendix D1.

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

2.1 Ridgeline

2.2 Plateau

2.3 Side slope of hill/mountain

2.4 Closed valley

2.5 Open valley

2.6 Plain

2.7 Undulating plain / low hills

2.8 Dune

2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

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

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

Natural veld - good condition^E	Natural veld with scattered aliens^E	Natural veld with heavy infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

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

Note: Ecology specialist study was conducted (Appendix D1).

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area

- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial^{AN}
- 5.9 Heavy industrial^{AN}
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit

5.15 Dam or reservoir

- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard^N
- 5.23 Railway line^N
- 5.24 Major road (4 lanes or more)^N
- 5.25 Airport^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation

5.33 Agriculture

5.34 River, stream or wetland

- 5.35 Nature conservation area

5.36 Mountain, koppie or ridge

- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site

5.42 Other land uses (describe): Electricity transmission lines of possibly 22 kV and Telkom line(s).

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

--

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

--

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

--

6. CULTURAL/HISTORICAL FEATURES

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

YES	NO
Uncertain	

If YES, explain:

--

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

Briefly explain the findings of the specialist:

An Archaeological Impact Assessment (AIA) Phase 1 (Appendix D2) has been conducted at the study area (exemption from Palaeontological Desktop Study – Appendix D3) and not any significant heritage resources have been identified. Mitigation measures, which are to be taken in the event of any future discoveries of archaeological or paleontological features, have been addressed in the EMP (Appendix F).

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

YES	NO
YES	NO

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

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

- (a) fixing a notice board at a gate in the vicinity where the water will be abstracted from the Orange River, the canal will be crossed and the pump stations will be located at the North Eastern section; in the vicinity where the pipeline will cross the N10 National Route as well as in the vicinity where the pipeline will enter the remainder of the Farm Vaalkoppies No. 40, conspicuous to the public at the boundary of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the **owner or person in control of that land** if the applicant is not the owner or person in control of the land;
 - (ii) the **occupiers** of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the **municipal councillor** of the ward in which the site or alternative site is situated and any **organisation of ratepayers** that represent the community in the area;
 - (v) the **municipality** which has jurisdiction in the area;
 - (vi) any **organ of state** having jurisdiction in respect of any aspect of the activity; and
 - (vii) any **other party** as required by the competent authority;
- (c) placing advertisements (Afrikaans and English) in—
 - (i) one local newspaper (**Gemsbok**); or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

Note: Find proof of the public participation attached in Appendices E and G2.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

The notice board, advertisement or notices:

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

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

Advertisements and notices must make provision for all alternatives.

Note: An advert was placed, according to stipulations in regulations, in the *Gemsbok*, a local newspaper in the area.
(Appendix G 2)

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under **Appendix E**.

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Note: Complete list with contact particulars in Appendix G 2b9.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

List of authorities informed:

- *National Government Representatives:*
 - None;
- *Provincial Government Representatives (Northern Cape):*
 - Department of Environment and Nature Conservation;
 - Department of Agriculture, Land Reform and Rural Development,
 - Department of Forestry (DAFF);
 - Department of Public Works;
 - Department of Water Affairs;
 - Department of Labour;
 - Department of Mineral Resources;
 - Department of Energy;
 - Department of Co-operative Governance, Human Settlements & Traditional Affairs;
 - Department of Economic Development and Tourism; and
 - Department of Sports, Arts and Culture;
- *Local and District Authorities:*
 - Pixley ka Seme District Municipality;
 - Siyancuma Local Municipality and Ward Councillor; and
- *Other authorities:*
 - South African Heritage Resources Agency;
 - Northern Cape Provincial Heritage Resources Agency;
 - Straussburg Irrigation Council; and
 - Upington Islands Main Irrigation Council
- *Environmental Non-Governmental Organisations:*
 - World Wildlife Fund;
 - Endangered Wildlife Trust; and
 - Wildlife and Environment Society of South Africa
- *Parastatals:*
 - SANRAL;
 - Eskom; and
 - Telkom;
- *Business Community:*
 - NOCCI
 - IDC
- *Surrounding landowners.*

List of authorities from whom comments have been received:

Upington Islands Main Irrigation Council & Strausburg Water User Council SANRAL SAHRA Department of Public Works NC Dept. of Agriculture, Land Reform and Rural Development Directorate: Land Use and Soil Management DAFF (National) Directorate: Forestry Management (Other Regions) DAFF

Note: Comments are attached in Appendix E and G 2

7. CONSULTATION WITH OTHER STAKEHOLDERS

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

Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?

YES	NO
-----	----

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application – **Appendix G 2**):

Comments received on the draft basic EIA made available to I&APs

The Department of Agriculture, Land Reform and Rural Development is guided by Act 43 of 1983.

With the development of the mentioned activities the developer must take care of the following:

Article 7.(3)b of Regulation 9238: CONSERVATION OF AGRICULTURE RESOURCES, 1983 (Act 43 of 1983)

Utilisation and protection of vlei, marshes, water sponges and water courses

7.(1) "...no land user shall utilize the vegetation in a vlei, marsh or water sponge or within the flood area of a water course or within 10 metres horizontally outside such flood area in a manner that causes or may cause the deterioration of or damage to the natural agricultural resources."

(3) "Except on authority of a written permission by the executive officer, no land user shall (b) cultivate any land on his farm unit within the flood area of a water course or within 10 metres horizontally outside the flood area of a water course."

Take also care of the following:

1. Who is the land owner?
2. Will it be a subdivision of land or a lease contract between the developer and the land owner?
3. Rezoning may also be applicable because the land use will change from the current status.

The Department of Agriculture, Land Reform and Rural Development foresee no problems in the development as mentioned as long as the developer adheres to the articles of Act 43 of 1983.

Directorate: Land Use and Soil Management DAFF (National)

Mrs Buys received the notification documentation from Mrs Anneliza Collett (to whom the documentation was also sent).

Mrs Buys requested the documents needed to be able to process the application.

The documentation outstanding:

1. Title Deed
2. Locality Map
3. Rezoning application form
4. Sketchplan.

It was requested that it be posted as soon as possible.

Chief Forester, NFA Regulation, Directorate: Forestry Management (Other Regions), DAFF

DEPARTMENTAL MANDATE

The Branch: Forestry and Natural Resource Management, DAFF, is mainly concerned about the potential impacts on protected tree species. See the National Forests Act, Act 84 of 1998 (NFA) as amended, section 12(1)(d) read with s15(1) and s62(2)(c). The list of protected tree species was published in GN 877 of 22 November 2013. No protected tree may be cut, removed, damaged, disturbed or

destroyed without a valid Forest Act License.

Environmental approvals in terms of other applicable legislation do not exempt the developer from complying with the NFA.

The DAFF is also responsible for the administration of the National Veld and Forest Fires Act, Act 101 of 1998 (NVFFA) as amended. Please take note of roles and responsibilities in terms of the NVFFA.

COMMENTS ON DRAFT BASIC ASSESSMENT REPORT (DBAR)

The DBAR pointed out that only a single individual protected *Acacia erioloba* tree was recorded near the Orange River and this tree must be avoided during construction of the pipeline, pump station and reservoir.

RECOMMENDATION

The Directorate: Forestry Management (Other Regions) has no objection against the proposed development. The protected tree encountered on site must be avoided and a Flora Permit must be obtained.

The work area at the abstraction point next to the Orange River must be kept as small as possible to minimize impacts on 'endangered' Lower Gariep Alluvial Vegetation.

Property Management, Dept. of Public Works

Acknowledge receipt of the request with regards to registering a servitude over State Land (206 Vaalkoppies Settlement).

Request correspondence from the DWA indicating that they do not have any objections to the pipeline, as well as technical specifications and drawings of the pipeline.

The drawings are required by the DPW Valuation Department, who will determine the once off payment in order for the servitude to be registered against the State Title Deed. The Regional Committee will then convene to decide on granting approval of the request.

The Upington Islands Main Irrigation Council and Strausburg Irrigation Council, that resort within the jurisdiction of the Upington Islands Main Irrigation Council, currently has right of use of parcel 206, Vaalkoppies.

The DWA is currently in process to transfer all the parcels of land and infrastructure to the various Councils.

In the light of the above the mentioned Councils confirm that it does not have any objection against the granting of a servitude over parcel 206, Vaalkoppies.

Also refer to Appendix G2 page 6 row No. 1 of the phase two public participation process where relevant points were raised by this Council.

Comments received on the advertisement in the Gemsbok as well as the background information document made available to potential I&APs

Upington Islands Irrigation Council

According to the advertisement in the Gemsbok it seems as if the pipeline would have to cross the canal and associated infrastructure. Parcel 206 of Vaalkoppies Settlement is occupied by the WUA and living coaters are situated on the property.

