# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

# APPLICATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION

**Date: 29 February 2012**
**JMA / 10391**
**JMA File Reference: LET7136**

**DEDET: 17/2/2/2 GS – 08**

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reaching new frontiers

JMA

# PROOF OF DELIVERY

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA Ref: 10391

**DELIVERED BY HAND**

6 March 2012

Directorate: Environmental Impact Management
Department of Economic Development, Environment and Tourism
P O Box 2777
ERMELO
2351

DEDET Ref: 17/2/2/2/GS - 08

**ATTENTION: MR S T MAREBANE**

**SASOL MINING**
**MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**APPLICATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED ESTABLISHMENT OF INFRASTRUCTURE FOR MINING LISTED ACTIVITIES RELATED TO THE CONSTRUCTION OF THE SHONDONI SHAFTW ITHIN THE JURISDICTION OF GOVAN MBEKI LOCAL MUNICIPALITY MPUMALANGA PROVINCE**

**ACKNOWLEDGEMENT OF RECEIPT**

Receipt is hereby acknowledged of 1 HARD COPY of the abovementioned application.

**Delivered by:**

NAME:
JMA Consulting (Pty) Ltd

Date: 6/3/2012

Time: 10:42

**Received by:**

B HEKI

NAME:
For and on behalf of DEDET

Date: 6/3/2012

Time: 10:42

# SUBMISSION LETTER

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

Your Ref: 17/2/2/2/GS - 08 Our Ref: JMA/10391/JM

29 February 2012

Directorate: Environmental Impact Management
Department of Economic Development, Environment and Tourism
P O Box 2777
**ERMELO**
2351

**ATTENTION: Mr S T Marebane**

Dear Sir

**APPLICATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED ESTABLISHMENT OF INFRASTRUCTURE FOR MINING LISTED ACTIVITIES RELATED TO THE CONSTRUCTION OF THE SHONDONI SHAFT WITHIN THE JURISDICTION OF GOVAN MBEKI LOCAL MUNICIPALITY MPUMALANGA PROVINCE**

With reference to the above we herewith now wish to submit our formal application for Amendment of the Environmental Authorization, Register Number 17/2/2/2 GS-08, issued to Sasol Mining (Pty) Ltd on 13/07/2011.

Although JMA Consulting, the EAP appointed by Sasol Mining for the EIA, received documentation from an appellant that a formal appeal was lodged against the decision, and duly responded to this, it now appears, after consultation with me Pamela Nntuli of DEDET, Nelspruit, (082 520 3680), that such an appeal was indeed never lodged with DEDET.

In view of the above, we therefore now wish to submit our formal Application for an Amendment to the Authorization as issued.

Subject to the supporting information contained in, and attached to, the formal application, JMA are of the opinion that sufficient motivation exists to indicate that granting of the application is unlikely to adversely affect the environment or the rights or interests of other parties.

In the interest of expediting the matter, JMA assumed that the alteration of the Conveyor Alignment could possibly be construed to represent a **substantive** amendment. In order to cater for this possibility, JMA Consulting, the appointed EAP for the Amendment Application, can confirm that:

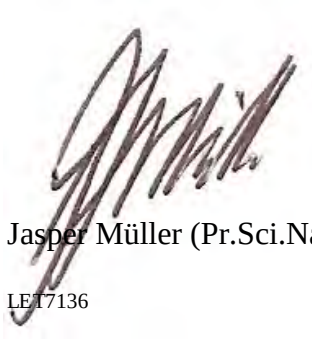
1. All landowners affected by the original, as well as the new conveyor alignment, have been informed of the alteration, as well as of the intention to apply for an amendment.

2. Additional investigations and assessments were commissioned on Noise, Heritage and Wetlands in support of the Application. The resulting reports are attached as Appendix B, Appendix C and Appendix D to this application.

We trust that the information supplied will negate the requirement for any further additional public participation and/or further additional investigations and assessments.

We anticipate your favorable consideration of our application on behalf of Sasol Mining.

Respectfully submitted



Jasper Müller (Pr.Sci.Nat.)

LET7136

# FORMAL APPLICATION ON PRESCRIBED FORM

the dedet

Department:
Economic Development, Environment and Tourism
MPUMALANGA PROVINCIAL GOVERNMENT

# Application for Amendment of Environmental Authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

(For official use only)

| | |
|---|---|
| **File Reference Number:** | |
| **NEAS Reference Number:** | |
| **Date Received:** | |
| **Responsible Official:** | |

**When to use this form**
This form must be used to apply for the amendment of an environmental authorisation, and must be submitted if a) there is a material change in the circumstances which existed at the time of the granting of the environmental authorisation; b) there has been a change in ownership in the property and transfer of rights and obligations must be provided for; c) a condition contained in the environmental authorisation must be amended, added, substituted, corrected, removed or updated.
**Note:** an extension of the time period for which an environmental authorisation is valid is regarded as an amendment of a condition contained in the environmental authorisation.

**Kindly note that:**

1. This application form is current as of 2 August 2010. It is the responsibility of the EAP/applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.

2. The application 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. It is in the form of a table that can extend itself as each space is filled with typing.

3. Incomplete applications may be returned to the applicant for revision.

4. The use of "not applicable" in the form must be done with circumspection as if it is used in respect of material information that is required by the competent authority for assessing the application, and may result in the rejection of the application as provided for in the regulations.

5. This form must be submitted to the Department at the postal address of the relevant **DISTRICT OFFICE** given below or by delivery thereof to the relevant **DISTRICT OFFICE**. Should the application form not be submitted at the relevant district office, it will not be considered.

6. No faxed or e-mailed applications will be accepted.

7. A certified copy of the environmental authorisation in respect of which an amendment is applied for must be attached to this document – **Appendix A**.

8. Unless protected by law, all information contained in and attached to this application, will become public information on receipt by the competent authority. Upon request during any stage of the application process, the applicant / EAP must provide any registered interested and affected party with the information contained in and attached to this application.

## DEPARTMENTAL DETAILS

| HEAD OFFICE (18 Jones Street, Nelpruit) | EHLANZENI DISTRICT (18 Jones Street, Nelspruit) | NKANGALA DISTRICT (Pavilion Building, Cnr Botha & Northey Streets, Witbank) | GERT SIBANDE DISTRICT (13 De Jager Street, Ermelo) |
|---|---|---|---|
| Attention: Directorate: Environmental Impact Management<br>Private Bag X 11219<br>Nelspruit,<br>1200<br><br>Queries should be directed to the Directorate: Environmental Impact Management at:<br>Tel: (013) 759 4000<br>Fax (013) 759 4165 | Attention: Directorate: Environmental Impact Management<br>Private Bag X 11219<br>Nelspruit,<br>1200<br><br>Queries should be directed to the Directorate: Environmental Impact Management at:<br>Tel: (013) 759 4000<br>Fax (013) 759 4165 | Attention: Directorate: Environmental Impact Management<br>P. O. Box 7255<br>Witbank,<br>1035<br><br>Queries should be directed to the Directorate: Environmental Impact Management at:<br>Tel:<br>Fax: | Attention: Directorate: Environmental Impact Management<br>P. O. Box 2777<br>Ermelo,<br>2351<br><br>Queries should be directed to the Directorate: Environmental Impact Management at:<br>Tel:<br>Fax: |

## A. BACKGROUND INFORMATION

### 1. Details relating to the environmental authorisation

| | |
|---|---|
| **Environmental authorisation number in respect of which an amendment is applied for:** | 17/2/2/2 GS - 08 |
| **Date of issue of environmental authorisation:** | 13/07/2011 |
| **Activity/ies for which authorisation was granted:** | GNR 386 Activities 1(c), 1(m), 1(n), 4, 7, 12, 13, 14, 15 and GNR 387 Activities 1(i), 1, 1(e), 1(j) and 2. |
| **Project Title:** | The Proposed Establishment of Infrastructure for Mining Listed Activities related to the Construction of the Sasol Mining Middelbult Block 8 Shondoni Shaft within the Jurisdiction of the Govan Mbeki Local Municipality, Mpumalanga Province. |
| **Property description** (Farm name, portion, number, registration division etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application. | A full list of all the properties involved are given in the list on Pages 3 & 4. |
| **Physical/Street address where authorised activity is taking or will take place:** | Shondoni Shaft Complex, Farms Leeuwspruit 134 IS, Witkleifontein 131(IS) and Zandfontein 130 IS, within the Jurisdiction of the Govan Mbeki Local Municipality, Mpumalanga Province. |

A certified copy of the environmental authorisation must be attached to this application.

| | |
|---|---|
| Certified copy of environmental authorization attached – **YES** | A copy of the environmental authorization has been attached as **Appendix A.** |

### 2. Details of the holder of the environmental authorisation

| | | | |
|---|---|---|---|
| **Name of person to whom the environmental authorisation was issued:** | Sasol Mining (Pty) Ltd | | |
| **Trading name (if any):** | Sasol Mining (Pty) Ltd | | |
| **Contact person:** | Dr Gail Nussey | | |
| **Physical address:** | Paul Kruger Road, Secunda | | |
| **Postal address:** | Private Bag X 1015, Secunda | | |
| **Postal code:** | 2302 | **Cell:** | 072 140 5500 |
| **Telephone:** | (017) 614 2207 | **Fax:** | (011) 592 9272 |
| **E-mail:** | gail.nussey@sasol.com | | |

### 3. Details of the environmental assessment practitioner

| | | | |
|---|---|---|---|
| **If an environmental assessment practitioner is being used, name of EAP:** | JMA Consulting (Pty) Ltd | | |
| **Contact person:** | Jasper Muller | | |
| **Postal address:** | P O Box 883, Delmas | | |
| **Postal code:** | 2210 | **Cell:** | 082 495 0169 |
| **Telephone:** | (013) 665 1788 | **Fax:** | (013) 665 2364 |
| **E-mail:** | jasper@jmaconsult.co.za | | |
| **Qualifications & relevant experience** | M.Sc. Geohydrology with 25 years experience in Environmental Assessment and Management | | |
| **Professional affiliation(s) (if any)** | Professional Natural Scientist Pr.Sci.Nat. 400073/86 (Earth Science & Environmental Science) | | |

### 4. Details of landowner

| | | | |
|---|---|---|---|
| **Name of landowner if the person to whom the environmental authorisation has been issued is not the owner:** | Sasol Mining obtains legal servitudes on all land on which they have surface infrastructure. However, the list of Landowners with their Contact Information, to which the properties on which the servitudes are registered, is shown on the extra page inserted as Page 3. | | |
| **Contact person:** | See list on Page 3 & 4 | | |
| **Postal address:** | See list on Page 3 & 4 | | |
| **Postal code:** | See list on Page 3 & 4 | | |
| **Telephone:** | See list on Page 3 & 4 | **Cell:** | See list on Page 3 & 4 |
| **E-mail:** | See list on Page 3 & 4 | **Fax:** | See list on Page 3 & 4 |
| **Has the owner been informed of this application?** | Yes | | |

If there is more than one landowner, please attach a list of landowners with their contact details to this application.