There are several requirements regarding the proposed crossing of the canal as the pump location and pipeline will cross the canal within the Upington Islands Main Irrigation Council area of responsibility.

1. The section where the pipeline will cross the canal it shall be within a steel sleeve.
2. The pipeline will be placed upon concrete blocks on either side of the canal. A sketch plan has been attached to Appendix G2b6.
3. The key and lock has to be arranged with the irrigation council.

SANRAL

Wayleave application needs to be submitted to SANRAL prior to any attempt to cross the road reserve. SANRAL provided an application form.

SANRAL does not allow a servitude to be registered across the national road reserve, but will issue a wayleave in terms of S 48 of Act 7 of 1998.

No open excavation will be allowed, the pipe will have to be installed by way of pipe jacking or directional drilling.

The pipeline must be inside a sleeve or a steel pipe and it must cover the full width of the road reserve.

SAHRA

Phase 1 Archaeological Impact Assessment (AIA) to be conducted.

A Palaeontological study or a letter of exemption (LOE) from a Palaeontologist.

NBKB, Northern Cape PHRA, determined that an assessment of the built environment will be required to be included in the HIA.

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with

oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewsapes must also be assessed.

Final comment on Phase 1a AIA and Palaeontology LOE:

Based on the submitted information, SAHRA has no objection to the proposed development on heritage grounds as it is unlikely that the proposed development will impact on significant heritage resources.

DPW

Be informed that it would be preferable to register a pipeline servitude which would require a valuation by the Departments Valuations Services in our Head Office.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

<p>Comments received on the draft basic EIA made available to I&APs</p> <p>The Upington Islands Main Irrigation Council and Strausburg Irrigation Council, that resort within the jurisdiction of the Upington Islands Main Irrigation Council, currently has right of use of parcel 206, Vaalkoppies.</p> <p>The DWA is currently in process to transfer all the parcels of land and infrastructure to the various Councils.</p> <p>In the light of the above the mentioned Councils confirm that it does not have any objection against the granting of a servitude over parcel 206, Vaalkoppies.</p> <p>Also refer to Appendix G2 page 6 row No. 1 of the phase two public participation process where relevant points were raised by this Council.</p>
<p>Comments received on the advertisement in the Gemsbok as well as the background information document made available to potential I&APs</p> <p>Mr Eduard Goussard (Land owner Portion 68 of Farm Vaalkoppies No. 40 as well as neighbour)</p> <p>Mr Goussard has identified himself as the owner of portion 68 of the farm Vaalkoppies No. 40 and states that not any written negotiations have taken place to date. The applicant has visited the terrain but Mr Goussard would have preferred negotiations to be finalised. He is not against the project but requests that his interests are protected in the long term. He will not allow any servitudes or development on his property without a written agreement with him.</p> <p>Mr J. du Preez (Nieghbour/Land owner Erf 175, Vaalkoppies)</p> <p>Mr du Preez indicated that he was contacted once regarding the possibility of the servitude for a pipeline crossing his property. He stipulates that should he not receive financial compensation for this servitude, he would not be interested for the pipeline to cross his property.</p> <p>If he has to obtain legal advice regarding this matter, he is not planning for it to have any costs to him.</p> <p>Mr du Preez would prefer that the pipeline not cross his property.</p> <p>Mr du Preez requested that he be informed about further developments in this regard and not read in information documents what is planned.</p>
<p>Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):</p>
<p>Response from EAP on comments received on the draft basic EIA made available to I&APs</p> <p>Upington Islands Main Irrigation Council and Strausburg Irrigation Council</p> <p>Noted</p>
<p>Response from EAP on comments received on the advertisement in the Gemsbok as well as the background information document made available to potential I&APs</p> <p>Mr Eduard Goussard</p> <p>The EAP indicated that even though the EIA has commenced, the developer should still reach a legal agreement with the landowner before any servitudes or development may proceed.</p> <p>Also mentioned to Mr Goussard that all documents obtained from the Surveyor General's office indicate that the property belongs to SANRAL and that he should give attention to this mistake as it might cause problems for him in future.</p> <p>Mr J. du Preez</p> <p>The developer indicated that Mr du Preez would be compensated for the size of the area as identified by the land surveyor to the value of agricultural land for the area as stipulated by financial institution.</p> <p>The developer chose to amend the route of the pipeline so as not to cross Parcel 175 belonging to Mr du Preez.</p>

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

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

An environmental impact matrix (Appendix G5) was used to identify possible positive and negative environmental issues for the planning, construction, operation and maintenance, and decommissioning phases. The following issues were investigated:

- water resources;
- soil and agricultural potential (risk of erosion linked to topography of area, land use potential and restriction of land use);
- ecology and biodiversity (impacts on ecology, flora and fauna and especially avifauna);
- social aspects on the macro-, meso-, and microlevel;
- visual quality and aesthetics;
- economic impacts (mostly positive);
- traffic impacts (construction, upgrading and decommissioning phases);
- noise (construction, upgrading and decommissioning phases);
- air quality;
- heritage resources; and
- tourism activities.

The identified possible impacts and possible cumulative effects are being discussed in detail in the Report. Regulatory and mitigatory measures with regard to these impacts have also been stipulated in a comprehensive Environmental Management Programme (EMP) (Appendix F), which forms part of the Report.

2.1 Alternative (preferred alternative) Planning and Design Phase

The first section of the pipeline where an alternative was identified for the pipeline route was identified on parcel 206, Vaalkoppies Settlement near the Orange River. See Appendices A2 and C1. At first the pipeline would have traversed east of one of the koppies through a neck between two koppies but that would traverse through parcel 206 and very near to the house situated on the property.

The route just inside the western border (red line on Appendix C1) of parcel 206 was then identified as a better route socio-economically. It would cross a small drainage area at several places. The construction phase would therefore have an impact but the pipe would be situated well below the soil surface and would therefore in the long term not pose a physical obstruction in the small drainage area. The mitigation measures of the EMP and Ecology report should be followed closely. The route would not follow through the neck of the two koppies that would mean a lower elevation and would also be straighter that would entail less costs regarding the infrastructure as well as water pressure (less sharp bends). As a servitude would be registered, it would be better should it not traverse through the centre of the property but just inside the border where it would have the least impact on the land owner and occupants and would not limit possible future developments on the property.

Two alternative routes were identified at the crossing of the N10. See Appendix C1. The red line indicates the preferred route as it would be straighter with less bends to facilitate better pressure as well as would be less costly. The two options would have the same environmental impact as both would cross the drainage area. The crossing of the N10 is an impacted area and would not cause any further significant impact as the pipeline would be situated below surface and would not present an obstruction to the flow of water. The culvert chosen to cross beneath has been eroded by water and the applicant undertook to repair it should SANRAL allow the pipeline to cross here below surface.

SANRAL indicated that no open excavation will be allowed, the pipe will have to be installed by way of pipe jacking or directional drilling. The pipeline must be inside a sleeve or a steel pipe and it must cover the full width of the road reserve (Appendix G2).

Three dam locations and pipeline routes were identified as alternatives to the south of the N10 on the remaining extent of the Farm Vaalkoppies No. 40. See Appendix C1. Dam 3 is the preferred alternative and was chosen due to engineering requirements. Dam 1 and 2 would both be located very high on the hills near sensitive areas. Dam 3 is located on the upper reaches of a drainage area that has also been indicated as sensitive as it is within 32 meters of a drainage area. Not any protected plants are occurring near or surrounding Dam 3 as in the case of Dams 1 and 2. The pipeline route would also mostly follow an existing road south of the N10 to the Dam 3 and would be shorter than the routes to Dams 1 and 2. Environmentally and from an engineering point of view Dam 3 has been chosen as the preferred alternative.

Direct impacts:

Poorly planned and designed pipelines can cause construction and possibly later operation and maintenance difficulties that can delay construction, be expensive to rectify and cause environmental damage such as re-opening of pipeline to correct faults and structural problems (cost to the environment). This may lead to legal and later financial impacts to the client, the consulting engineer as well as the contractor/s.

Indirect impacts:

The above aspects may lead to a delay in commissioning of the pipeline and associated infrastructure and therefore a delay of planned agriculture activities on Deo Gloria Olive Estate.

Cumulative impacts:

Not any cumulative impacts identified

Mitigation:

Alternatives need to be considered with regards to the BATNEEC principle (Best Available Technology Not Exceeding Excessive Cost).

Available skills of nearby communities to be established.

Proper planning to be done by relevant skilled people to identify the infrastructure, technology & processes, available resources and resources needed, identify and acquire persons with the required technical competence, and plan the timing of the implementation and operation of the pipeline.

Land surveying and delineation of construction area and search, rescue and transplanting of protected species.

Refer to page 11 of the EMP Pre Construction (Planning) General (Appendix F)

Water Use Applications should already be in place prior to the crossing of the drainage areas en route.

“No-go” Alternative:

Direct impacts:

To not proceed with the planning for the proposed development would mean that the developer would not be able to develop the pipeline or the subsequent planned intensive agricultural activities on his property.

Indirect impacts:

The work opportunities that would be created by this and subsequent developments would not be created.

Cumulative impacts:

Slower economic development of the local area that would in turn have assisted in the economic development of the Northern Cape.

2.2 Alternative (preferred alternative) Construction Phase

Activities that may have an impact on the environment during the construction phase:

Many impacts associated with the project would only be effected during the construction phase and the action would thus be temporary in duration. However, actions performed during the construction phase may cause pollution that would have longer lasting effects on the environment. Construction phase impacts are therefore investigated further during this phase, especially with a view to limit and mitigate lasting effects.

- Clearing and removal of vegetation and topsoil in the construction area and camp to the upper side (Clearing & Grubbing);
- Construction of access and internal service roads;
- Establishment of camp site and temporary structures e.g. offices, toilets, ablution facilities, storage facilities (POL) and maintenance area;
- Eating areas and camp followers;
- Use and cleanliness of toilets and ablution facilities;
- Sewage: Storage and Disposal;
- Waste Management: General and hazardous solid and liquid waste storage and disposal;
- Crew camps;
- Fires;
- Storage and Use of machinery, vehicles and equipment on the construction area and construction camp;
- Storage, use and maintenance of workshop equipment;
- Storage and Use of:
 - Oil and chemicals;

- Fuels (Bulk);
- Dangerous and toxic materials;
- Cement & concrete batching (for building of structures).
- Handling of Stockpiles;
- Blasting;
- Earthworks.

Impacts (Direct, Indirect and Cumulative):

2.2.1 Water Resources:

Potential impacts associated with the Construction phase include:

- Surface Water Pollution and Quality Degradation;
- Ground Water Pollution;
- Hydrology
 - impact on infiltration;
 - change in storm water drainage;
 - catchment areas;
 - ponding; and
 - change in amount and velocity of runoff.

Surface Water

The temporary water usage during the construction phase is mainly for construction of concrete foundations and potable water. A concrete batching plant could possibly be erected on site or pre-mixed concrete obtained from an external supplier.

Potable water would be supplied via trucks or small trailers where personnel are working.

Open water do not occur within the study area and rainfall is very low but heavy thunderstorms occur in summer that could mobilise spilled contaminants to other areas and also cause ingress. Water enlarges the area of contamination significantly and after ingress or dissipation of the water soil pollution emanates in another area. Cumulative impacts might be experienced downstream due to neighbouring farming activities. The likelihood would be low due to the low rainfall of the area.

Hydrology (Surface Water)

The regional economy depends on the existence of the Orange River and therefore any activity that would possibly reduce their flow must be considered.

The utilisation of this resource is complicated by the following factors:

- the highly intermittent flow of the river;
- weakening water quality; and
- the wide variety of consumers within the system, varying from users who need a high degree of assurance for continuous supply, such as commercial/progressive farmers, to users who can adapt to various levels of supply.

The agricultural sector in this area is highly dependent on the water from the Orange River for irrigation purposes, especially during the summer, which is the active growth season for most crops.

Due to the highly fluctuating nature of the rivers and the high number of different water users within this region, requiring water during different periods, an estimate of the availability of water for the agriculture development is not part of this study.

The DWA control water allocations and also calculates the percentage needed for the environment (approximately 5 %). The water is then allocated to users according to set rules and standards and monitored closely.

Different Water Use Applications has been and some will still be submitted to DWA and this BAR and EMP should also be attached to the application documentation for the WULAs.

The installation of the pipeline would create some impervious areas such as buildings, infrastructure and roads. This would cause local changes to infiltration at the scale of the building, but storm water drainage would disperse this on site.

Infiltration is also affected by disturbance and sealing. Agricultural activities result in the sealing of the soil surface, which leads to reduced infiltration. Furthermore, vehicular activity could cause disturbance and compaction, which would further reduce infiltration.

The runoff generated by rainfall on a soil surface is dependent on the intensity and duration of the rainfall, combined with the infiltration capacity of the soil. It is not likely that the development of the pipeline would have a significant impact on runoff, as most of the site would retain its soil and topographical characteristics. When runoff occurs in this arid environment, it occurs as storm flow, subsiding quickly, with the stream channel reverting to its normal dry condition. Thus it is also likely that there would be no effect on stream flow.

The pipeline will be placed underground and will not present a physical obstruction to the hydrology of the drainage areas. The physical excavation through the bed and banks of the drainage areas would not present long term impacts should the soil erosion mitigation

measures be implemented. Impacts on plant growth on the banks will be short term should the stipulated prevention and mitigation measures be implemented.

Ground Water

The following possible risks to the groundwater have been identified:

- leaching of herbicides that might be needed for alien plant control into the subsurface;
- migration of hydrocarbon fuel spillages (chemical contamination) as well as oils and lubricants by construction vehicles and machinery into the subsurface; and
- sewage storage and disposal.

In all instances the spatial scale of contamination is likely to be localised, i.e. encompassing the zone between the source and the Orange River. The duration of this impact is likely to be either long-term (between 15 and 30 years) or permanent. Mitigation (other than natural mitigation) is likely to be difficult, expensive and time-consuming. Prevention would therefore be better than cure.

Groundwater gradients at the study area are not known with any certainty, but it is assumed that they slope in the direction of the Orange River. Any contaminants in the groundwater will therefore form a plume from the source towards the Orange River.

The likelihood of such an impact actually occurring is improbable should all the measures, as stipulated in the EMP, be implemented.

Mitigation Measures

Mitigation measures pertaining to water resources are contained in the following sections of the Environmental Management Programme (Appendix F)

- Preconstruction phase
 - Planning of layout
- Construction and operational phase
 - handling stockpiles
 - oil and chemicals
 - cement and concrete batching
 - provision of storage facilities for dangerous and toxic materials
 - bulk storage of fuels and oils
 - use of dangerous and toxic materials
 - toilets and ablution facilities
 - waste management
 - workshop equipment, maintenance and storage
 - erosion and sedimentation
 - no-go/sensitive areas
 - access road
 - internal service roads
 - hydrology
 - soil

Storage of POL on a concrete floor fitted with an oil trap as well as a berm to contain contaminated water or accidental rupturing of tanks (100% of volume of tanks + 10%).

The oil trap or separator has to be cleaned and maintained regularly.

Vehicles to be maintained and repaired at the designated area within the construction camp where possible.

Drip trays to be used for possible oil and diesel (POL) leaks that might occur for each machine and vehicle and when they are stored at the site when not in use.

Correct placement of the construction camp in consultation with the ECO.

Effective day to day management, control and housekeeping through the implementation and enforcement of the Environmental Management Program by the project manager.

2.2.2 Soil & Agriculture

Construction-related activities that could have an impact on the soil and agricultural potential of the study area include:

- land clearing;
- construction of access road and internal service roads;
- excavation activities;
- operation and maintenance of construction camps, construction vehicles and machinery;
- stockpiling;
- batching plant; and
- dust suppression.

Potential impacts associated with the construction and operational phases include:

- soil pollution;
- soil degradation;
- soil erosion;
- compaction of soils;
- impacts on topography or slope;
- impacts on land use potential or capability;
- impacts on agricultural potential or capability; and
- restriction of land use.

The proposed pipeline route covers the Lower Gariiep Alluvial Vegetation at the Orange River and the Kalahari Karroid Shrubland to the south.

Wind and water erosion are the major natural causes of soil degradation in the Northern Cape, while changes in species composition, loss of plant cover, and bush encroachment, due to commercial farming, are the most frequent forms of vegetation degradation. (DEAT, 2006)

Soil pollution could take place due to spillage of hazardous chemicals such as petrochemicals that would be stored and used on the construction site.

Soil degradation takes place through the removal, alteration or damage to soil and soil forming processes by land clearing, dust suppression and compaction of soil at roads and development footprints. The direct impacts of degradation and accelerated wind erosion of soil during and after the land clearing activities have been considered.

The potential for soil to erode is the likelihood that erosion will take place when soils are exposed to water and/or wind due to construction activities. The potential for erosion is increased in areas with low-plasticity and fine-grained soils.