| | |
|---|---|
| Page 3 & 4 | **Extra page attached** |

## List of Properties, Surveyor General ID Code, Landowners, Postal Address, Telephone, Fax, E-mail

**NB! Properties and Owners shown in RED are the only ones affected by the Changes to the Conveyor Route.**

| PROPERTY | 21 DIGIT SURVEYOR GENERAL CODE | LAND OWNER | POSTAL ADDRESS | TELEPHONE | FAX | E-MAIL | INFORMED OF AMENDMENT APPLICATION (YES/NO) |
|---|---|---|---|---|---|---|---|
| Winkelhaak 135 IS Portion 16 | T0IS00000000013500016 | CE Combrink | P.O. Box 178, Kinross | 082 388 2150 | 086 101 0377 | mrhcombrink@gmail.com | NO |
| Ruigtekuilen 129 IS Portion 1 | T0IS00000000012900001 | CE Combrink | P.O. Box 178, Kinross | 082 388 2150 | 086 101 0377 | mrhcombrink@gmail.com | NO |
| Ruigtekuilen 129 IS Remaining Extent | T0IS00000000012900000 | MRH Combrink | P.O. Box 178, Kinross | 082 388 2150 | 086 101 0377 | mrhcombrink@gmail.com | NO |
| Kromdraai 128 IS Portion 14 | T0IS00000000012800014 | Braam de la Rey Trust | P.O. Box 32, Leslie | 082 927 3388 | | mdelarey@mweb.co.za | NO |
| Leeuspruit 134 IS Remaining Extent | T0IS00000000013400000 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | NO |
| Witkleifontein 131 IS Portion 1 | T0IS00000000013100001 | Sakhisiswe Comunal Property Association | P.O. Box 818, Evander | 082 044 2820 | | steveshabangu@gmail.com | NO |
| Witkleifontein 131 IS Portion 4 | T0IS00000000013100004 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | NO |
| Witkleifontein 131 IS Remaining Extent | T0IS00000000013100000 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | NO |
| Zandfontein 130 IS Portion 4 | T0IS00000000013000004 | Sasol Mining (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | NO |
| Zandfontein 130 IS Portion 5 | T0IS00000000013000005 | Brendan Village cc | P.O. Box 374, River Crescent, Witbank | 013 656 5816 | 013 656 5954 | carel@brendanvillage.com | NO |
| Zandfontein 130 IS Portion 6 | T0IS00000000013000006 | Zandfontein MMC Eiendomme cc | P.O. Box 178, Kinross | 082 388 2150 | 086 101 0377 | mrhcombrink@gmail.com | NO |
| Zandfontein 130 IS Portion 2 | T0IS00000000013000002 | Brendan Village cc | P.O. Box 374, River Crescent, Witbank | 013 656 5816 | 013 656 5954 | carel@brendanvillage.com | NO |
| Zandfontein 130 IS Portion 3 | T0IS00000000013000003 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | NO |
| Zandfontein 130 IS Portion 8 | T0IS00000000013000008 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | YES |
| Zandfontein 130 IS Portion 9 | T0IS00000000013000009 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | YES |
| Grootspruit 279 IS Portion 3 | T0IS00000000027900003 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | YES |
| Grootspruit 279 IS Portion 6 | T0IS00000000027900006 | MJ Dakile | 1580, Eae str, Embalenhle | 017 685 2502 | - | - | YES |
| Grootspruit 279 IS | T0IS00000000027900007 | J C Els | P.O. Box 35, | 017 712 5211 | 086 614 1755 | svniekerk@ipsojure.co.za | YES |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Portion 7 | | | Standerton | | | | |
| Grootspruit 279 IS Portion 9 | T0IS00000000027900009 | Govan Mbeki Local Municipality | Private Bag X 1017, Secunda | 017 620 6000 | 017 631 3599 | albert.o@govanmbeki.gov.za | YES |
| Grootspruit 279 IS Portion 10 | T0IS00000000027900010 | Govan Mbeki Local Municipality | Private Bag X 1017, Secunda | 017 620 6000 | 017 631 3599 | albert.o@govanmbeki.gov.za | YES |
| Grootspruit 279 IS Portion 12 | T0IS00000000027900012 | Govan Mbeki Local Municipality | Private Bag X 1017, Secunda | 017 620 6000 | 017 631 3599 | albert.o@govanmbeki.gov.za | YES |
| Grootspruit 279 IS Portion 14 | T0IS00000000027900014 | Siyalinga Small Scale Farmers Co-Operative Ltd | P O Box 1272, Witbank | 013 656 6452 | 013 656 4755 | makobe@ikon.co.za | YES |
| Grootspruit 279 IS Remaining Extent | T0IS00000000027900000 | Evander Gold Mines Ltd | Private Bag X1012, Evander | 072 603 0622 | 017 632 4046 | boet.conradie@harmony.co.za | YES |
| Rietkuil 283 IS Portion 5 | T0IS00000000028300005 | Republic of South Africa | Private Bag X 86, Marshalltown | 011 355 5401 | | sankosi@dla.gov.za | YES |
| Rietkuil 283 IS Portion 6 | T0IS00000000028300006 | Republic of South Africa | Private Bag X 86, Marshalltown | 011 355 5401 | | sankosi@dla.gov.za | YES |
| Rietkuil 283 IS Portion 8 | T0IS00000000028300008 | Embalenhle Community Trust | - | 082 965 1296 | - | - | YES |
| Rietvlei 320 IS Portion 2 | T0IS00000000032000002 | Sasol Synfuels (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Rietvlei 320 IS Portion 3 | T0IS00000000032000003 | Sasol Synfuels (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Rietvlei 320 IS Portion 4 | T0IS00000000032000004 | Sasol Mining (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Rietvlei 320 IS Portion 8 | T0IS00000000032000008 | Sasol Mining (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Rietvlei 320 IS Portion 15 | T0IS00000000032000015 | Sasol Mining (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Rietvlei 320 IS Remaining Extent | T0IS00000000032000000 | Sasol Synfuels (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Brandspruit 318 IS Portion 3 | T0IS00000000031800003 | Sasol Synfuels (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |
| Twistdraai 285 IS Portion 4 | T0IS00000000028500004 | Sasol Synfuels (Pty) Ltd | P.O. Box 699,Trichardt | 082 499 4379 | 011 522 5882 | ampie.potgieter@sasol.com | YES |

## B. AMENDMENTS APPLIED FOR AND RELATED INFORMATION

### 1. Amendments requested

Describe the amendments that are applied and an explanation of why the amendments are required in the table below.

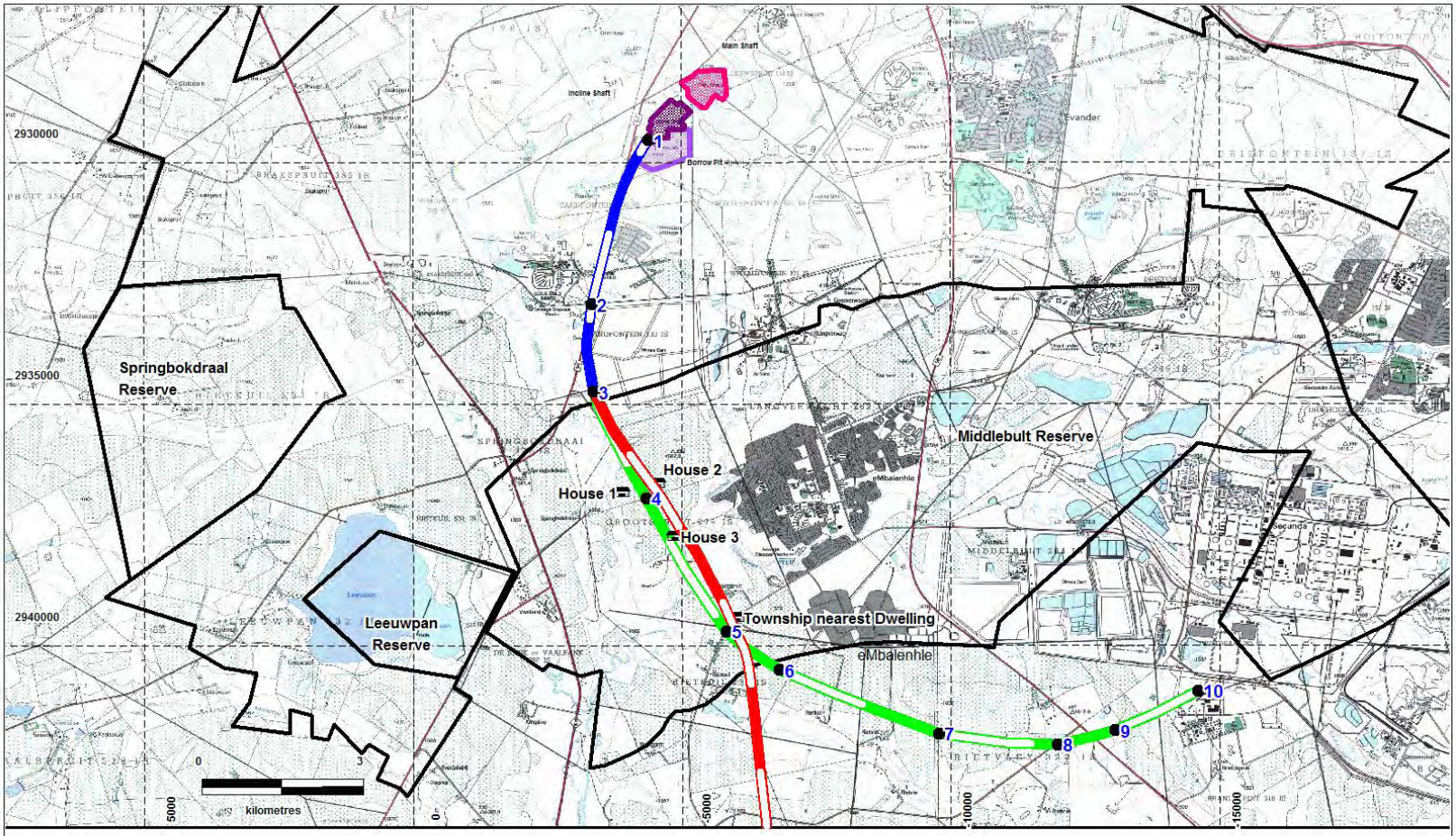
| Amendment requested | Reason why amendment is required |
|---|---|
| 1. Location of Activity | All the locations/properties on which listed activities will occur are not listed. A comprehensive list of properties on which Listed Activities for which this authorization is required are located, is attached - APPENDIX B.<br><br>Activities occur on portions of the Farms:<br><br>Winkelhaak 135 IS<br>Ruigtekuilen 129 IS<br>Kromdraai 128 IS<br>Leeuspruit 134 IS<br>Witkleifontein 131 IS<br>Zandfontein 130 IS<br>Grootspruit 279 IS<br>Rietkuil 283 IS<br>Rietvlei 320 IS<br>Brandspruit 318 IS<br>Twistdraai 285 IS |
| 2. Activity Authorized – Impact Assessment Regulations 2010. | It is stated in the ROD that the activities are authorized in terms of the 2010 EIA Regulations. However, the Application for Authorization in terms of NEMA was lodged in terms of the 2006 EIA Regulations. It is therefore our submission that this ROD should be dispensed with in terms of the Transitional Arrangements provided for in section 76 (1) of GNR 543 of 18 June 2010 which states:<br><br>*"A application submitted in terms of the previous NEMA regulations and which is pending when these Regulations take effect, must despite the repeal of those regulations be dispensed with in terms of the those previous NEMA regulations as if those previous NEMA regulations have not been repealed."* |
| 3. Activity Authorized - Contact Person | Sasol Mining (Pty) Ltd wishes to amend the details of the contact person, currently Dr Gail Nussey, with Mr Pierre Jordaan who will be the mine manager. His contact details are:<br><br>The Mine Manager<br>Brandspruit Mining Complex<br>Private Bag X 1015<br>Secunda<br>2302<br>Tel: (017) 614 5503<br>Cel: 082 465 0248<br>Fax: (011) 522 5528<br>Email: pierre.jordaan@sasol.com |
| 4. Activity Authorized – Coordinates of Overland Coal Conveyor | The proposed alignment of the Shondoni Overland Coal Conveyor has changed after Point 3. The full motivation for the amendment related to the changed alignment will be dealt with later. Both the old and new alignments are shown on the map. The new coordinates are given below. Blue coordinates are for the unchanged section and green coordinates are for the new section):<br><br>Point # Latitude Longitude<br><br>1<br>2 9 01 ' 58.595 "<br>3 31 ' 38.982 " 29 01 ' 59.232 "<br><br>5 34 ' 20.518 " 29 03 ' 30.445 "<br>6 34 ' 46.646 " 29 04 ' 02.640 "<br>7 35 ' 28.374 " 29 05 ' 50.417 "<br>8 35 ' 36.236 " 29 07 ' 07.385 "<br>9 35 ' 26.700 " 29 07 ' 45.876 "<br>10 34 ' 59.351 " 29 08 ' 42.241 "<br><br>A map showing the authorized coal conveyor alignment, together with the proposed new alignment is attached as an extra page (Page 7). |

| | |
|---|---|
| 5. Activity Authorized – Listed Activities | The application was lodged in terms of the 2006 EIA Regulations and listed activities related to both GNR 386 and GNR 387 were applied for. Whereas the listed activities of GNR 386 applied for were correctly reflected in the ROD, the GNR 387 activities applied for were not reflected correctly. The correct GNR 387 activities that should be reflected in the ROD are Listed Activities 1(j), 1(l) and 2.<br><br>The ROD furthermore reflects that the activities relate to GNR 544 and GNR 546 of 18 June 2010, which is incorrect. As stated earlier, it is our submission that this ROD should be dealt with in terms of the Transitional Arrangements provided for in section 76 (1) of GNR 543 of 18 June 2010. |
| 6. Commissioning and Operation of the Activities – condition 3.38 | The applicant, Sasol Mining (Pty) Ltd, requests that this provision be amended to also include the Mine Health & Safety Act (Act No 29 of 1996). |
| 7. Change in Location of Overland Coal Conveyor | During the final design stage of the project, the southern leg of the overland coal conveyor was moved. The main reasons for the alteration in alignment relates to practical considerations with regard to the curvature of the conveyor, financial considerations due to the new alignment being shorter and environmental considerations in that the Waterval River would not have to be crossed. |

If there is insufficient space in the table above the table may be expanded if being completed electronically, or attach an extra page.

Page 7 **Extra page attached**

**Map showing the Authorized Coal Conveyor Alignment together with the Proposed New Coal Conveyor Alignment**




**Date:** January 2012

**JMA CONSULTING (PTY) LTD**

*Sustainable Environmental Solutions through Integrated Science & Engineering*

**LEGEND**

- Conveyor Route not Changed
- New Alignment of Shondoni Conveyor Route
- Old Alignment of Shondoni Conveyor Route
- Coordinate Points

## 2. Environmental impacts

2.1 Describe any negative environmental impacts that may occur if the application is granted. Information on any increases in air emissions, waste generation, discharges to water and impacts of the natural or cultural environment must be included.