Soil erosion could occur through wind and water erosion on the cleared areas during the short and medium term. After rehabilitation and re-establishment of vegetation as stipulated in the EMP, the likelihood for erosion would diminish. Should this not be the case mitigation measures should be implemented as stipulated in the EMP (Appendix F).

Land use potential, agricultural potential and restriction of land use could be lowered temporarily due to the fact that the open trench would be a physical obstruction that could prevent some stock and other faunal species from moving around on the impacted area. The duration would be low as it is a temporary activity of up to eight months.

Mitigation Measures

The construction phase would, in general, not impact on the agricultural potential of the surrounding area.

Mitigation measures pertaining to soil and agricultural resources are contained in the following sections of the Environmental Management Programme (Appendix F):

- Preconstruction phase
 - Site demarcation and development
 - Planning of layout
- Construction and operational phase
 - handling stockpiles
 - oil and chemicals
 - provision of storage facilities for dangerous and toxic materials
 - bulk storage of fuels and oils
 - use of dangerous and toxic materials
 - dust
 - erosion and sedimentation
 - no-go/sensitive areas
 - access roads
 - internal service roads
 - hydrology
 - soil

Land use potential/capability: The contractor will be restricted to a 10 m construction footprint on one side of the pipeline trench or 5 m on either side of the trench. It shall be demarcated and kept to. Fines shall be issued should this be transgressed.

2.2.3 Ecology and Biodiversity

Construction-related activities that could have an impact on the ecology and biodiversity of study area include:

- land clearing;
- construction of access road;
- implementation of associated infrastructure; and
- soil and/or water contamination through the use and storage of petrochemicals.

Potential impacts associated with the construction phase include:

- habitat transformation and/or degradation;
- loss of sensitive/pristine local and regional habitat types;
- ecological and corridor function due to fencing;
- increase in local and regional fragmentation;
- isolation of habitat (long-term impact);
- invasion of alien flora and fauna on disturbed land;
- vegetation destruction (loss of economic use of vegetation);
- depletion of natural resources (e.g. grazing capacity and quality loss);
- destruction of red data/threatened flora spp. (high ecological value);
- floristic species changes;
- destruction of protected tree spp.;
- impacts on threatened faunal spp.;
- impacts on common faunal spp.;
- faunal interactions with structures, servitudes and personnel;
- impacts on surrounding habitats and spp.;
- impacts on South Africa's conservation obligations and targets;
- impacts on avifauna:
 - disturbance;
 - roosting/nesting;
 - perching;
 - nuisance (faeces);
 - collisions;
 - electrocutions; and
 - issues with regard to associated infrastructure.

Areas that are considered to be sensitive are:

- untransformed natural vegetation;
- high diversity or habitat complexity;
- areas containing Red Data species; and
- systems that is vital to sustain ecological functions.

Areas that have low sensitivity are transformed areas that are of little or no importance for the functioning of ecosystems.

Development (or change in land use) usually contributes to habitat loss and degradation in many biodiversity important areas. Much of the impact can be minimized through careful planning and avoidance of sensitive areas. In many areas it is not the direct use of biological resources such as subsistence harvesting (especially of medicinal plants) and illegal collection for commercial trade (particularly of groups such as succulents) that is threatening their sustainability, but rather indirect pressures such as changing of land use, land degradation, clearing of indigenous vegetation, overgrazing, invasion of land by alien species, informal settlements, urban development, industrial and agricultural pollution, mining, impoundments, cultivation, water abstraction and climate change. Loss of habitat is therefore regarded as the foremost cause of loss of biodiversity. (Van Rooyen, 2012)

Direct impacts especially relate to the construction phase and the development footprint and include the destruction of threatened and protected flora species, as well as sensitive/pristine regional habitat types, and direct impacts on common as well as threatened fauna species.

Short term and/or temporary direct and indirect impacts will be experienced on the biodiversity on and directly surrounding the study area. It is a possibility that alien flora might establish on the disturbed areas and then spread to other natural areas.

Protected flora and tree spp. do occur on sections of the study area and the activity will have a direct impact on it and should the construction activities not be controlled it might even have an indirect impact on the flora spp. adjacent to the study area.

Low short term impacts on fauna and avifauna spp. will be a possibility due to the aridity and low rainfall of the area and period of construction activities.

Ecological and habitat fragmentation and corridor function is currently taking place on especially faunal spp. due to the N10, the canal and the fencing of the farm properties alongside it. Due to the current infrastructure and agricultural developments access to the Orange River has been cut off completely for faunal species that occurs naturally to the south and north of the river. Not any planning has been made for corridors for these animals to gain access to the riverine areas that contains life sustaining resources etc., safely from either the north or the south.

This however resorts within a spacial environmental impact assessment where it should be attempted to mitigate this impact that has been created by many years of development without taking the environment into consideration. The impact cannot be rectified in this EIA but is taken into consideration not to exacerbate the impact. It can even create a mitigatory aspect for some smaller faunal species as it creates a direct route to the riverine area next to the river from the Deo Gloria Olive estate underneath the N10 and over the canal (the writer of this report has witnessed in several instances where snakes and lizards have crossed the canal via the pipelines or bridges). It is not foreseen that any fencing would be needed to cordon off the reserve as the pipeline would be situated subsoil.

The construction period would cause a short term cumulative impact. Due to the aridity the area is sparsely populated. Other further cumulative impacts are not currently foreseen as not any other similar activities or structures that would cause the same impacts are currently taking place in the area or is known of that will take place during the same period of this proposed construction phase.

An ecological specialist study has been conducted on the study area by Dr Noel van Rooyen (Ekotrust cc) attached in Appendix D1.

An assessment of the significance of the impacts on the terrestrial ecosystems, aquatic ecosystems, rare and protected plant species and fauna was done. The significance of impacts was assessed by means of the criteria of certainty, severity (intensity and duration), direction (negative, neutral or positive) and scale (extent). The significance rating is determined by a combination of the impact and sensitivity ratings. (Van Rooyen, 2012)

This ecological assessment of the proposed water pipeline for the Deo Gloria Olive Estate (Pty) Ltd covers the area from the Orange River southwards to the dam sites on the farm Vaalkoppies No. 40 near Upington. An environmental impact assessment of the eastern portion of the farm Vaalkoppies No. 40 was commissioned by Van Zyl Environmental Consultants to determine the possible impact that the proposed building of an approximately 4 km pipeline, from the Orange River southwards, and a reservoir, will have on the environment.

The farm Vaalkoppies No. 40 occurs on the sandy and rocky undulating plains south of the Orange River at an altitude varying from about 800 m a.s.l. in the north near the Orange River, to 919 m a.s.l. at the highest point in the southeast, a difference of 119 m. The hills on the site consist of quartzite and schist, while most of the plains are covered with red-brown wind-blown sand of Recent age. Occasional small outcrops of ultrametamorphic rock form small hills (inselbergs) locally in the area. Lime and calcrete are present in places, with some quartz-rich outcrops occurring locally. The site falls in Land Type Ae and consists of red-yellow apedal, freely drained sandy soils with a high base status and deeper than 300 mm. No dunes occur in this land type.

Alien plant species

Invasive alien species should be controlled and eradicated with an emphasis on urgent action in biodiversity priority areas. In addition to habitat loss due to development pressures, transformation of habitats due to the uncontrolled spread of invasive alien species is a serious concern in all biomes and ecosystems.

Protected flora and Rare plant species

Red Data Lists are a source of information for decision-makers, to improve the monitoring of the rate of loss of biodiversity, and should include an assessment of the cause of a species' conservation status. Species threatened by habitat destruction need to be conserved through mechanisms that conserve the entire ecosystem, where possible. (Van Rooyen, 2012)

NCNCA (as cited in Van Rooyen, 2012) Schedule 2 protected plant species on site, eg. *Aloe claviflora*, *Aloe hereroensis*, *Anacampseros filamentosa* and *Avonia albissima* should be conserved if possible. Permits are required to remove these species. . Most of the plants' National Red List statuses vary from declining (*Acacia erioloba*) and Least concern.

National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004) (TOPS lists). None of the plant species recorded on site is listed in the NEMA:BA (TOPS) lists of critically endangered, endangered or vulnerable species. (Van Rooyen, 2012)

Red List of South African Plants (Raimondo et al. 2009). All plant species recorded on site are considered as 'Least Concern'. (Van Rooyen, 2012)

CITES classification (2009 lists, Appendices I, II, & III). Appendix II of the Ecology Study lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. Species recorded at the site includes *Aloe claviflora*, *Aloe hereroensis*, *Anacampseros filamentosa*, *Avonia albissima*, *Euphorbia avasmontana* and *Euphorbia gariiepina* (Van Rooyen, 2012)

Red data mammals

Based on Mills & Hes (1997), Friedmann & Daly (2004) and Skinner & Chimimba (2005), and the type of habitat on site, the habitat requirements of the species and personal observations of Dr Van Rooyen during the field survey, no Red Data Book (RDB) species with a status higher than LC was recorded during the survey in November 2012. The aardvark does occur on the site where some deep sandy

habitats are found. The armadillo (*Oryzomys afer*), previously listed as Vulnerable, is now listed as "Least Concern" (Friedmann & Daly 2004). (Van Rooyen, 2012)

Indirect impacts on fauna could occur due to loss of habitat and faunal interactions with the structures, servitudes and personnel.

Contact would inevitably occur between personnel and animals, especially during the construction phase, when a large number of people would be required on the site. Although larger faunal species would tend to move away from the site and avoid contact with humans, encounters with snakes, scorpions, spiders and possibly larger predators would remain likely. The likelihood of animals being killed by means of snaring, poaching, poisoning, trapping and vehicles would inevitably increase due to the presence of humans in areas of natural habitat and measures should be taken to prevent and mitigate these impacts.

Consequences of the construction phase may be the fragmentation of populations, reduction of area of occupancy and loss of genetic variation of affected species.

While animals generally avoid contact with humans and human structures, they do grow accustomed to structures, and some species even to humans, after some time. Animals such as baboons and monkeys can climb on structures and possibly cause damage to structures. These animals are not likely to occur at this study area as water and high features, providing protection against predators, are limited or unavailable. These species normally occur nearer to the river systems where food, water and protection are more readily available.

Sensitivity

An ecological sensitivity analysis was conducted by the ecologist, Dr Noel van Rooyen that can be found on page 45 of the Ecology Report in Appendix D1b.

The plant communities on site were evaluated and ranked in terms of sensitivity (very low, low, moderate, high and very high sensitivity). The sensitivity rating for the flora and faunal component is based on the presence of rare and/or threatened flora and fauna on site and is a subjective assessment of the sensitivity on a scale ranging from very low (1) to very high (5) (see sensitivity ranking and rating scale above). The flora and fauna sensitivity is rated as low provided the protected tree species on site is conserved and offset land is available for dispersal of fauna. (Van Rooyen, 2012)

Presence of biodiversity offset areas

Biodiversity offsets are conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects or other harmful activities, so as to ensure no net loss of biodiversity (Table 5, CSIR 2005, De Witt et al., 2006 as cited in Van Rooyen, 2012). The need to consider a biodiversity offset is only triggered when residual biodiversity impacts of moderate to higher significance are evident.

Mitigation Measures

Mitigation measures pertaining to ecology and biodiversity aspects are contained in the following sections of the Environmental Management Programme (Appendix F):

- Preconstruction phase
 - Site demarcation and development
 - Planning of layout
- Construction and operational phase
 - Fires
 - Erosion and sedimentation
 - Fauna
 - Flora
 - No-go/sensitive areas
 - Access routes/haul roads
 - Ecological specialist findings

Development should be contained within the proposed footprint of the pump station, bulk water supply line and reservoir and unnecessary disturbance adjacent to the site should be avoided.

Erosion and dust control measures should be implemented during construction.

Minimise large-scale clearance of natural vegetation and disturbance along the pipeline and reservoir sites. Area denuded and disturbed on site due to construction should be re-vegetated (e.g. with dwarf shrubs, forbs and grasses from the area) as soon as possible. Use existing and dedicated access roads to limit disturbance of the natural vegetation.

Establish a monitoring program for the early detection and control of alien invasive plant species. No alien plant species should be used in landscaping on the site.

Displaced fauna should be able to move away from the development site during construction. The rocky ridges and other outcrops should be excluded from any development.

The necessary flora permits should be acquired from Northern Cape Nature Conservation in terms of the Northern Cape Nature Conservation Act (Act No. 9 of 2009) since some protected plant species may be disturbed or destroyed during the construction of the proposed facility and access roads.

Trees

It is recommended that the presence of tall and/or protected trees is assessed once a decision is made on the precise location of the pipeline route and access road. The indigenous and endemic trees and shrubs should be protected as far as possible because they form important food sources and habitats for various fauna.

Alien plants

The alien invader *species* should be controlled on site. Introduction of other alien plants during construction should be prevented. Alien plant control should be continued after the construction of the site.

Fauna

The core site is surrounded by similar habitat and displaced fauna should be able to move away from the development site. However, it is important that the power line to the relevant pump stations be clearly marked to prevent bird collisions.

2.2.4 Social Environment

The main social challenges experienced within the district include:

- low economic growth rate that limits the material needs of communities;
- negative population growth rate due to urbanisation;
- lack of job creation and training institutions in the province resulting in high unemployment rates;
- primary education;
- a desperate need for social activities, services, and youth development; and
- lack of basic services including sanitation.

Potential impacts associated with the construction and operational phases include:

- **Macrosystem**
 - impact on country
 - economic growth
 - long-term social benefits
 - development/transfer of technology
- **Mesosystem**
 - safety and security
 - daily movement patterns
 - socio-economic impacts (social investment, job creation, job seekers, population increase, increased services demand, social problems)
 - impact on urban expansion
 - impact on tourism and recreation
 - economic impact
 - distance to residential areas
- **Microsystem (physical presence of infrastructure)**
 - health and safety of workers and public
 - sense of place (tourism and recreation)
 - land use impacts (cultivation and grazing)
 - traditional/cultural conflicts
 - I&AP interest

The sphere of influence of the proposed pipeline has been assessed within the mesosystem and the microsystem.

Social impacts at the macrosystem level derive from the fact that the related development that would follow the implementation of the pipeline would assist in ensuring food security to South Africa.

Social impacts at the mesosystem level include all or part of the district or local municipality's area of responsibility. The impacts of the project on employment opportunities have been assessed.

Impacts at the microsystem level are caused by the physical presence of the pipeline and ancillary infrastructure, and are confined to the occupants of the study area or directly adjacent to it.

Mesolevel Impacts

Employment opportunities created by the construction phases would have short-term positive impacts that in turn would improve the lives of individuals and families. The magnitude of this impact would depend on the number of construction workers to be employed, either by the developer itself or by contractors. Sourcing of construction workers from the local labour pool is likely to be limited to unskilled workers. This could have some economic benefits for surrounding communities, although only of a temporary nature. The development would not substantially reduce the unemployment rate of the area but it could still help some households to recover from dire financial situations. Some local procurement of goods, materials and services could occur, which would result in positive indirect socio-economic impacts. Should the development proceed it would ensure the long term agricultural development on the property of the proponent. This would have long term indirect positive socio-economic impacts due to employment opportunities on the olive and raisin farm that would realise should the needed water become available.

Microlevel Impacts

The physical presence of the construction plant and construction activities could possibly cause direct impacts to the area immediately surrounding the study area. These impacts might be experienced by landowners and residents in the area immediately surrounding the study area.

Mitigation Measures

It is important to establish the number of skilled labourers in the area, as well as the types of skills they have.

Mitigation measures pertaining to the social environment are contained in the following sections of the Environmental Management Programme (Appendix F)

- Preconstruction phase
 - Communication with stakeholders and I&APS
- Construction and operational phase
 - Cognisance of other developments
 - Employment opportunities for local communities
 - Capacity building in local communities
 - HIV/Aids education
 - Crime, safety and security

2.2.5 Visual and Aesthetical Impacts

Potential impacts associated with the construction and operational phases include:

- visual impacts;
- reduction in aesthetic properties;
- littering and housekeeping on the construction site;
- light pollution ; and
- dust nuisance and other impacts related to the construction phase.

The construction infrastructure, machinery and activities will be visual from a short distance. The vertical dimension of the machinery will be the highest and might reach 4 to 5 meters in height. The vegetation is very low and will not conceal the activity. The surrounding landscape has koppies and hilly areas surrounding it. It will be visible from a very short distance on the N 10 as well as from some of the immediate surrounding farm roads.

The activity will have a short term medium direct aesthetic impact.

Mitigation Measures

In most cases, the landscape and visual impacts occurring during the construction phase can be mitigated relatively effectively. Rehabilitation of the disturbed areas would prevent the exposure of soil, which may cause a reduction in the visual quality of the study area. Sensitive positioning of the construction camps and laydown yards should take advantage of the natural screening capacity of the study area by locating the camps outside of the views of sensitive visual receptors.