**The only amendment requested which could have any new environmental impact not assessed in the original EIA, is the amendment requested for the change in the conveyor alignment. In support of this application for amendment, the project EAP, JMA Consulting, conducted an environmental review to assess which environmental or social attributes could be influenced by the prosed conveyor alignment change.**
**The following components were identified:**

- **Noise impacts on residents adjacent to the conveyor**
- **Impacts on Heritage Resources along the conveyor alignment**
- **Impacts on Surface Water Quality, Wetlands and Aquatic Ecosystems along the conveyor alignment**

**JMA Consulting commissioned three Specialist Consultants to conduct an impact assessment and to provide a management plan related to any noise, heritage or water/wetland related aspects which may be caused by the change in the conveyor alignment. The specialist reports are attached as Appendices to this application.**

1. **Noise Specialist Report by Acusolv – Appendix B**
2. **Heritage Specialist report by Dr Julius CC Pistorius – Appendix C**
3. **Water/Wetland Specialist Report by Wetland Consulting Services – Appendix D**

**The findings of the specialist studies revealed the following:**

**Noise**

**Five areas of concern were identified as far as possible noise impacts are concerned. All five these areas were also relevant to the original conveyor alignment and therefore the change in the conveyor alignment will not aggravate the noise impacts. The noise report nevertheless quantified the noise impacts and provides detailed management measures, which if implemented by the applicant, will reduce the noise impacts to acceptable levels.**

**Heritage**

**Only one area of concern was identified as far as possible heritage impacts are concerned. This area was also relevant to the original conveyor alignment and therefore the change in the conveyor alignment will not aggravate the heritage impacts. The heritage report nevertheless quantified the heritage impacts and provides detailed management measures, which if implemented by the applicant, will effectively manage the heritage impacts in accordance with acceptable guidelines as existing in terms of current legislation.**

**Surface Water/Wetlands and Aquatic Ecosystems**

**Up till point 5 of the proposed new conveyor alignment, the impacts assessed for surface water, wetlands and aquatic ecosystems of the original conveyor alignment remain unchanged and have therefore been dealt with fully in the original EIA.**

**After point 5, the original conveyor alignment would have crossed the Waterval River, which was assessed as a high potential impact impact zone on surface water, wetlands and aquatic ecosystems. The new conveyor alignment now avoids crossing the Waterval River all together. Instead it runs parallel to the river and only crosses 4 much less significant water courses – numbered as Crossings 12, 13 14 and 15 in the Specialist Report – see section 6.1.7 of the Specialist Report for Impact Assessment and Management Plan.**

**The highest impact assessed is that of moderate and all impacts can be managed to acceptable levels.**

If there is insufficient space in the table above the table may be expanded if being completed electronically, or attach and extra page and tick the box.

☐ **Extra page attached**

2.2 Describe any negative environmental impacts that may occur if the application is **not** granted.

**If the application is not granted, it will not have any adverse impact on the environment.**

If there is insufficient space in the table above the table may be expanded if being completed electronically, or attach and extra page and tick the box.

☐ **Extra page attached**

2.3 Describe any positive environmental impacts that may occur if the application is granted. Information on any reduction in the ecological footprint, air emissions, waste generation and discharges to water must be included.

**The original conveyor alignment crossed the Waterval River. The river channel, together with its well defined floodplain and wetland systems, was assessed as one of the major environmental risks associated with the original (approved) conveyor alignment and required extensive management and monitoring measures. This entire river crossing and its associated environmental risk has now been removed due to the fact that the new alignment will run north of, and parallel to, the Waterval River. The new alignment therefore represents a much more favorable environmental option.**

If there is insufficient space in the table above the table may be expanded if being completed electronically, or attach and extra page and tick the box.

☐ **Extra page attached**

### 3. Authorisation from other government departments

Are any permission, licenses or other authorisations required from any other departments before the requested amendments can be effected?

| Yes | X | No | |
|---|---|---|---|

If yes, please complete the table below.

| Name of department and contact person | Authorisation required | Authorisation applied for (yes/ no) |
|---|---|---|
| **Department of Water Affairs**<br>**Gauteng Region**<br>**Me Flora Mamabolo**<br>**Tel: 012 392 1361**<br>**Cel: 082 881 8193**<br>**Email: mamabolof@dwa.gov.za** | **Water Use License – NWA section 21(c) and section 21(i) water uses** | **YES** |

### 4. Rights and interests of other parties

Will the rights or interests of other parties be **adversely** affected by the granting of the application?

| Yes | | No | X |
|---|---|---|---|

If yes, please describe the parties who may be affected and the manner is which they may be affected in the space below.

N/A

If no, describe why other parties will not be adversely affected in the space below.

**The following observations are important:**

1. **Sasol Mining will negotiate a mutually acceptable binding servitude agreement with all land owners prior to the conveyor being built. This agreement will ensure that land owners will be adequately compensated for the use of their land.**

2. **Apart from the pure environmental impacts described above, the only other impacts which the conveyor will have on other parties, comprise social attributes related to possible noise and heritage impacts. In this regard it can be stated that these impacts are the same regardless of which conveyor alignment is used. In the areas where noise and heritage impacts occur, the two alignments (old and new) are so close together, that the impact footprints for noise and heritage are similar. The specialist reports attached to this application clearly demonstrates that these impacts have been assessed to a very high level of accuracy and that adequate measures have been designed to manage these impacts to acceptable levels.**

**NOTE:**
**The Department is entitled to request further information if it believes it is necessary for the consideration of the application. If the application is for a substantive amendment or if the rights or interests of other parties are likely to be adversely affected, the Department will instruct the applicant to conduct a public participation process and to conduct any investigations and assessments that it deems necessary.**

## C. DECLARATION

I, _____ , -

- Am duly authorised to make this application on behalf of the applicant; *(delete if the applicant is a natural person)*
- Apply for the amendment(s) of the environmental authorisation referred to in _____;
- Declare that the information in this application form, including any attachment, is not false or misleading in any material manner.

Signature of the applicant and position if the applicant is a legal entity:

Name of company:

Date:

Signature of the Commissioner of Oaths:

Date:

Designation:

Official stamp (below):

## D. CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed; and
- The form has been signed by the holder of the authorisation.

# CERTIFIED COPY OF AUTHORISATION

# MPUMALANGA PROVINCIAL GOVERNMENT

Building No. 4
No. 7 Government Boulevard
Riverside Park Extension 2
Nelspruit
1200
South Africa

Private Bag X 11215
Nelspruit, 1200
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Fax: 013 766 4614
Int: +27 13 766 4004
Int: +27 13 766 4614

## Department of Economic Development, Environment and Tourism

Litiko Letekutfutfukiswa Kwetemnotfo, Simondzwo neteku Vakasha | Umngango Wezoku Thuthukiswa KoMnotho, iBhoduluko nezamaVakatjho | Departement van Ekonomiese Ontwikkeling, Omgewing en Toerisme

**Enquiries** : **ST Marebane**
**Telephone** : **(017) 811 3944**
**Reference** : **17/2/6/3 GS-08**

Dr Gail Nussey
Sasol Mining (Pty) Ltd
Private Bag X1015
**Secunda**
2302

**Fax** : (011) 592 9272
**Email** : gail.nussey@sasol.com

Dear Madam

**AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED ESTABLLISHMENT OF INFRASTRUCTURE FOR MINING LISTED ACTIIVITIES RELATED TO THE CONSTRUCTION OF THE CONVEYOR BELT AT SHONDONI SHAFT ON VARIOUS FARMS WITHIN THE JURISDICTION OF GOVAN MBEKI LOCAL MUNICIPALITY, MPUMALANGA PROVINCE.**

Your application for amendment refers.

The Department has, in terms of the powers vested in it by regulation 45 of the Environmental Impact Assessment Regulations, 2010, decided to amend the authorisation.

1. The amendment entails the realignment of the overland coal conveyor belt. The new conveyor route will be as per the following farms and coordinates

**Farms and Coordinates**

| ID | Farm Name | Latitude (ES) | Longitude (EE) |
|---|---|---|---|
| Start | Zandfontein 130 IS | 26.479482 | 29.04277 |
| 1 | Zandfontein 130 IS | 26.50054 | 29.035212 |
| 2 | Grootspruit 279 IS | 26.546358 | 29.044069 |
| 3 | Rietkuil 283 IS | 26.577336 | 29.068091 |
| 4 | Rietvley 320 IS | 26.591102 | 29.110795 |
| End | Brandspruit 318 IS | 26.581166 | 29.146287 |

2. **The amendment is subject to the following further conditions in addition to compliance with conditions stipulated in terms of the environmental authorization issued on 09 June 2011:**

   2.1 The noise barriers must be constructed to reduce conveyor noise.

   2.2 The relocation of graves must strictly comply with applicable precepts from the South African Heritage Resources Act and any municipal provisions.

3. **Reason considered in granting an amendment**.

   3.1 The original conveyor route was designed to cross the Waterval River. The river channel together with its defined floodplain and wetlands were assessed as a major environmental risk which requires extensive management and monitoring. The entire river crossing has now been avoided and a more favourable environmental option found. The new conveyor route will not fall within the footprint of the wetlands.

4. The department deemed the amendment substantive to result in significant environmental impacts that would conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and subjected the application to an extensive public participation process.

5. The new conveyor comprises impact on social attributes, noise and heritage and was subjected to an extensive public participation process.

6. There were no objections recorded during the public participation process.

7. You are instructed in terms of regulation 10(2) of the Regulations to notify all registered interested and affected parties, in writing and within 12 days of the date of this letter, of the Department's decision to amend the environmental authorisation as well as the provisions regarding the making of appeals that are provided for in the regulations.

8. Your attention is drawn to Chapter 7 of the Regulations which regulates appeal procedures. Appeals may be lodged by means of one of the following methods:

**By facsimile**: (013) 7668 4614

**By post**: Private Bag x 11215
Nelspruit
1200

**By hand**: Building 4, Government Boulevard,
Riverside Park Extension 2
Nelspruit
1200

Your sincerely

**Mr. S.S. Maluleka**
**Chief Director: Environmental Services**
**DATE:** 30-01-13

cc: Jasper Muller
Jasper consulting (Pty) Ltd
Fax: (013) 665 2364
Email: jasper@jimconsult.co.za

MPUMALANGA PROVINCIAL GOVERNMENT

Department of Economic Development, Environment and Tourism

Enq: surgeon Marebane
File No: 17/2/4 GS-27

Dr Gail Nussey
Sasol Mining (Pty)Ltd
Private Bag x1015
**Secunda**
2302
Fax no: 011 592 9272

Dear Sir

**APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED ESTABLISHMENT OF INFRASTRUCTURE FOR MINING ACTIVITIES RELATED TO THE CONSTRUCTION OF SHONDONI SHAFT WITHIN THE JURISDICTION OF GOVAN MBEKI MUNICIPALITY MPUMALANGA (17/2/4/GS-27)**

With reference to the abovementioned application, please be advised that the Department has decided to grant Authorisation. The Environmental Authorisation and reasons for the decision are attached herewith.

In terms of regulation 10(2) of the Environmental Impact Assessment Regulations, 2006, you are instructed to notify all registered interested and affected parties, in writing and within 7 (SEVEN) calendar days of the date of this letter, of the Department's decision in respect of your application as well as the provisions regarding the making of appeals that are provided for in the regulations.

Your attention is drawn to Chapter 7 of the Regulations, which regulates appeal procedures. Should you wish to appeal any aspect of the decision, you must, inter alia, lodge a notice of intention to appeal with the MEC, within 10 days of receiving this letter, by means of one of the following methods:

Certified true copy of the original
IC Groenewald CA (SA)
Membership number: 03293822
Private Bag X1015
**Secunda**
**2302**
Groenewald
08/03/2010

By facsimile: (013) 7668 4614
By post: Private Bag x 11215
Nelspruit
1200

By hand: First Floor, Building 4,
Government Boulevard,
Riverside Park Extension 2
Nelspruit
1200

Should you decide to appeal, you must serve a copy of your notice of intention to appeal on all registered interested and affected parties as well as a notice indicating where, and for what period, the appeal submission will be available for inspection.

Yours faithfully

Dr V DLAMINI
HEAD OF DEPARTMENT
DATE: 12/04/2011

Certified true copy of the original
IC Groenewald CA (SA)
Membership number: 03293822
Private Bag X1015
Secunda
2302
05/03/2012

# MPUMALANGA PROVINCIAL GOVERNMENT

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## Department of Economic Development, Environment and Tourism

Litiko Lekukuthuthukiswa Kwetemnotho, Simondzvo netekuVakasha | Umgangho Wezokuthuthukiswa KoMnotho, iBhoduluko nezamaVakatjho | Departement van Ekonomiese Ontwikkeling, Omgewing en Toerisme


# Environmental Authorisation

**Authorisation register number** : 17/2/2/2 GS - 08

**Holder of Authorisation** : Sasol Mining (Pty) Ltd

**Location of activity** : On portions of the farms kromdraai 128 IS, Leeuwpan 532 IR, Rietkuil 531 IR, Grootspruit 279 IS, Riekuil 283 IS, Langeverwacht 282 IS, Winkelhaak 135 IS, Driefontein 137 IS, Kinross 133 IS, Ruigtekuilen 129 IS and Brakspruit 359 IR

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1. **Decision**
The Department is satisfied on the basis of the information available to it and subject to compliance with the conditions of this environmental authorisation, that the applicant should be authorised to undertake the activity as specified below. Details regarding the basis on which the Department reached this decision are set out in Annexture 1.

2. **Activity authorised**
By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2010, the Department hereby authorises:

Sasol Mining (Pty) Ltd
Private Bag X1015
Secunda
2302

**Contact person:** Dr Gail Nussey
**Tel no:** (017) 614 2207 / 072 140 5500
**Fax no:** (011) 592 9272

**To undertake the following activities (hereafter referred to as "the activities"):** The proposed construction of mining infrastructure at the Shondoni shaft. The project entails the construction of:

- Coal stockpile;
- Coal conveyor belt;
- Pollution control dams
- Fuel storage facilities
- Access road;
- Power lines and
- Clearing of vegetation for infrastructure.