Mitigation measures pertaining to the visual impacts are contained in the following sections of the Environmental Management Programme (Appendix F):

- Preconstruction phase
 - Site demarcation and development
 - Planning of layout
 - Visual impacts (lighting)
- Construction and operational phase
 - Dust
 - Crew camps
 - Traffic impacts
 - Visual impact
 - Ecological specialist recommendations

2.2.6 Economic Impacts

Potential impacts associated with the construction phase include:

- financial and economic impacts;
- stakeholder interest;
- business risk/benefit; and
- damage to property (landowner and developer).

Positive economic and financial impacts have been sufficiently addressed in the social environment section.

Should property such as equipment, infrastructure, machines and vehicles be damaged or lost, it will have a negative financial impact on the developer and contractor for replacing infrastructure. While a high level of both stakeholder and business risk is involved, there are also great potential benefits. There is a high level of financial input, while the developer is not at all assured that leave would be granted to implement the proposed development.

The stakeholders are the developer, contractor and community who will benefit from the employment opportunities, intellectual information and infrastructure that will be provided. The developer and, to a lesser extent, the contractor carries all the risk associated with this project.

The activity will have some positive economic impact through possible job creation and use of Northern Cape based suppliers.

Business, financial and economic benefit to community is a net benefit as all expenditures, technology inputs, will be carried by the developer.

The members employed at all levels also benefit from technology and skills transfer that will take place from the employer to the workforce.

Mitigation Measures

This impact could only be mitigated by internalising the externalities and clearly identifying and defining aspects related to this development. It would include proper planning, good management control and housekeeping, as well as safety and security of infrastructure and personnel.

The purpose of the EIA as a whole is to assist in addressing these aspects very early in the planning phase. The EIA will continue to do so as the project planning (critical project timeline) of the proposed development progresses.

Business risk to the developer can be mitigated partly through research, business plans drawn up, and strict control of expenditures and implementation of effective but affordable technology.

Mitigation measures have been addressed in the following sections of the Environmental Management Programme (Appendix F):

- Preconstruction phase
 - Project contract and programme
 - Appointments and duties of project team
- Construction and operational phase
 - Crime, safety and security

2.2.7 Noise

Potential impacts associated with the construction phase include:

- nuisance;
- health and safety of workers and public;
- traffic volumes; and
- noise sensitive areas.

Noise associated with the proposed development would mostly be generated during the construction phases and, to a lesser extent, during the decommissioning phase, and would be limited to noise levels generally associated with construction.

Noise nuisances will be low and short termed. The study area is located well away from any noise sensitive areas. Noise will be experienced by farm residents that might possibly move nearer to the development area due to farming practices or possibly curiosity. Health & Safety in areas declared as noise areas will have a direct impact on the hearing of workers. Public will not be allowed near this area.

Mitigation Measures

Workers should wear proper PPE. Mitigation measures pertaining to the noise impacts are contained in the construction and operational phase noise section of the Environmental Management Programme (Appendix F).

2.2.8 Air Quality

Impacts on air quality would mostly occur during the construction and decommissioning phases and could involve dust nuisance and emissions by vehicles and construction equipment.

Dust nuisances would be experienced at the areas where the construction is taking place but the duration would be short. The dust may have a direct impact on the respiratory health of the workers and to a lesser extent the public but the extent, duration and intensity would be low.

Mitigation Measures

Mitigation measures are included in the dust section of the construction and operational phase section of the EMP.

Air pollution

Vehicles to be maintained and fitted with exhausts and mufflers to ensure that air pollution is kept to minimum.

The vehicles and machinery that is to be used shall be maintained and kept in good order according to standard rules and regulations as to keep the air pollution generated from these vehicles and machinery to within the limits as prescribed within legislation.

Regulatory control of vehicles and machinery as well as regular and good maintenance.

Dust nuisance

Dust suppression to be conducted when needed to prevent dust pollution and nuisances onto the N10 and the nearby farm residences.

Health & safety of workers & public

Workers to wear proper PPE and public do not need to come near the construction area due to the remoteness of the area. It is possible to keep the public out of this area.

2.2.9 Heritage Resources

Archaeological Aspects

A Phase 1 Archaeological Impact Assessment was conducted by Dr Peter Nilssen in December 2012 (Appendix D3b). Dr Nilssen is an accredited archaeologist and a professional member - in good standing - of the Association of South African Professional Archaeologists (ASAPA), including the Cultural Resource Management section of the same association expertise is included within the AIA Report.

Although numerous Stone Age artefacts were identified along most of the studied area, these are scattered on the surface in low densities and occur mostly as isolated finds. No faunal remains or other cultural materials were seen. The vast bulk of specimens are in quartz with only a few pieces made in banded ironstone. A few artefacts of potentially Middle Stone Age (MSA) origin were seen, but the overwhelming majority are of the Later Stone Age (LSA). No archaeological materials were identified in exposed profiles of geotech test holes or stream cuttings. (Nilssen, 2012)

Stone artefact types include cores (some microlithic and a few bladelet cores), flakes, chunks, and numerous retouched pieces were identified. The latter are dominated by a variety of scrapers and notched pieces/adzes. A bifacially retouched point or convergent flake was also noted. (Nilssen, 2012)

Significance and Recommendation

Because Stone Age artefacts identified in the study area occur as isolated finds or in low density artefact scatters that are in a temporally mixed and derived context, these materials are considered to be of low archaeological significance. The finds are designated a field rating of Generally Protected C, and because they were adequately documented during this study they do not require further recording before development commences (Nilssen, 2012)

Apart from the above-mentioned archaeological materials, no other heritage related resources or issues were identified during the study.

Recommended mitigation measures

Archaeological resources identified during this study do not require further recording/studies and because they are considered to be of low heritage value, they can be damaged and/or destroyed without a permit from SAHRA (Nilssen, 2012)

In the event that excavations and earthmoving activities expose significant archaeological or heritage resources, such activities must stop and SAHRA must be notified immediately. If significant archaeological or heritage resources are exposed during construction activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer. In the event of exposing human remains during construction, the matter will fall into the domain of the South African Heritage Resources Agency (Mrs Colette Scheermeyer) and will require a professional archaeologist to undertake mitigation if needed (Nilssen, 2012)

Palaeontological Aspects

Exemption was granted by SAHRA (Appendix G2b6) from a Palaeontological Impact Assessment.

The highly metamorphosed bedrocks of the Precambrian Vaalkoppies Group, Namaqua Natal Province are entirely unfossiliferous (Almond & Pether 2008).

Close to the Orange River alluvial gravels of Miocene and younger Late Tertiary / Neogene age are locally highly fossiliferous (e.g. Hendy 1984, Schneider & Marias 2004, Almond 2008, 2009 and extensive references therein) but, as argued above, these are not mapped within the Vaalkoppies study area. Younger silty alluvial deposits may contain a range of terrestrial and freshwater fossils and subfossils. Freshwater snails are mentioned in particular by Moen (2007, p. 150). Possible relict patches of Quaternary aeolian sands of the Gordonia Formation (Kalahari Group) are of low palaeontological sensitivity. (Almond, 2013)

Conclusion and recommendations

The proposed bulk water supply line for the Deo Gloria Olive Estate near Upington is underlain by unfossiliferous Precambrian basement rocks (Vaalkoppies Group) and well as locally by thin superficial sediments (geologically young stream and river alluvium, surface gravels, aeolian sands) of low palaeontological sensitivity. Potentially fossiliferous Tertiary river gravels are not mapped in this area. The impact significance of the proposed water pipeline on local fossil heritage resources is considered to be LOW (Almond, 2013).

Mitigation measures pertaining to the heritage impacts are contained in the construction and operational phase heritage section of the Environmental Management Programme (Appendix F).

2.2.10 Impacts on Eco-Tourism

The potential impacts on tourism would include but not be limited to:

- visual impact on established tourism areas and products as well as potential tourists;
- proximity to roads; and
- impact on traffic flow to the area.

There is a need for economic development by the business sector to the district to facilitate further economic growth and employment opportunities.

There are no known established tourism facilities or guest houses in the vicinity of the study area.

The small size of the population means that relatively few people would see the construction activities daily at this site. Traffic past the area is via the N10 between Groblershoop and Upington.

Due to the short period that construction will last, the remoteness of the area and the lack of tourism activities within this area, the impact will be low with a low impact on the traffic and visibility. This construction will not hamper established tourism within the area and will also not create any potential for tourism development within this area. Not any indirect or cumulative impacts have been identified.

Mitigation measures addressed within the EMP are as follows (Appendix F):

- Pre-construction phase: Site demarcation and development;
- Construction and operational phase: Visual impact.

2.3 Alternative (preferred alternative) Decommissioning and Rehabilitation of Construction Areas after Completion of Construction Work

Activities that may have an impact on the Environment after the completion of construction work:

Removal and disposal of spoil and construction rubble. It is an option to infill into the nearby old borrow pit should the spoil or rubble not be contaminated. It would improve the visual aspects of these borrow pits and reduce travelling distance to the nearest municipal general waste disposal site that would imply less fuel, time and maintenance on vehicles as well as maintenance of roads.

Removal and dismantling of the construction camp and associated infrastructure.

Rehabilitation of contaminated areas should it be needed.

Transporting of equipment, machinery and vehicles to the next construction site.

Contouring of topsoil back onto construction areas.
Mulching and seeding with indigenous vegetation where needed.

Impacts (direct, indirect, cumulative):

The impacts (direct, indirect and cumulative) will be approximately the same as the construction phase although some would have a lower impact than during the construction phase. The scale of these impacts can be viewed in the Environmental Impact Matrix in Appendix G5.

Mitigation:

The mitigation measures for the decommissioning and rehabilitation of construction areas after completion of construction work has been addressed in the EMP within the following sections:

- crew camps;
- erosion and sedimentation;
- flora; and
- soil.

2.4 Alternative (preferred alternative) Operational and Maintenance Phase of infrastructure and services

Activities that may have an impact on the Environment during the O&M phase:

Commissioning of the pipeline
Pump water into installed pipeline to conduct installation tests
Maintenance of pipeline
Maintenance of the access road alongside the pipeline.
Maintenance and repair of pipeline and associated infrastructure.

Impacts (Direct, Indirect, Cumulative):

2.4.1 Water Resources:

Potential impacts associated with the O&M phase include:

- Surface Water Pollution and Quality Degradation;
- Hydrology
 - impact on infiltration;
 - change in storm water drainage;
 - catchment areas;
 - ponding; and
 - change in amount and velocity of runoff; and
- Impact on the sustainability of aquifer/groundwater of area.

Open water do not occur within the study area and rainfall is very low but heavy thunderstorms occur in summer that could mobilise spilled contaminants. Direct and indirect impacts may be experienced due to the above mentioned activities. The same aspects is applicable as in the construction phase but the extent, intensity and probability of the impact to actually occur will be much lower than in the construction phase.

This pipeline has a direct and indirect positive impact on the usage of boreholes on the Deo Gloria Olive Estate. The availability of good quality water from the river would ensure that the impact on the aquifers/groundwater within this area is much lower. The possible recharge from agricultural use of water from the usage of the Orange River water may have a positive or negative impact on the geohydrology of the area due to the use of fertilizers.

Mitigation:

Mitigation measures pertaining to water resources are contained in the following sections of the Environmental Management Programme (Appendix F)

- Operational phase
 - erosion and sedimentation
 - no-go/sensitive areas
 - access road
 - internal service roads
 - hydrology
 - soil

2.4.2 Soil and Agriculture

Operation-related activities that could have an impact on the soil and agricultural potential of the study area include:

- Operation and maintenance of
 - access roads;
 - infrastructure including ancillary infrastructure; and
 - vehicles.

Possible Impacts:

- Soil Pollution
- Soil Erosion

Maintenance activities could possibly cause soil pollution should a breakdown be experienced and repairs need to be conducted within the study area.

Soil erosion could proceed during this phase should rehabilitation during the decommissioning phase not be conducted correctly or rehabilitated areas not maintained afterwards where vegetation did not establish properly due to various reasons such as grazing and movement of animals on the areas that could cause deterioration or excessive draughts be experienced after the rehabilitation phase.

Mitigation Measures

The continued implementation of the rehabilitation and control measures as set out within the EMP should ensure that soil pollution and erosion be prevented and should it occur the mitigation and rehabilitation measures as set out within the EMP should be implemented.

2.4.3 Ecology & Biodiversity

Operation- and maintenance-related activities that could have an impact on the ecology and biodiversity of the study area include:

- use of access roads;
- operation and maintenance of main and associated infrastructure;
- presence of impermeable surfaces; and
- maintenance of vegetation in the area (veld management).

Impacts that relate to the operational phase and the surrounding environment include potential floristic species changes in the development area, faunal interactions with all components of the development, and impacts on surrounding habitats and species. Cumulative impacts include increases in or continuation of local fragmentation or isolation of habitats, as well as increases in or continuation of environmental degradation.

Habitat may be transformed within the short term through the succession stages of rehabilitation of the plant growth on the areas where the disturbance took place. Alien flora could possibly establish on the disturbed areas.

Mitigation Measures

Mitigation measures pertaining to ecology and biodiversity aspects are contained in the following sections of the Environmental Management Programme (Appendix F):

- Operational phase
 - Fires
 - Erosion and sedimentation
 - Fauna
 - Flora
 - No-go/sensitive areas
 - Access routes/haul roads
 - Ecological specialist findings

Establish a monitoring program for the early detection and control of alien invasive plant species.

2.4.4 Socio Economic Environment

Social Aspects relevant in the O&M phase would be:

- Mesosystem
 - Socio economic benefits
 - Economic Impact
 - I&AP interest
- Economy
 - Economic impacts
 - Financial impacts
 - Damage to property

- Stakeholder interest
- Business risk/benefit

The continued assured availability of water to the Deo Gloria Olive Estate will continue to benefit the agriculture development of the local area positively as activities, economic of nature, can continue to take place and the possibility of expansion of the current agricultural development is made possible through the water supplied from the Orange River via the pipeline.

To ensure that the positive socio-economic impacts of the new pipeline continue would also depend on the correct operation and maintenance of the pipeline. This will ensure that the pipeline will be operational for the long term.

2.5 Alternative (preferred alternative) Decommissioning and Closure Phase

Activities that may have an impact on the Environment during the decommissioning and closure phase:

The removal of the pumps, pump houses, and valve boxes along the route of the pipeline and removal of the rubble to a general landfill site and selling of the pumps.

Impacts(Direct, Indirect, Cumulative):

The removal of the infrastructure would have minimal and negligent environmental impacts of which the most important would be soil and water pollution should breakdowns of vehicles and machinery be experienced. The physical disturbance of the areas where the structures are removed would be very local and restricted to those specific areas.

The aquifers/groundwater within the Deo Gloria Olive Estate and surrounding area would be impacted upon as it would be used to replace the loss of the pipeline water. A further specialist study would be needed at that stage to ascertain if the aquifers would be able to sustain the current and future planned agriculture and estate developments.

A socio-economic impact would be experienced within the local communities due to the loss of employment should it become evident that the aquifers would possibly not be able to sustain the agriculture and other developments that has been implemented at that stage.

Mitigation:

The same principles for prevention, control and rehabilitation as set out within the EMP for the construction and operation and maintenance phases would be applicable should it become necessary to decommission the pipeline in future.

Other economic developments should be implemented to mitigate the socio-economic impact on the Deo Gloria Olive Estate should the pipeline be closed down and removed.

2.6 Alternative (preferred alternative) “No-Go” Alternative

Impacts (Direct, Indirect, Cumulative):

2.6.1 Water Resources

- Ground Water Pollution;
- Impact on sustainability of aquifer/groundwater of the area

Open water do not occur within the study area and rainfall is very low but heavy thunderstorms occur in summer that may recharge groundwater occasionally.

The aquifers/groundwater within the surrounding area would be impacted upon should the agricultural as well as other planned developments be only reliant on the aquifers. A further specialist study would then be needed at that stage to ascertain if the aquifers would be able to sustain the current and future planned agriculture and estate developments should the no-go option be opted for.

2.6.2 Socio Economic Environment

- Economic impacts
- Financial impacts
- Damage to property
- Stakeholder interest
- Business risk/benefit

The “No-Go” option would possibly limit the planned agricultural and other developments from proceeding and would also possibly have a long term negative direct, and indirect impact on the economy of Deo Gloria Olive Estate and its employees.

3. ENVIRONMENTAL IMPACT STATEMENT

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

Impacts that might potentially be associated with the pipeline include impacts on water resources; soil and agricultural potential (risk of erosion linked to topography of area, land use potential and restriction of land use); ecology and biodiversity (impacts on ecology, flora and fauna, and especially avifauna); social aspects on the meso- and microlevel; visual quality and aesthetics; economic impacts (mostly positive); and heritage resources.

Most of the potential impacts identified are anticipated to be site-specific. No environmental fatal flaws were identified. Mitigation has provided for protected plants and trees to either be avoided or permits obtained to move it or remove it (plants and trees of less importance).

Alternative A (preferred alternative)

3.1 Potentially Significant Issues Related to the Construction and Operational Phase after Mitigation

Not any potentially significant issues were identified for the construction and operational phases should the mitigation measures, stipulated in the EMP and specialist recommendations, be adhered to and implemented correctly.