The coordinate are:

| | Latitude | Longitude |
|---|---|---|
| 1 | 26° 27' 55.8444" | 29° 0308.4785" |
| 2 | 26° 28' 41.6701" | 29° 02' 32.1237" |
| 3 | 26° 29' 00.0287" | 29° 02' 14.8567" |
| 4 | 26° 29' 54.1093" | 29° 01' 59.8127" |
| 5 | 26° 30' 20.8675" | 29° 01' 52.996" |
| 6 | 26° 30' 36.6423" | 29° 01' 52.6902" |
| 7 | 26° 30' 49.8817" | 29° 01' 53.5157" |
| 8 | 26° 31' 13.1967" | 29° 01' 59.4131" |
| 9 | 26° 31' 28.4805" | 29° 02' 05.1223" |
| 10 | 26° 31' 46.5138" | 29° 02' 14.317" |
| 11 | 26° 32' 13.2829" | 29° 02' 29.8051" |
| 12 | 26° 32' 38.9234" | 29° 02' 43.0377" |
| 13 | 26° 33' 14.4267" | 29° 03' 10.0943" |
| 14 | 26° 33' 48.2379" | 29° 03' 29.2513" |

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Groenewald
03/03/2015

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| | | |
|---|---|---|
| 15 | 26° 34' 05.1428" | 29° 03' 37.7003" |
| 16 | 26° 34' 24.8619" | 29° 03' 42.4755" |
| 17 | 26° 34' 42.0463" | 29° 03' 46.1247" |
| 18 | 26° 35' 22.3302" | 29° 03' 48.6142" |
| 19 | 26° 36' 15.8532" | 29° 03' 51.652 |

**Items 1(c),1(m), 1 (n),4,,7,12,13,14,15, and 1 (i), 1, 1(e) 1(j) and 2 in terms of Chapter 5 of the National Environmental Management Act, 1998 Government Notice R 544 and R546 of 18 June 2010 respectively).**

The granting of this authorisation is subject to the conditions set out below.

3. **Conditions of authorisation**

**Scope of Authorisation**

3.1 Authorisation of the activity is subject to the conditions contained in this authorisation, which form part of the Environmental Authorisation and are binding on the holder of the authorisation

3.2 The holder of the authorisation must ensure compliance with the conditions by any person acting on his or her behalf, including but not limited to, an agent, sub-contractor, employee or person rendering a service to the holder of the authorisation.

3.3 The activity which is authorised may only be carried out at the property indicated above.

3.4 Any changes to, or deviations from the project description set out in this authorisation must be approvesd in writing by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request further information as it may deem necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations.

3.5 These activities must commence within a period of **two (2) years** from the date of issue. If commencement of the activities does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activities to be undertaken.

3.6 The Department may change or amend any of the conditions in this authorisation if, in the opinion of the Department is environmentally justified

3.7 In the event of any dispute concerning the significance of a particular impact, the opinion of the Department in respect of its significance will prevail.

3.8 This authorisation does not negate the holder of the authorisation, responsibility to comply with any other statutory requirements that may be applicable to the undertaking of the activities.

3.9 The holder of this authorisation is responsible for compliance with the provisions for **Duty of Care and Remediation of Environmental Damage** contained in Section 28 of the National Environmental Management Act, 1998 (Act 107 of 1998).

**Appeal of authorisation**

3.10 The holder of the authorisation must notify every registered interested and affected party, in writing and within 12 days, of receiving notice of the Department's decision to authorise the activities.

The notification referred to above must:

a) Specify the date on which the authorisation was issued;
b) Inform the interested and affected parties of the appeal procedure provided for in Chapter 7 of the regulations; and
c) Advise the interested and affected parties that a copy of the authorisation and reasons for the decision will be furnished on request.

**Management and monitoring of the activities**

3.11 An Environmental Management Plan (EMP) incorporated in the Environmental Impact Report (EIR) must be strictly adhered to throughout the life-cycle of the activities.

3.12 The holder of the authorization must submit a post-construction environmental audit report to the Department within 30 (thirty) days after completion of construction activities. The audit report must be compiled by an independent auditor.

3.13 The coal stockpile must be operated on a lined surface. Surface run off must be captured and handled as dirty water and be disposed of in pollution control dams.

3.14 Monitoring of water quality must be undertaken upstream and downstream of the pollution Control facilities on a quarterly basis.

3.15 Dust monitoring must take place on a continuous basis to ensure that coal dust from coal storage areas does not constitute health risk. Measures must be taken if more unacceptable dust levels are recorded.

3.16 The Department retains the right to monitor and/ or inspect the proposed project during both construction and operational phases.

**Commissioning and operation of the activities.**

3.17 **Fourteen (14)** days written notice must be given to the Department that the activities will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activities will commence.

3.18 The conditions stipulated in this environmental authorisation, mitigation measures and recommendations contained in the Environmental Impact Assessment Report and Environmental Management Plan shall be a legally binding component of any contract and must therefore be legally enforceable.

3.19 The applicant must assign the development to a full time-based team of Environmental Officers/scientists who will ensure among others:

(a) Strict compliance of the development to the conditions of the Environmental Authorisation as well as the measures contained in the Environmental Management Plan;
(b) Discuss and advise contractor on site about the environmental matters before construction takes place;
(c) Monitor compliance during construction and operation phases of the activities;
(d) Keep records of all environmental audits.

3.20 Soil stockpiles must only be located in the designated construction area, not within 100m of any wetlands delineated on site.

3.21 Strom water drainage systems must be maintained to ensure effective performance of the systems and to circumvent blockages.

**3.22** During construction, the site must be demarcated to avoid unauthorized people from entering the site.

**3.23** The pollution control dams must be designed in such a manner that they prevent seepage of contaminated water from entering and polluting ground water.

**3.24** The design capacity of the pollution control dams must take into account the expected volumes of water to be pumped to surface into these facilities.

**3.25** Clean water cut-off system must be constructed upstream of the coal stockpiles.

**3.26** Pollution control facilities and settling facilities must be constructed prior to the underground workings commencing.

**3.27** Water use license must be obtained for all the applicable water related activities prior to the commencing of the activity.

**3.28** Any complaints received from the employees or any one within the immediate vicinity of the site during the construction and operational phases of the activity must be attended to as soon as possible and addressed to the satisfaction of all concerned.

3.29 Dust suppression measures must be implemented during the construction phase.

3.30 Measures must be implemented to ensure that dust emission at coal storage areas is reduced to acceptable levels.

3.31 General waste generated during all phases of the activities must be disposed of at a permitted disposal facility.

3.32 The handling and storage of any hazardous waste must comply with the relevant statutory requirements.

3.33 The filling area of dangerous goods including fuel oil and diesel must be located on a hard surface to prevent soil and ground water contamination.

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3.34 Any spilled product must be directed towards a separate, properly lined pit where fuel could be removed and disposed of at a hazardous facility.

3.35 All storage tanks must be located within bunded walls to collect accidental spillages.

3.36 All equipment must be subjected to a noise specification that will reduce the overall noise at the closest receiving environment and ensure that the noise levels do not exceed the legal limits.

3.37 It is the responsibility of the holder of the authorisation to rectify any source of pollution from their undertaking and to take appropriate measures to prevent any pollution of surface as well as ground water.

3.38 The facilities must be operated in accordance with the relevant provisions of Occupation Health and Safety Act (Act No 85 of 1993).

3.39 The conveyor belt must incorporate turnovers to minimize spillage during normal operations. Should spillages occur due to malfunctioning of the conveyor or any other reason, clean up of the spillages must be undertaken as soon as possible.

3.40 The conveyor belt must be boxed in at watercourse crossings to prevent the coal from spilling into the water bodies.

3.41 All clearing activities for the conveyor belt must be limited to the construction servitude as narrow as possible

3.42 The conveyor belt must be constructed in such a way that sufficient space remains underneath the conveyor to allow for free movement of faunal species such as small mammals.

3.43 Suitable fire protection systems must be accessible on site when urgently required to deal with an emergency situation. Such as fire detection and fire fighting systems must be accessible to workers on site.

3.44 Construction personnel must be sensitized to the requirements of the South African Heritage Resources Act. Should any material of cultural or archaeological significance be encountered during construction, all activities must cease immediately and the South African Heritage Resources Agency (SAHRA) must be informed accordingly.

3.45 Appropriate ablution facilities and camp waste disposal bins must be provided to the construction team to prevent pollution of the surrounding environment.

3.46 All heavy vehicles operator and truck drivers must be restricted to designated areas, such as construction sites and roads.

**Site closure and decommissioning**

3.47 A Decommissioning and Rehabilitation Plan must be submitted to this Department for approval at least six (6) months prior to the decommissioning phase.

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2302

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General

3.48 A copy of this authorisation must be kept at the property where the activities will be undertaken. The authorisation must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.

3.49 Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/ or telephonic details; the applicant must notify the Department as soon as the new details become known to the applicant.

3.50 The holder of the authorisation must notify the Department, in writing and within 24 (twenty four) hours, if conditions of this authorisation are not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.

3.51 Non-compliance with a condition of this authorisation may result in criminal prosecution or other actions provided for in the National Environmental Management Act, 1998 and the regulations.

3.52 National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the applicant with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.

**ENVIRONMENTAL AUTHORISATION APRROVED BY:**

**DR. V. DLAMINI**
**HEAD OF DEPARTYMENT**
**DATE:** 29/06/2021

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IC Groenewald CA (SA)
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2302

## ANNEXURE1: REASONS FOR THE DECISION

1. **Background**

The applicant Sasol Mining (Pty) Ltd applied for Environmental Authorisation for the following:

The proposed construction of mining infrastructure at the Shondoni shaft. The project entails the construction of:

- coal stockpile;
- coal conveyor belt;
- Pollution control dam- located at the main inclined shaft is with the capacity of 25000m$^3$, a PCD to be located at the workshop area. Will the capacity of 800000m$^3$,
- fuel storage facilities and the
- Construction of access road;
- Construction of power lines
- Clearing of vegetation for infrastructural development.

**Items1(c),1(m), 1 (n),4,,7,12,13,14,15, and 1 (i), 1, 1(e) 1(j) and 2 in terms of Chapter 5 of the National Environmental Management Act, 1998 Government Notice R 544 and R546 of 18 June 2010 respectively).**

2. The applicant appointed the following Environmental Assessment Practitioner to undertake the Environmental Assessment process:

| | |
|---|---|
| Consultant Name: | JMA Consulting (Pty) Ltd |
| Address: | P.O. Box 883<br>Delmas<br>2210 |
| Contact Person: | Mr Jasper Müller |
| Telephone: | (013) 665 1788 / 082 495 0160 |
| Fax: | (013) 665 2364 |

3. **Information considered in making a decision.**

In reaching its decision, the Department took the following into consideration:

a) The information contained in the Environmental Impact Assessment Report (EIR)
b) The objective and requirements of relevant legislation, policies and guidelines, including Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).
c) Findings of the site visit undertaken by Martin Fuwela on 24 February 2011.

4 **Key factors considered in making the decision.**

All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues that, in the Department's views, were of the most significance is set out below:

a) Impact on aquatic species;
b) Degradation of the soil;
c) Fauna and Flora
d) Public involvement.
e) Need and desirability

**5. Findings**

After consideration of the information and factors listed above, the Department made the following findings:

a) There will be potential impact on aquatic life or downstream users of water within the rivers. Mining activities can potentially alter the PH of the water and create acidic conditions that will result in mobilisation of metals which may then create toxicity of the water. Discharge of water with an increase in electrical conductivity can potentially affect irrigation practices downstream. Water will also become unsuitable for potable use; Monitoring , management and balance of mine water will take place

b) The activity will lead to habitat destruction, loss of population of threatened plant species, change in physical abiotic condition etc.

c) The negative cumulative impacts are likely to occur. Loss of vegetation, habitat fragmentation and decrease in water quality are evident. Urbanisation and increased cultivation will cause additional decrease in natural habitat. Pollution originating from the urban areas, roads, farming activities and other mining activities in the catchments have contributory cumulative negative effects on the environment. The development of the mining infrastructure is likely to contribute to significant negative cumulative impact on the environment and terrestrial fauna. Future mining in these areas must carefully assess and consider cumulative impacts.

d) There are sensitive features in and around the study area. The eastern side of the Leeuwpan is classified as irreplaceable. However there are no major constraints or limitations associated with the activity.

e) The investigation identified two major grassland plant communities as well as wetland vegetation in drainage lines that are classified as endangered and listed in the draft list of protected ecosystems.

f) Interested and affected parties were given the opportunity to participate in the decision making process by means of newspaper advertisements, site notices.

g) No objections were received.

In view of the above, the Department is satisfied that, subject to compliance with the conditions contained in the environmental authorisation, the proposed activity will not conflict with the general objectives of integrated environmental management as laid down in Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and that any potentially detrimental environmental impacts resulting from the proposed activity can be mitigated for to acceptable levels. Authorisation is accordingly granted.

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# AMENDED NOISE STUDY

**Ben van Zyl** PhD MSc (Eng)
ACOUSTIC CONSULTING ENGINEER T/A Acusolv

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Die Wilgers
0041

Tel: 012 807 4924
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*ben@acusolv.co.za*
542 Verkenner Ave ▸ Die Wilgers ▸ Pretoria

| | |
|---|---|
| Sasol Mining Middelbult (Block 8) | Report G952-R1 |
| Shondoni Project | |
| Design and planning measures for noise reduction | |
| eMbalenhle and singular houses along the conveyor route | |
| For: Sasol Mining (Pty) Ltd | Date Issued: 26-Jan-2012 |

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# 1 Introduction

## 1.1 Noise Control Project

A noise study conducted by Acusolv as part of the EIA for Shondoni Project found that the project is expected to have significant noise impacts on the residents of Brendan Village and on residents in the western part of eMbalenhle Township. In response to the findings of the EIA noise study, Sasol appointed Acusolv to undertake a more detailed assessment and to advise them on engineering solutions for noise reduction. The assessment and design development took into account the latest project layout and changes that have been made in the conveyor route.

## 1.2 Re-assessment for EIA

In view of a change in a section of the conveyor route near eMbalenhle Township, JMA Consulting (Pty) Ltd, for purposes of updating the EIA, also requested a re-examination of the noise implications of the project for eMbalenhle and for three specific houses along the revised conveyor route. This report presents the findings of the assessment and discusses the requirements and solutions for mitigation.

## 1.3 Key finding

A key finding is that the degree of the expected impact varies and that different solutions are required for each of the affected areas. The scheme required for eMbalenhle differs from the scheme proposed for Brendan Village - it is simpler. Moreover, the design measures proposed for eMbalenhle will also contain the impact at two of the three singular houses if applied to the relevant sections of line affecting them. This can be achieved either by using specified low-noise rolls, or by construction of a specified noise barrier. It is for Sasol to decide which of the two options to implement. If a wall is required for security purposes, it could of course also serve as a noise barrier.

The third house, however, is too close to the conveyor and requires a combination of quiet rolls and a noise barrier to contain the noise impact.

More details of the noise reduction requirements and design solutions proposed for eMbalenhle and the lone-standing houses of concern are presented in Section 2 of this report.

# 2 Noise Control Requirements and Solutions eMbalenhle and nearby singular houses

## 2.1 Unmitigated conveyor noise levels - eMbalenhle and nearby singular houses

Noise Map 2.1 shows the expected unmitigated noise impact of the conveyor on eMbalenhle and nearby singular houses. The contours represent the 3 dB and 5 dB noise footprints (increase in ambient level) and were calculated for a night-time background ambient level of 40 dBA. A significant impact will occur inside the 5 dB contour, while the design target is to limit the impact to a maximum of 3 dB. Outside the 3 dB contour (further away from the conveyor) the noise impact will be negligible.

With the 5 dB footprint extending to a distance of about 700 m, it is estimated that the impact at the nearest houses in eMbalenhle will be 10 dB, which is 7 dB above the design target and 3 dB above the 7 dB legal limit.

## 2.2 Noise reduction

### 2.2.1 General considerations

As in the case of Brendan Village, the options considered for noise reduction for eMbalenhle are one or a combination of:

(a) The use of low-noise rolls;

(b) Noise screening by means of a noise barrier.

### 2.2.2 Proposed solution

**eMbalenhle Township**

The solution proposed in the following is based on the calculation of noise levels at the nearest houses in eMbalenhle. Whether these houses are currently located inside or outside the area zoned as residential needs to be verified by Sasol. If the nearest houses are considered informal and not included in the noise reduction target area, the distance between conveyor and residential boundary will be greater and measures required to achieve the 3 dB design target simplified. Design measures and recommendations in this report assume that the nearest houses on the western side of eMbalenhle are to be protected against excessive noise impact and that they are included in the target area.

In the case of Brendan Village mitigation of the noise impact requires the use of low-noise rolls as well as a 3,5 m high noise barrier. It was established in the design assessment that reduction of the noise impact in eMbalenhle to the 3 dB target can be achieved either by the use of HPDE rolls only, or by construction of a noise barrier only. It is not necessary to employ both measures. Noise Map 2.2 shows the expected result if only low-noise rolls are used without any noise screening (no noise barrier). This reduces the 5 dB noise footprint from 700 to about 250 m and the 3 dB footprint to about 350 m. The estimated impact at the nearest houses is 2 dB.

Alternatively, Noise Map 2.3 shows that a similar result may be obtained with standard steel rolls, but with a noise screen with a height of 3 m constructed at a distance of 6 m from the conveyor line as explained in Figure 2.1.

**Lone-standing houses in the eMbalenhle area**

As indicated on the noise maps, there are also three lone-standing houses (Houses 1, 2 and 3) located inside the unmitigated significant impact footprint of the Shondoni conveyor. Noise Maps 2.2 and 2.3 show that the measures employed for noise control in eMbalenhle (the use of low-noise rolls or the construction of a 3 m high noise barrier) will also be sufficient to reduce conveyor noise impacts at Houses 1 and 2 to 3 dB.

These measures will however not be sufficient for House 3, which is situated very close to the conveyor route. To obtain the necessary reduction at this location, both low-noise rolls and a 3 m high noise barrier located between the conveyor and House 3 will be required. The total length of the barrier should be at least 200 m, with the centre aligned with the house.

### 2.2.3 Specification and practical considerations

**Low-noise rolls requirement**

The results in Noise Maps 2.1 to 2.3 were obtained in simulations using noise data obtained in numerous investigations and comparative tests conducted by Acusolv on steel and HPDE rolls from different suppliers, with conveyors running at various speeds. It was found that belt-on-roll impact is the primary source of noise on overland conveyors and that the type and manufacture of rolls are the decisive factors. The mitigated results in Noise Map 2.2 were obtained from calculations using noise data from tests conducted on the service (open) side of a conveyor with conventional dog-house canopy, equipped with HPDE rolls supplied by Africa Rollers (Melco) and running at 6,5 m/s.

To achieve the results in Noise Maps 2.2 and 2.3, either the above-mentioned rolls should be used, or the system should meet the following performance specification:

**Conveyor noise specification**

With the system running with or without load at 6 m/s, conveyor noise averaged with a moving microphone over a span of at least 10 rolls at a distance of 3 m from the open side of the canopy, shall not exceed 68 dBA.

**Noise barrier**

If employed as a solution for the eMbalenhle area or the lone-standing houses, a noise barrier should be constructed as specified in Figure 2.1.

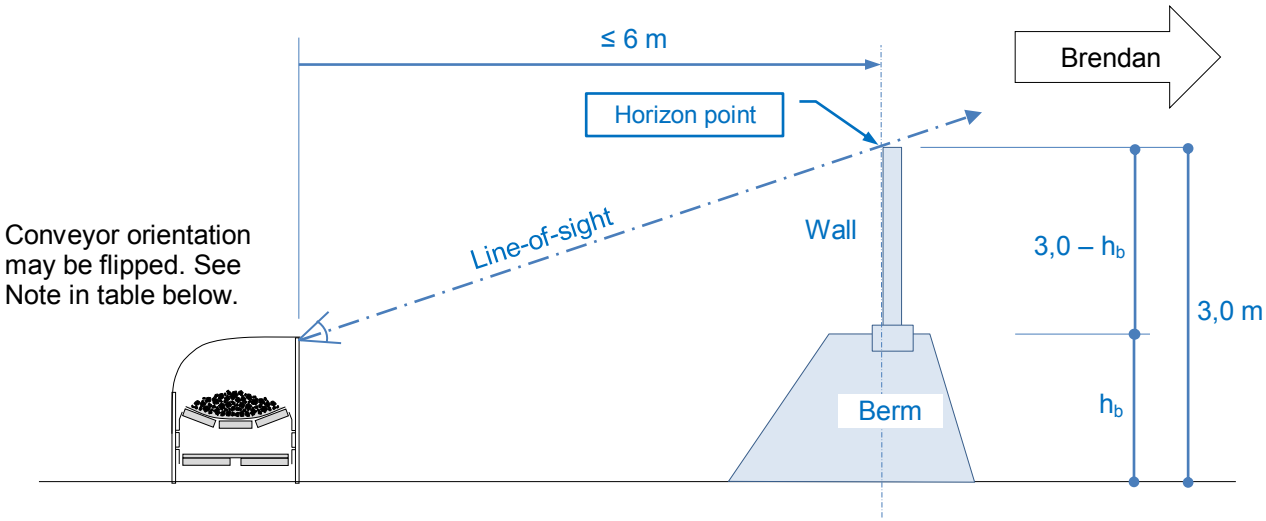



**Figure 2.1**

Noise barrier construction

## A Primary requirements

The composite barrier creates a virtual noise screen with effective height and distance defined by the sight-line as explained in Figure 2.1. The effective (virtual) noise screen should meet the following requirements:

| | |
|---|---|
| Noise screen height: | 3,0 m |
| Noise screen distance from conveyor: | ≤ 6 m |
| Noise screen (barrier) length: | Minimum total length approximately 1,6 km<br>Extending from the southern to northern boundary lines of Brendan, plus 300 m overlaps north and south. |
| **Note:** The conveyor in Figure 2.1 is shown with the "open" side of the canopy facing the noise-sensitive area to be protected. This is the worst-case condition for which requirements for noise reduction were calculated. Acoustically, the difference between noise levels on the open and closed sides is relatively small. | |

## B Explanatory notes and practical considerations

- The barrier comprises of a berm, or a wall, or a combination of a berm and a wall as shown in Figure 2.1.

- The required total height of the barrier is at least 3 m. If a combination of a berm and a wall is used, the heights of the individual components are not important, as long as the overall height of the virtual screen is at least 3 m.

- The effective height and distance of the noise screen are determined by the distance from the conveyor and the height above ground level of the horizon point, regardless of the shape of the berm. The horizon point is defined by the line-of-sight from the top of the conveyor, looking in the direction of the noise-sensitive area (Figure 2.1).

- The horisontal distance from the side of the conveyor to the horizon line should not exceed 8 m, preferably $\leq 6$ m, the smaller the distance between conveyor and barrier, the better.

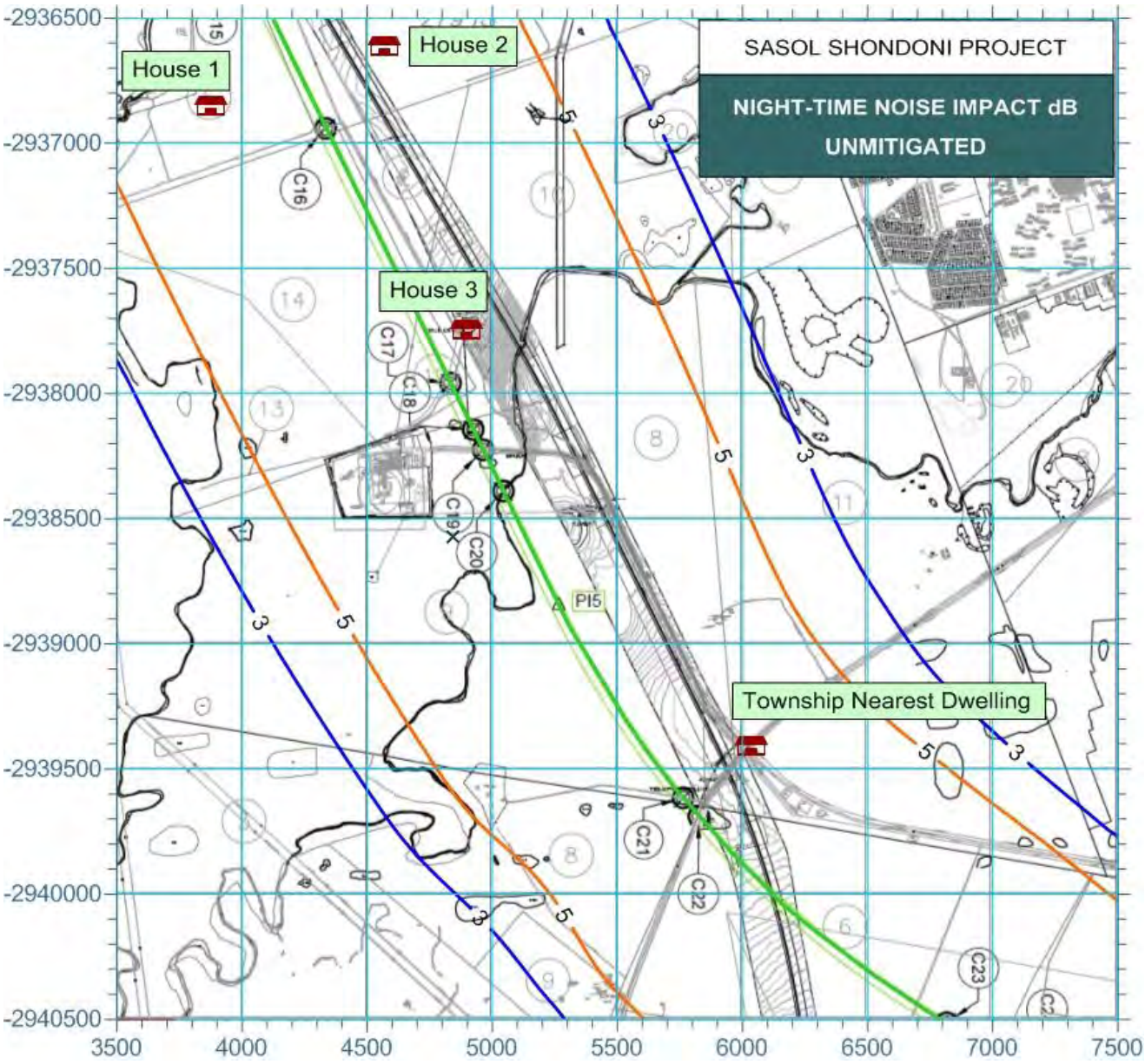
- With respect to attenuation, the width of the berm is unimportant, any practical structure will be more than thick enough for acoustical purposes.

- Although the use of a berm as part of the barrier is not a precondition, it should be noted that a berm does have certain advantages over a vertical wall in that firstly, it provides a small degree of absorption. More importantly, the sloped face on the side of the conveyor reflects conveyor noise skywards, rather than horisontally. This is important if there is a noise-sensitive area on the opposite unscreened side of the conveyor as well. In that case, a barrier face with a gentle slope on the conveyor side is better than a steep upward slope.

- The thickness of a brick wall will be determined by structural, safety and security considerations. For acoustical purposes, a single (110 mm) brick wall is more than adequate. The barrier must have no gaps and all joints must be airtight. Alternatives to a brick wall which may be considered, are solid concrete and chromadek steel walls. Because of poor sealing at joints and poor long-term stability, general-purpuse pre-fabricated concrete walls are not recommended in this application.