See Appendix G5 EIA Matrix for the ratings of the initial impacts and after the implementation of the mitigation measures.

3.2 No-go alternative (compulsory)

The 'do nothing' alternative is the option of not undertaking the development of the pipeline. Should this alternative be selected, it would have local impacts.

The identified site, at a local level, would not be impacted on from an environmental perspective and would continue to be utilised for agricultural activities on marginal agricultural land.

Deciding not to proceed with the development would have a negative impact on the local socio-economic development of the area. The temporary direct construction job opportunities and long term indirect agricultural job creation and poverty alleviation that would have occurred due to the development, would not take place.

The 'do nothing' alternative is not a preferred alternative in this application compared to the socio-economic development that would be created considering the direct, indirect and cumulative impacts to the environment as it would be possible to control and mitigate the impacts related to the construction and operational phase of the development should the mitigation stipulations of the EMP and specialist recommendations be implemented.

SECTION E. RECOMMENDATION OF PRACTITIONER

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

YES	NO

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

--

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

Close attention should be given to the following aspects and the related mitigation measures to ensure that impacts remain within an acceptable limit.

At the abstraction point at the Orange River, the Lower Gariep Alluvial Vegetation occurs that is considered as 'endangered' in terms of NEMA:BA (2009). An application should therefore be submitted to the competent authority to work within this area. Works within this area should be limited to as small an area as possible. Hand labour is a preferred method in this area as machinery would open up a large area and would compact soils. Hand labour should be used until the road next to the canal south of the Orange River where the pipeline will cross.

The Ecology Report pointed out that only a single individual protected *Acacia erioloba* tree was recorded near the Orange River and this tree must be avoided during construction of the pipeline, pump station and reservoir.

The stipulations made by the water user association/water board regarding the crossing of the canal should be complied with and should be confirmed prior to the commencement of construction.

There are several requirements regarding the proposed crossing of the canal as the pump location and pipeline will cross the canal within the Upington Islands Main Irrigation Council area of responsibility.

1. The section where the pipeline will cross the canal shall be within a steel sleeve.
2. The pipeline will be placed upon concrete blocks on either side of the canal. A sketch plan has been attached to Appendix G2f.
3. The key and lock has to be arranged with the irrigation council.

Detailed plans should be submitted to the competent authority (DWA or WUA) for approval. Any damage to the canal would be to the account of the developer.

As the development is taking place near or within drainage areas, the developer should endeavour to limit the crossings of the drainage areas. Although an application to work within the 32 meter range of drainage areas has been submitted, the pipeline should be planned such that it refrain from entering these areas where possible. This is a pertinent stipulation within the ecology report so as to ensure that the impacts remain within an acceptable limit.

It is important that water use applications should be submitted to DWA for the access to the Orange River as well as crossings of the drainage areas. This did not form part of the EIA and it is not known to the EAP if it has been done. This should be a pertinent stipulation within the environmental authorisation.

Soil erosion would be a real concern as the development will be taking place near and in some places within the drainage areas where storm flow would take place after heavy rains. It is expected that natural rehabilitation and regrowth of vegetation would be very slow due to the vegetation type and aridity of the area. It is therefore imperative that erosion control measures, re-vegetation and rehabilitation be implemented correctly.

The socio-economic impact to stakeholders should be addressed by ensuring that contracts or agreements with landowners where the pipeline will cross are finalised and the registration of servitudes finalised, prior to the commencement of construction.

The location of protected plants en route of the pipeline and dam location should be confirmed by a specialist and permits and possibly licenses obtained from the relevant competent authorities. Should any fauna such as meerkat and ground squirrel colonies etc. occur within the construction areas, it should be relocated prior to commencement of construction near those areas.

A wayleave application needs to be submitted to SANRAL prior to any attempt to cross the road reserve. SANRAL provided an application form to the applicant.

SANRAL does not allow a servitude to be registered across the national road reserve, but will issue a wayleave in terms of S 48 of Act 7 of 1998.

No open excavation will be allowed, the pipe will have to be installed by way of pipe jacking or directional drilling.

The pipeline must be inside a sleeve or a steel pipe and it must cover the full width of the road reserve.

Is an EMPr attached?

YES	NO
-----	----

The EMPr must be attached as **Appendix F**.

REFERENCES

- Almond, J.E., 2013. **RECOMMENDED EXEMPTION FROM FURTHER PALAEOLOGICAL STUDIES: Proposed Bulk Water Supply Line for the Deo Gloria Olive Estate near Upington, Northern Cape.** Cape Town
- Department of Environmental Affairs and Tourism (DEAT). 2006. **South Africa Environment Outlook. A Report on the State of the Environment.** Department of Environmental Affairs and Tourism, Pretoria. 371pp.
- Miller, G.T., 2005. **Living in the Environment. Principles, Connections, and Solutions.** 14th ed. Pacific Grove: Brooks/Cole-Thomson Learning.
- Nilssen, P., 2012. **Phase 1a Archaeological Impact Assessment. The Proposed Building and Operation of a Bulk Water Supply Line near Upington on Remaining Extent of the Farm Vaalkoppies No. 40, //Khara Hais Municipality, Northern Cape Province.** Great Brak River
- Van Rooyen, N. 2012. **Ecology Assessment of the Proposed Deo Gloria Water Pipeline (from Orange River to farm Vaalkoppies No. 40, Upington).** Lynnwood

ADDENDUM 1:

Pipeline 250 m points of Alternatives

SECTION F: APPENDIXES

- Appendix A: Site plan(s)
- Appendix A1: Locality Map
- Appendix A2: Cadastral Map
- Appendix A3: Regional Land Types Map
- Appendix A4: Regional Vegetation Map
- Appendix A5: Climate
- Appendix B: Photographs
- Appendix C: Facility illustration(s)
 - C1: Status Quo
 - C2: Access Routes (Google Earth)
- Appendix D: Specialist reports (including **terms of reference**)
- Appendix D1a: ToR Ecology
- Appendix D1b: Ecology Report
- Appendix D2a: ToR AIA
- Appendix D2b: Archaeology Report
- Appendix D2c: Supporting Letter
- Appendix D3a: ToR Palaeontology Studies
- Appendix D3b: Palaeontology LOE
- Appendix E: Comments and Responses Report
- Appendix F: Environmental Management Programme (EMP)
- Appendix G: Other information
- Appendix G1: Communication from DENC
- Appendix G2a: Public Participation Process Phase 1 prior to Application for Authorisation
- G2b: Public Participation Process Phase 2: Notifications
 - G2b1: Distribution of Notification Letters to identified I&APs, stakeholders and government
 - G2b2: Response Form
 - G2b3: Background Information Document (BID)
 - G2b4: Proof of Email Notifications
 - G2b5: Proof of Distribution of Notification Letters, Response Form, and BID
 - G2b6: Comments Received & Responses
 - G2b7: Advertisement (Gemsbok) dated 2 November 2012
 - G2b8: On Site and other Notices
 - G2b9: List of Stakeholders and Registered I&APs
- G2c: PPP Phase 3 Proof Notices to Registered I&APs and Comments Received
- Appendix G3a&b: Water Use Licences (DWA)
- Appendix G3c: Environmental Authorisation dated 15 December 2010
- Appendix G3d&e: Ploughing Certificates
- Appendix G4: Title Deed Information
- Appendix G5: Significance Rating Scale Impact Matrix
- Appendix G6: Van Zyl Environmental Consultants Company Profile

Appendix A:

Site plan(s)

- Appendix A1: Locality Map
- Appendix A2: Cadastral Map
- Appendix A3: Regional Land Types Map
- Appendix A4: Regional Vegetation Map
- Appendix A5: Climate

Appendix B:

Photographs

Appendix C:

Facility Illustrations

- Appendix C1: Status Quo
- Appendix C2: Access Routes (Google Earth)

Appendix D:

Specialist reports (including **terms of reference**)

Appendix D1a: ToR Ecology

Appendix D1b: Ecology Report

Appendix D2a: ToR AIA

Appendix D2b: Archaeology Report

Appendix D2c: Supporting Letter

Appendix D3a: ToR Palaeontology Studies

Appendix D3b: Palaeontology LOE

Appendix E:

Comments and Responses Report

Appendix F:

Environmental Management Programme

Appendix G1:

Communication from DENC

Appendix G2:

Public Participation Process Phase 1, 2 & 3

Appendix G3:

Authorisations Issued to Date

Water Use Licences (DWA)

Environmental Authorisation dated 15 December 2010

Ploughing Certificates

Appendix G4:

Title Deed Information

Appendix G5:

Significance Rating Scale Impact Matrix

Appendix G6:

Van Zyl Environmental Consultants Company Profile