**Noise Maps**

**eMbalenhle and nearby singular houses**




**Noise Map 2.1**

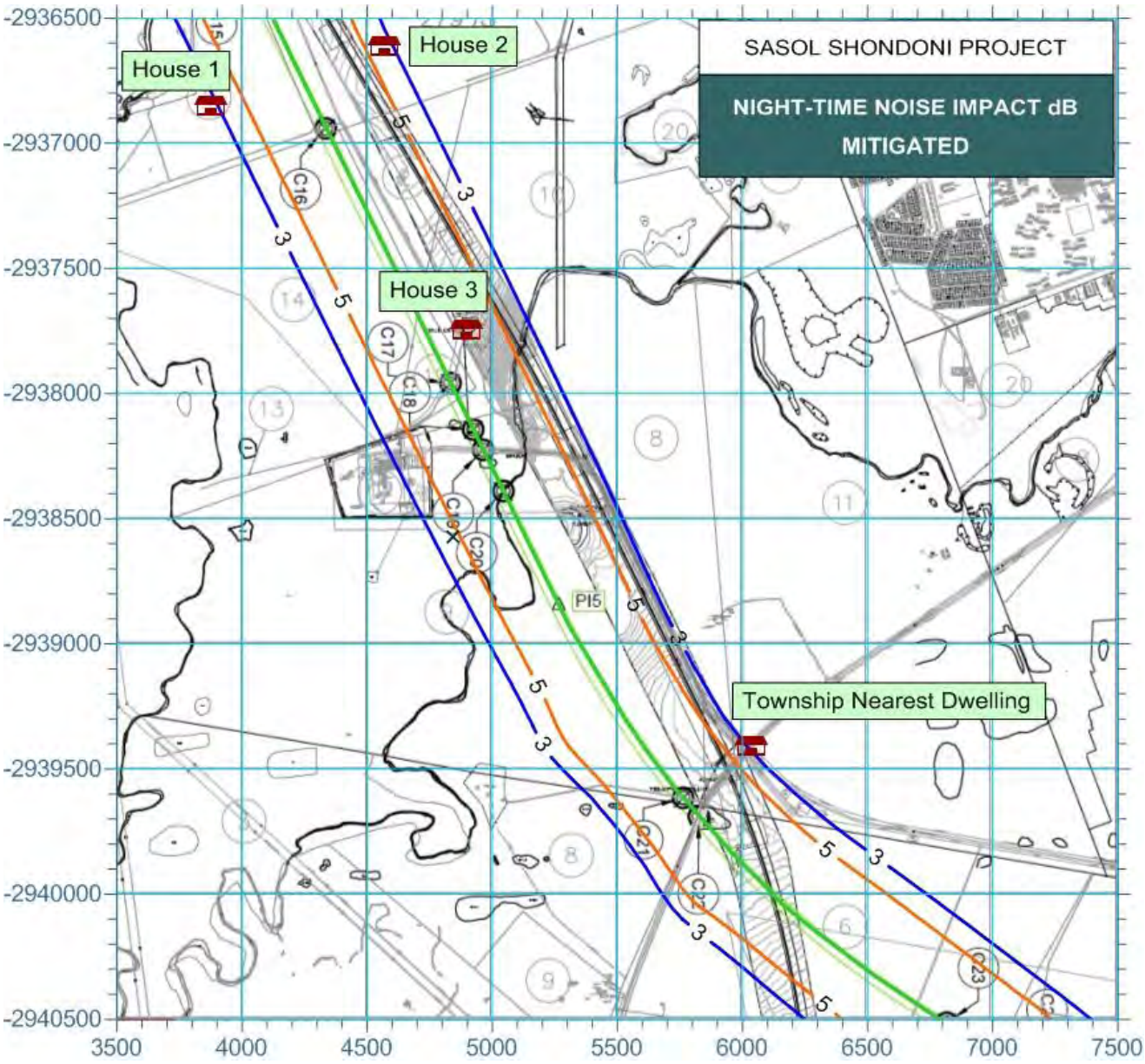
eMbalenhle and nearby singular houses

**Unmitigated Conveyor Noise**
**Standard steel rollers**

A significant impact occurs inside the 5 dB contour.
The design target is to limit the impact to less than 3 dB

| Mitigation | | Noise Reduction |
|---|---|---|
| Rollers | No mitigation - Standard steel rollers | - |
| Noise barrier | No barrier | - |

| Consequence | Noise impact |
|---|---|
| Unmitigated noise impact at nearest houses in eMbalenhle | 10 dB |




**Noise Map 2.2**

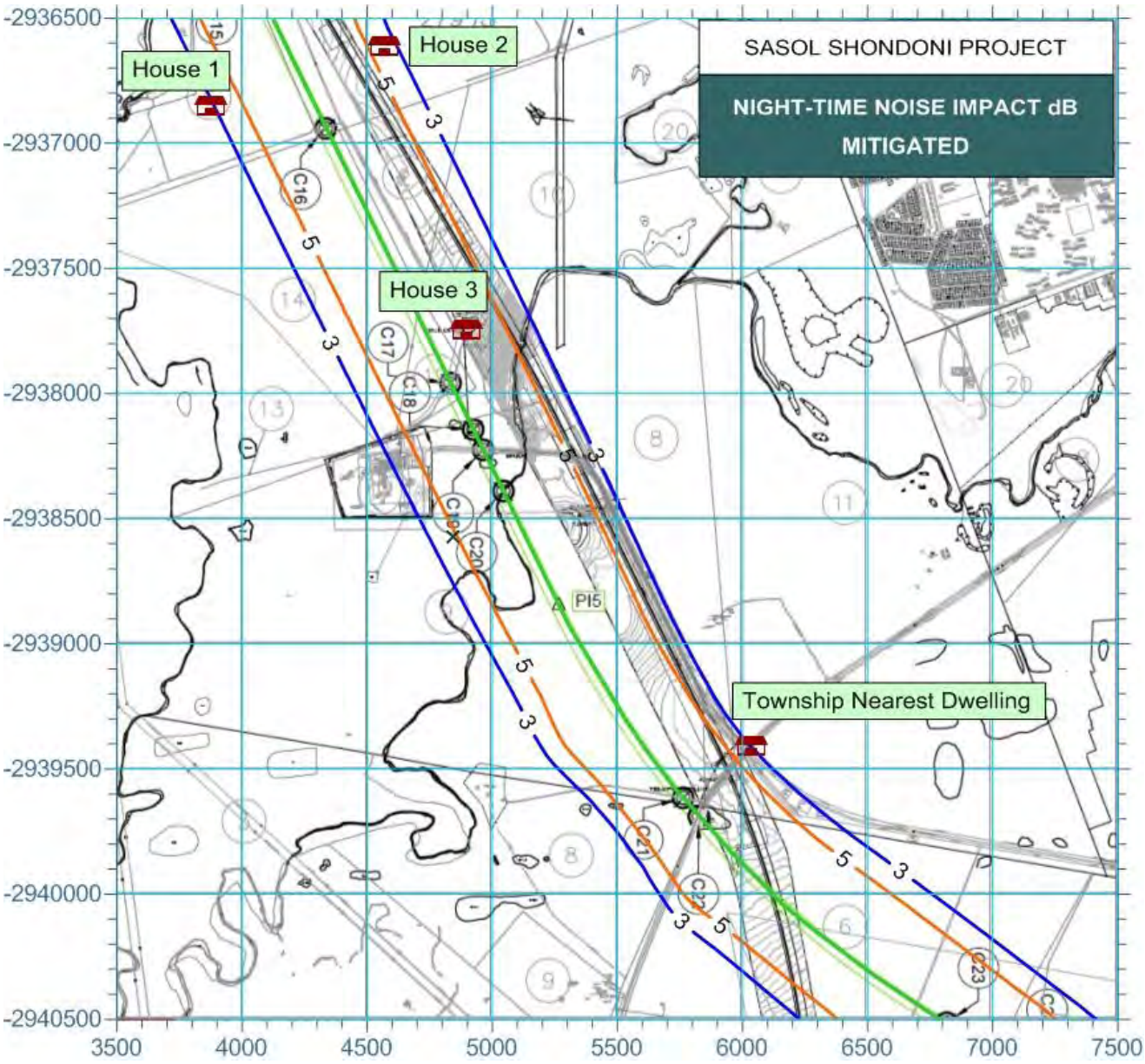
eMbalenhle and nearby singular houses

**Mitigated Conveyor Noise**

A significant impact occurs inside the 5 dB contour.
The design target is to limit the impact to less than 3 dB

| **Mitigation** | | **Noise Reduction** |
|---|---|---|
| Rollers | HPDE instead of steel rollers | 8 dB |
| Noise barrier | No noise barrier | - |

| **Consequence** | **Remaining noise impact** |
|---|---|
| Remaining noise impact at nearest houses in eMbalenhle | 2 dB |




**Noise Map 2.3**

eMbalenhle and nearby singular houses

**Mitigated Conveyor Noise**

A significant impact occurs inside the 5 dB contour.
The design target is to limit the impact to less than 3 dB

| **Mitigation** | | **Noise Reduction** |
|---|---|---|
| Rollers | No mitigation - Standard steel rollers | - |
| Noise barrier | Noise barrier 3,0 m high at 6 m distance | 7 dB |

| **Consequence** | **Remaining noise impact** |
|---|---|
| Remaining noise impact at nearest houses in eMbalenhle | 3 dB |

## 3 References

[1] Van Zyl B G; *"Sasol Mining Middelbult (Block 8) Shondoni Project, Noise Study for Environmental Impact Assessment"; 13-Aug-2010.*

[2] Van Zyl B G; "Sasol Mining Middelbult (Block 8) Shondoni Project, Design and planning measures for noise reduction"; 25-Jan-2012.

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# AMENDED HERITAGE STUDY

**Prepared for:**

**JMA CONSULTING (PTY) LTD**

**SASOL MINING SECUNDA**

## STATEMENT:

**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE SASOL SHONDONI CONVEYER AMENDMENT PROJECT ON THE EASTERN HIGHVELD IN THE MPUMALANGA PROVINCE**

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**November 2011**

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## EXECUTIVE SUMMARY

The Phase I Heritage Impact Assessment (HIA) study for the Sasol Shondoni Conveyer Amendment on the Eastern Highveld in the Mpumalanga Province of South Africa was done according to Section 38 of the National Heritage Resources Act (No 25 of 1999). This project is here referred to as the Sasol Project and the footprint of the area to be affected by the project was referred to as the Sasol Project Area.

The aims with the Phase I HIA study were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1) do occur within the perimeters of the Sasol Project Area.
- To determine the significance of these heritage resources and whether any of these types and ranges of heritage resources will be affected by the Sasol Project, and if so, to determine mitigation measures for those heritage resources that will be affected by the Sasol Project.

The Phase I Heritage Impact Assessment (HIA) for the Sasol Project Area revealed the following types and ranges of heritage resources in and near the Sasol Project Area as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), namely:

- Historical remains consisting of houses and cattle enclosures.
- Informal graveyards.

These heritage resources were geo-referenced and mapped (Figures 1-2, Tables 1-2).

**The significance of the heritage resources**

Several structures consisting of the remains of dwellings and cattle enclosures associated with the historical remains as well as one or more of the graveyards will be affected (impacted) by the Sasol Project. The significance of the various types and ranges of heritage resources in the Sasol Project Area therefore is indicated whilst mitigation measures are outlined for those heritage resources which may be affected by the Sasol Project.

**The historical remains**

The historical remains (dwellings, enclosures and graveyards) constitute a cultural landscape along the higher eastern banks of the Waterval River due to the contextual and temporary connection between these remains. The dwellings, cattle enclosures and graveyards therefore

are spatially, culturally and functional interrelated with each other and supports each other's meaning and existence. This landscape is also historical in nature as it approaches sixty years of age or may even be older.

Cultural landscapes are part of archaeological and historical remains and are protected by the National Heritage Resources Act (No 25 of 1999).

The cultural landscape has low to medium significance when considering criteria such as the following (Table 1):

- Historical remains such as those in the SASOL Project Area (and elsewhere on the Eastern Highveld) are rapidly disappearing as a result of development and modernisation.
- The historical remains have research (scientific) value.

**The graveyards**

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years.

The act also distinguishes various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

**Mitigating the heritage resources**

The following mitigation measures have to be followed if any of the historical remains associated with the cultural landscape or any of the graveyards are to be affected by the Sasol Project.

**The historical remains**

None of the historical remains associated with the cultural landscape may be affected (demolish, renovate, alter) by the Sasol Project *prior* to their investigation by an archaeologist accredited with the South African Heritage Resources Agency (SAHRA). After these remains have been investigated the archaeologist or the developer has to acquire a demolishing permit from SAHRA before the cultural landscape (excluding the graves) may be affected (demolish, alter, renovate) as a result of the Sasol Project.

**The graveyards**

Graveyards and graves can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

General

Although due consideration was given to the observing and documenting of all heritage resources in the Sasol Project Area some resources may not have been detected due to various reasons (occurring beneath the surface, unmarked, inconspicuous or eroded nature, covered by vegetation, human failure to recognise, etc.).

If any heritage resources of significance is exposed during the Sasol Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds.

# 1 INTRODUCTION

This document contains the report on a Phase I Heritage Impact Assessment (HIA) study which was done for the Sasol Shondoni Conveyer Amendment Project on the Eastern Highveld in the Mpumalanga Province**.**

Focused archaeological research has been conducted in the Mpumalanga Province for more than four decades. This research consists of surveys and of excavations of Stone Age and Iron Age sites as well as the recording of rock art and historical sites. The Mpumalanga Province has a rich heritage comprised of remains dating from the pre-historical and from the historical (or colonial) periods of South Africa. Pre-historical and historical remains in the Mpumalanga Province of South Africa therefore form a record of the heritage of most groups living in South Africa today.

Previous heritage surveys conducted for Sasol Mining indicated that the most common types and ranges of heritage resources on the Eastern Highveld in the Mpumalanga Province include historical farmstead complexes associated with formal and informal graveyards. Stone walled settlements dating from the Late Iron Age and Historical Period also occur but are limited to areas where low, dolerite kopjes and randjes exist. These topographical features are generally scarce in the mining areas where Sasol is operational.

However, various types and ranges of heritage resources that qualify as part of South Africa's 'national estate' as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur across the Mpumalanga Province (see Box 1, next page).

## Box 1: Types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act (Act 25 of 1999, Section 3) outlines the following types and ranges of heritage resources that qualify as part of the national estate:

a. Places, buildings structures and equipment of cultural significance;
b. Places to which oral traditions are attached or which are associated with living heritage;
c. Historical settlements and townscapes;
d. Landscapes and natural features of cultural significance;
e. Geological sites of scientific or cultural importance;
f. Archaeological and palaeontological sites;
g. Graves and burial grounds including-
    i. Ancestral graves;
    ii. Royal graves and graves of traditional leaders;
    iii. Graves of victims of conflict;
    iv. Graves of individuals designated by the Minister by notice in the Gazette;
    v. Historical graves and cemeteries; and
    vi. Other human remains which are not covered in terms of the Human Tissue Act (Act 65 of 1983);
h. Sites of significance relating to the history of slavery in South Africa;
i. Moveable objects, including -
    i. Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, material, meteorites and rare geological specimens;
    ii. Objects to which oral traditions are attached or which are associated with living heritage;
    iii. Ethnographic art and objects;
    iv. Military objects;
    v. Objects of decorative or fine art;
    vi. Objects of scientific or technological interest; and
    vii. Books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act (Act 43 of 1996).

The National Heritage Resources Act (Act 25 of 1999, Sec 3) also distinguishes nine criteria for a place and/or object to qualify as 'part of the national estate if they have cultural significance or other special value …'. These criteria are the following:

a. Its importance in the community, or pattern of South Africa's history;
b. Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
c. Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
d. Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
e. Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
f. Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
h. Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and/or
i. Its significance relating to the history of slavery in South Africa.

## 2 TERMS OF REFERENCE

The Sasol Shondoni Conveyer Amendment Project may have an impact on any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999). Therefore, Sasol Mining and JMA Consulting, who is responsible for the compiling the Environmental Impact Assessment report for the Sasol Shondoni Conveyer Amendment Project, commissioned the author to undertake a Phase I HIA study for this project.

The conveyer route and infrastructure associated with the Sasol Shondoni Conveyer Amendment Project is here referred to as the Sasol Project whilst the footprint that will be affected by this project is referred to as the Sasol Project Area.

The aims with the Phase I HIA were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1) do occur within the perimeters of the Sasol Project Area.
- To determine the significance of these heritage resources and whether any of these types and ranges of heritage resources will be affected by the Sasol Project, and if so, to determine mitigation measures for those heritage resources that will be affected by the Sasol Project.

## 3 METHODOLOGY

This Phase I HIA study was conducted by means of the following:

- Surveying the proposed Sasol Project Area with a vehicle and selected spots on foot.
- Briefly surveying literature relating to the pre-historical and historical context of the Sasol Project Area.
- Consulting maps of the proposed Sasol Project Area.
- Consulting archaeological (heritage) data bases.
- Consulting spokespersons regarding the possible presence of graves and graveyards in the project area.
- Synthesising all information obtained from the data bases, fieldwork, maps and literature survey.

## 4 ASSUMPTIONS AND LIMITATIONS

Although due consideration was given to the observing and documenting of all heritage resources in the Sasol Project Area some resources may not have been detected due to various reasons (occurring beneath the surface, unmarked, inconspicuous or eroded nature, covered by vegetation, human failure to recognise, etc.).

If any heritage resources of significance is exposed during the Sasol Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

# 5 THE PHASE I HERITAGE IMPACT ASSESSMENT

## 5.1 Types and ranges of heritage resources

The Phase I Heritage Impact Assessment (HIA) for the Sasol Project Area revealed the following types and ranges of heritage resources in and near the Sasol Project Area as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), namely:

- Historical remains consisting of houses and cattle enclosures.
- Informal graveyards.

These heritage resources were geo-referenced and mapped (Figures 1-2, Tables 1-2).

The significance of the heritage resources is indicated. Mitigation measures are outlined for those heritage resources which may be affected by the Sasol Project.

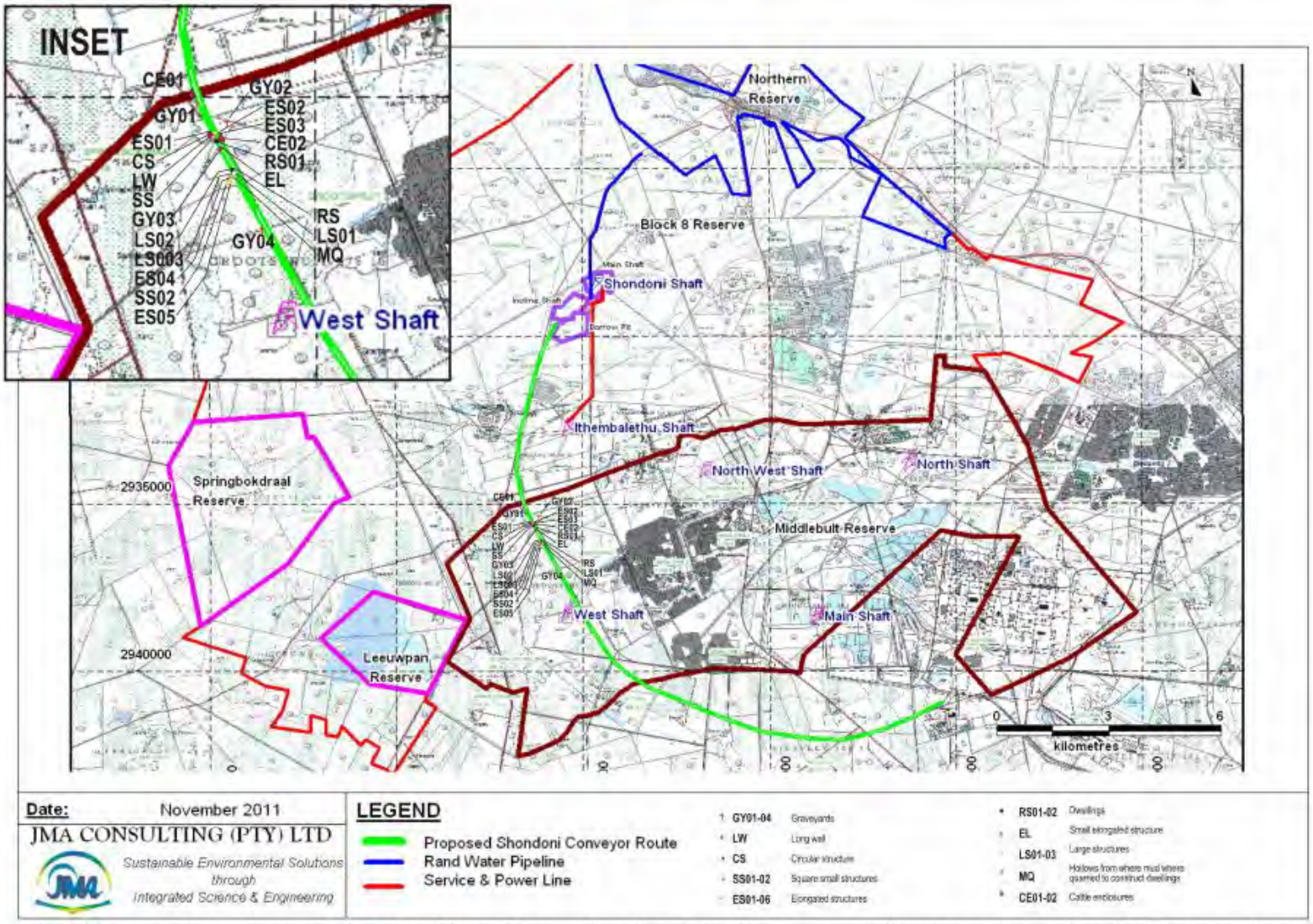



***Figure 1-*** The proposed new conveyer route for the Sasol Shondoni Conveyer Amendment Project. Note the presence of historical remains (consisting of dwellings and enclosures) and graveyards in and near the Sasol Project Area (above).

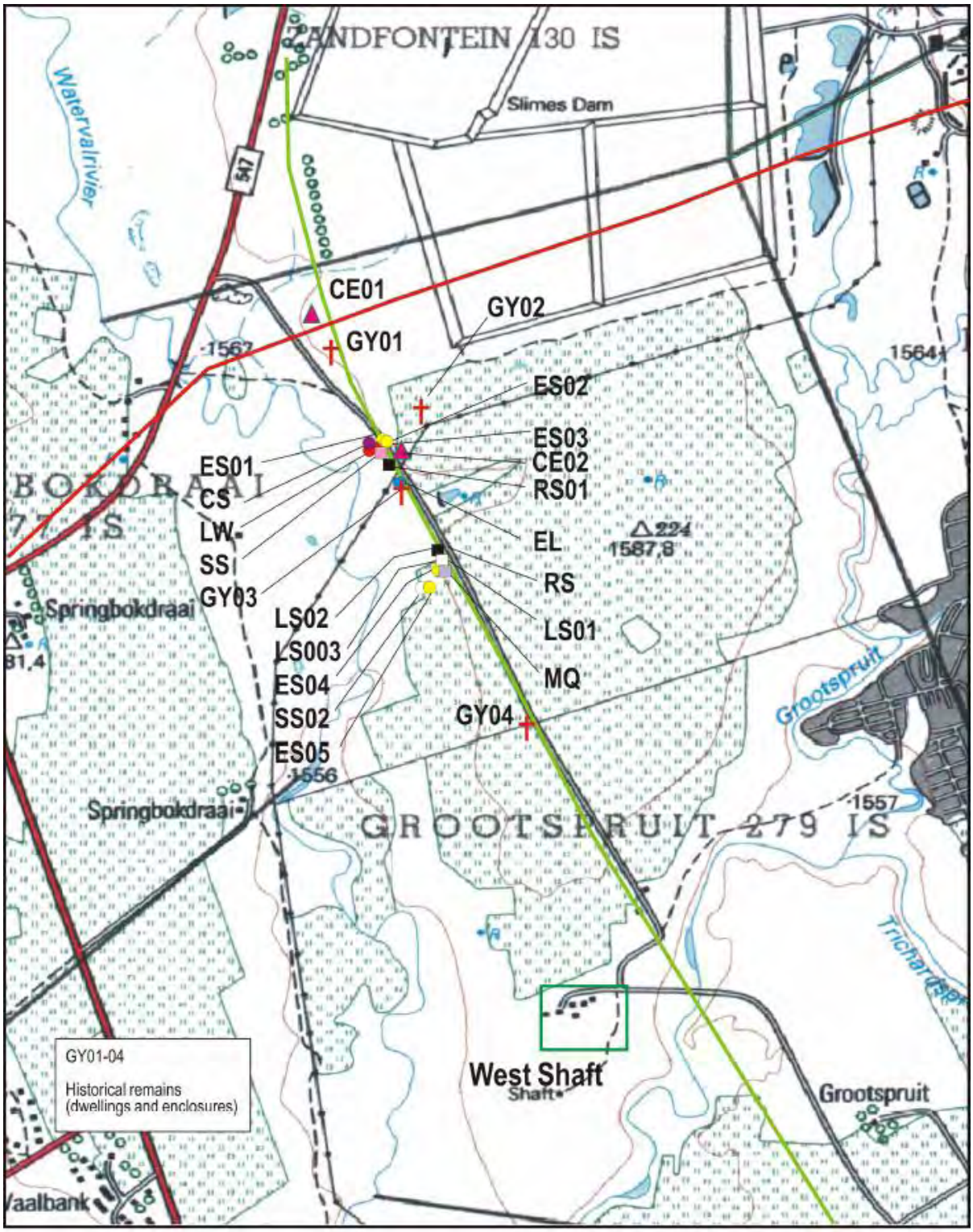



***Figure 2-*** Historical remains (consisting of dwellings and enclosures) and graveyards in and near the Sasol Project Area (above).

## 5.2 Historical remains

Historical remains consisting of houses and cattle enclosures occur in and near the Sasol Project Area. These remains occur in an area to the east of the Waterval River and comprise the remains of dwellings that were built with stone, mixtures of stone and mud and some dwellings that were mainly constructed with mud. The mud dwellings have largely disintegrated and little of their remains can still be observed. Shallow holes or quarries from where some of the mud was quarried to construct the dwellings also occur. Rectangular enclosures constructed with stone in which cattle were penned were constructed in close proximity of the remains of the houses.

These remains probably date from the last decades of the nineteenth century or from the early twentieth century and were probably occupied well into the first half of the nineteenth century.

**Figure 3- One of several cattle enclosures built with dolerite stone in the Sasol Project Area. Two of these enclosures are located on the high ridge above the Waterval River. Both structures were constructed with dolerite stone and are rectangular in ground plan. These two enclosures (CE01, CE02) are respectively associated with GY01 and GY02 (above).**

**Figures 4 & 5- A long stone wall constructed on the banks of the Waterval River was part of an enclosure in which cattle were penned close to the water whilst the remains of dwellings occur on higher ground away from the water (above and below).**

**Figures 5 & 6- Hollows or shallow quarries where mud was mined and used in conjunction with stone to construct dwellings (above). A rectangular shaped cattle enclosure constructed with stone (below).**

| Historical remains | Coordinates | Significance |
|---|---|---|
| CE01. Cattle enclosure | 26º 31.636' 29º 02.027' | **Med-low** |
| CE02. Cattle enclosure | 26º 31.962' 29º 02.257' | **Med-low** |
| LW. Long wall constructed with dolerite. Part of cattle enclosure next to the river | 26° 31.952' 29˚ 02.143' | **Med-low** |
| CS. Circular stone structure. Possible dwelling | 26° 31.948' 29˚ 02.147' | **Med-low** |
| SS. Square small stone and mud structure. Possible dwelling | 26° 31.946' 29˚ 02.159' | **Med-low** |
| ES01. Elongated structure with several rooms which is part of an extended dwelling | 26° 31.925' 29˚ 02.176' | **Med-low** |
| ES02. Elongated structure with several rooms. Extended dwelling | 26° 31.927' 29˚ 02.186' | **Med-low** |
| ES03. Elongated structure. Extended dwelling | 26° 31.930' 29˚ 02.181' | **Med-low** |
| RS. Rectangular structure. Cattle enclosure. | 26° 31.991' 29˚ 02.192' | **Med-low** |
| EL. Small elongated structure. Possible dwelling | 26° 32.042' 29˚ 02.225' | **Med-low** |
| RS. Dwelling with two rooms, one constructed with stone and the second with mud. Possible dwelling | 26° 32.228' 29˚ 02.331' | **Med-low** |
| LS. Large structure constructed with mud and stone. Large dwelling? | 26° 32.235' 29˚ 02.332' | **Med-low** |
| LS Large structure with unidentifiable features. Possible dwelling | 26° 32.233' 29˚ 02.329' | **Med-low** |
| LS. Large structure with unidentifiable features. Possible dwelling | 26° 32.249' 29˚ 02.334' | **Med-low** |
| MQ. Hollows from where mud where quarried to construct dwellings | 26° 32.259' 29˚ 02.364' | **Med-low** |
| ES. Elongated structure with unidentifiable features. Possible dwelling | 26° 32.277' 29˚ 02.328' | **Med-low** |
| ES. Elongated structure with unidentifiable features. Possible dwelling | 26° 32.329' 29˚ 02.307' | **Med-low** |
| SS. Small structure constructed with stone | 26° 32.325' 29˚ 02.285' | **Med-low** |
| ES. Large elongated structure constructed with dolerite | 26° 32.259' 29˚ 02.831' | **Med-low** |

**Table 1- Coordinates and significance rating for historical remains in and near the Sasol Project Area (above).**

### 5.3 Graveyards

The following graveyards were observed in and near the Sasol Project Area:

#### 5.3.1 Graveyard 01

GY01 is situated on a high ridge away from the Waterval River. It holds at least seven graves of which four are lined with cement strips and fitted with headstones. Inscriptions on the headstones are indecipherable. Three graves are covered with piles of stone. GY01 is demarcated with a low dolerite stone wall.

#### 5.3.2 Graveyard 02

GY02 is demarcated with a solidly constructed dolerite wall. This graveyard holds at least five or six graves which all have been vandalised. One cement headstone is still standing. It has the following inscription:

- 'Hier rus Jan Hendrik Adriaan Roets Geb 24 Mei 1859 Oorl 28 Sept 1940 Ges 182:1'

**Figure 7- GY01 is one of at least three graveyards located in and near the Sasol Project Area (above).**

**Figures 8 & 9- GY02 comprises at least eight heaps of stone which are located near Eskom's 400kV power lines (above). GY03 is one of at least three graveyards located in and near the Sasol Project Area (below).**

### 5.3.3 Graveyard 03

This graveyard (GTY03) is located near Eskom's 400kV power line and the banks of the Waterval River. It holds seven to eight graves, all covered with piles of stone. No inscription occurs on any of the graves.

### 5.3.4 Graveyard 04

GY04 holds approximately ten graves all of whom are demarcated with upright standing stones. One of the graves is edged with bricks and fitted with a cement headstone with the following inscription: 'Nelty Mazibuku'

| Graveyards | Coordinates | Significance |
|---|---|---|
| GY01.Graveyard located on high ridge. | 26º 31.682' 29º 02.036' | **HIGH** |
| GY02. Second graveyard located on high ridge. | 26º 31.842' 29º 02.281' | **HIGH** |
| GY03. Graveyard with seven or eight graves near Eskom's 400kV power lines | 26º 32.057' 29º 02.233 | **HIGH** |
| GY04. Graveyard with ten graves demarcated with upright stones | 26° 32.714' 29° 02.572' | **HIGH** |

**Table 2- Coordinates and significance rating for graveyards in and near the Sasol Project Area (above).**

# 6 THE SIGNIFICANCE, POSSIBLE IMPACT ON AND MITIGATION OF THE HERITAGE RESOURCES

## 6.1 The significance of the heritage resources

Several structures consisting of the remains of dwellings and cattle enclosures associated with the historical remains as well as one or more of the graveyards will be affected (impacted) by the Sasol Project. The significance of the various types and ranges of heritage resources in the Sasol Project Area therefore is indicated whilst mitigation measures are outlined for those heritage resources which may be affected by the Sasol Project.

### 6.1.1 The historical remains

The historical remains (dwellings, enclosures and graveyards) constitute a cultural landscape along the higher eastern banks of the Waterval River due to the contextual and temporary connection between these remains. The dwellings, cattle enclosures and graveyards therefore are spatially, culturally and functional interrelated with each other and supports each other's meaning and existence. This landscape is also historical in nature as it approaches sixty years of age or may even be older.

Cultural landscapes are part of archaeological and historical remains and are protected by the National Heritage Resources Act (No25 of 1999).

The cultural landscape has low to medium significance when considering criteria such as the following (Table 1):

- Historical remains such as those in the Sasol Project Area (and elsewhere on the Eastern Highveld) are rapidly disappearing as a result of development and modernisation.
- The historical remains have research (scientific) value.

### 6.1.2 The graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years.

The act also distinguishes various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

## 6.2 Mitigating the heritage resources

The following mitigation measures have to be followed if any of the historical remains associated with the cultural landscape or any of the graveyards are to be affected by the Sasol Project.

### 6.2.1 The historical remains

None of the historical remains associated with the cultural landscape may be affected (demolish, renovate, alter) by the Sasol Project *prior* to their investigation by an archaeologist accredited with the South African Heritage Resources Agency (SAHRA). After these remains have been investigated the archaeologist or the developer has to acquire a demolishing permit from SAHRA before the cultural landscape (excluding the graves) may be affected (demolish, alter, renovate) as a result of the Sasol Project.

### 6.2.2 The graveyards

Graveyards and graves can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to

whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

# 7 CONCLUSION AND RECOMMENDATION

The Phase I Heritage Impact Assessment (HIA) for the Sasol Project Area revealed the following types and ranges of heritage resources in and near the Sasol Project Area as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), namely:

- Historical remains consisting of houses and cattle enclosures.
- Informal graveyards.

These heritage resources were geo-referenced and mapped (Figures 1-2, Tables 1-2).

The significance of the heritage resources is indicated. Mitigation measures are outlined for those heritage resources which may be affected by the Sasol Project.

**The significance of the heritage resources**

Several structures consisting of the remains of dwellings and cattle enclosures associated with the historical remains as well as one or more of the graveyards will be affected (impacted) by the Sasol Project. The significance of the various types and ranges of heritage resources in the Sasol Project Area therefore is indicated whilst mitigation measures are outlined for those heritage resources which may be affected by the Sasol Project.

**The historical remains**

The historical remains (dwellings, enclosures and graveyards) constitute a cultural landscape along the higher eastern banks of the Waterval River due to the contextual and temporary connection between these remains. The dwellings, cattle enclosures and graveyards therefore are spatially, culturally and functional interrelated with each other and supports each other's meaning and existence. This landscape is also historical in nature as it approaches sixty years of age or may even be older.

Cultural landscapes are part of archaeological and historical remains and are protected by the National Heritage Resources Act (No 25 of 1999).

The cultural landscape has low to medium significance when considering criteria such as the following (Table 1):

- Historical remains such as those in the Sasol Project Area (and elsewhere on the Eastern Highveld) are rapidly disappearing as a result of development and modernisation.
- The historical remains have research (scientific) value.

**The graveyards**

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 2). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years.

The act also distinguishes various categories of graves and burial grounds. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

**Mitigating the heritage resources**

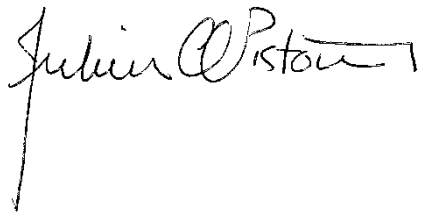
The following mitigation measures have to be followed if any of the historical remains associated with the cultural landscape or any of the graveyards are to be affected by the Sasol Project.

**The historical remains**

None of the historical remains associated with the cultural landscape may be affected (demolish, renovate, alter) by the Sasol Project *prior* to their investigation by an archaeologist accredited with the South African Heritage Resources Agency (SAHRA). After these remains have been investigated the archaeologist or the developer has to acquire a demolishing permit from SAHRA before the cultural landscape (excluding the graves) may be affected (demolish, alter, renovate) as a result of the Sasol Project.

**The graveyards**

Graveyards and graves can be mitigated by means of exhumation and relocation. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.



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# AMENDED WETLAND STUDY

# Wetland Delineation and Impact Assessment for Various Infrastructure Developments Associated with the Shondoni Shaft near Secunda, Mpumalanga Province

***For:***

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**Reference: 786/2011**

# DOCUMENT SUMMARY DATA

| | |
|---|---|
| PROJECT: | **Wetland Delineation and Impact Assessment for Various Infrastructure Developments Associated with the Shondoni Shaft near Secunda, Mpumalanga Province** |
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# INDEMNITY AND CONDITIONS RELATING TO THIS REPORT

The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and Wetland Consulting Services (Pty.) Ltd. and its staff reserve the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

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# 1. BACKGROUND INFORMATION

Wetland Consulting Services (Pty.) Ltd. (WCS) was appointed by JMA Consulting (Pty) Ltd to undertake a wetland delineation and impact assessment to support a Section 21 (c) and (i) Water Use Licence Application (WULA) for various proposed infrastructure developments associated with the Shondoni Shaft. The proposed infrastructure developments include:

- Shondoni Main and Ventilation Shaft Area
- Shondoni Incline Shaft Area
- Shondoni Borrow Pits Area
- Shondoni Rand Water Pipeline Servitude
- Shondoni Service Water Pipeline and Power Line Servitude
- Shondoni Overland Coal Conveyor Servitude

WCS had previously already undertaken a wetland delineation and assessment for the Sasol Mining Middelbult (Block 8) Shondoni Project which covered the entire Shondoni mining area. The findings of this original study have been incorporated into this report, with the current survey adding additional data to expand on the findings, to increase the accuracy of the delineation and to allow more detailed, site specific recommendations to be made.

The requirement to establish the existence and/or extent of wetlands on the property is based on the legal requirements contained in NEMA and the National Water Act, as well as the Mineral and Petroleum Resources Development Act. Given the stringent legislation regarding mining developments within or near wetland areas, it is important that these areas are identified and developments planned sensitively around them to minimize any potential impacts.

The purpose of this document is to specifically address the supplementary water use information required by the DWA for Section 21 (c) and (i) water uses for the infrastructure developments listed above. The report includes a detailed baseline description of each of the affected wetland systems, an assessment of expected impacts associated with the developments, recommends appropriate mitigation and management measures to address the identified impacts, and provides a monitoring plan to ensure successful execution of the mitigation measures.

# 2. SCOPE OF WORK

In order to meet the project objectives, the following tasks were identified:

- **Wetland Delineation and Functional Assessment:**
  - ⇒ Conduct a desktop and field investigation of the wetlands within the study area to expand on the existing information;
  - ⇒ Assess, classify, delineate and map the identified wetlands;
  - ⇒ Identify and describe the functions of the wetlands on site;
  - ⇒ Determine the Present Ecological State (PES) and Ecological Importance and Sensitivity (EISC) of the wetlands on site;

 

- ⇒ Identify and assess expected impacts;
- ⇒ Provide suitable mitigation and management measures;
- ⇒ Recommend a monitoring plan; and
- ⇒ Provide a report, including maps of the wetland area, detailing all the information.

# 3. LIMITATIONS

Due to the scale of the remote imagery used (1:10 000 orthophotos and Google Earth Imagery), as well as the accuracy of the handheld GPS unit used to delineate wetlands in the field, the delineated wetland boundaries cannot be guaranteed beyond an accuracy of about 20m on the ground. Should greater mapping accuracy be required, the wetlands would need to be pegged in the field and surveyed using conventional survey techniques.

# 4. STUDY AREA

## *4.1 Location*

The map below shows the location of the Shondoni Shaft as well as all of the proposed infrastructure developments addressed in this report. The Shondoni Shaft is located approximately 4.5 km directly to the west of the town of Evander along the R547 road in the Mpumalanga Province.

For the purpose of the wetland delineation, the study area was defined as the entire area falling within 500 m of any of the proposed infrastructure developments so as to ensure that the Section 21 (c) and (i) water use requirements of including any activity falling within 500 m of a wetland in the application are met.

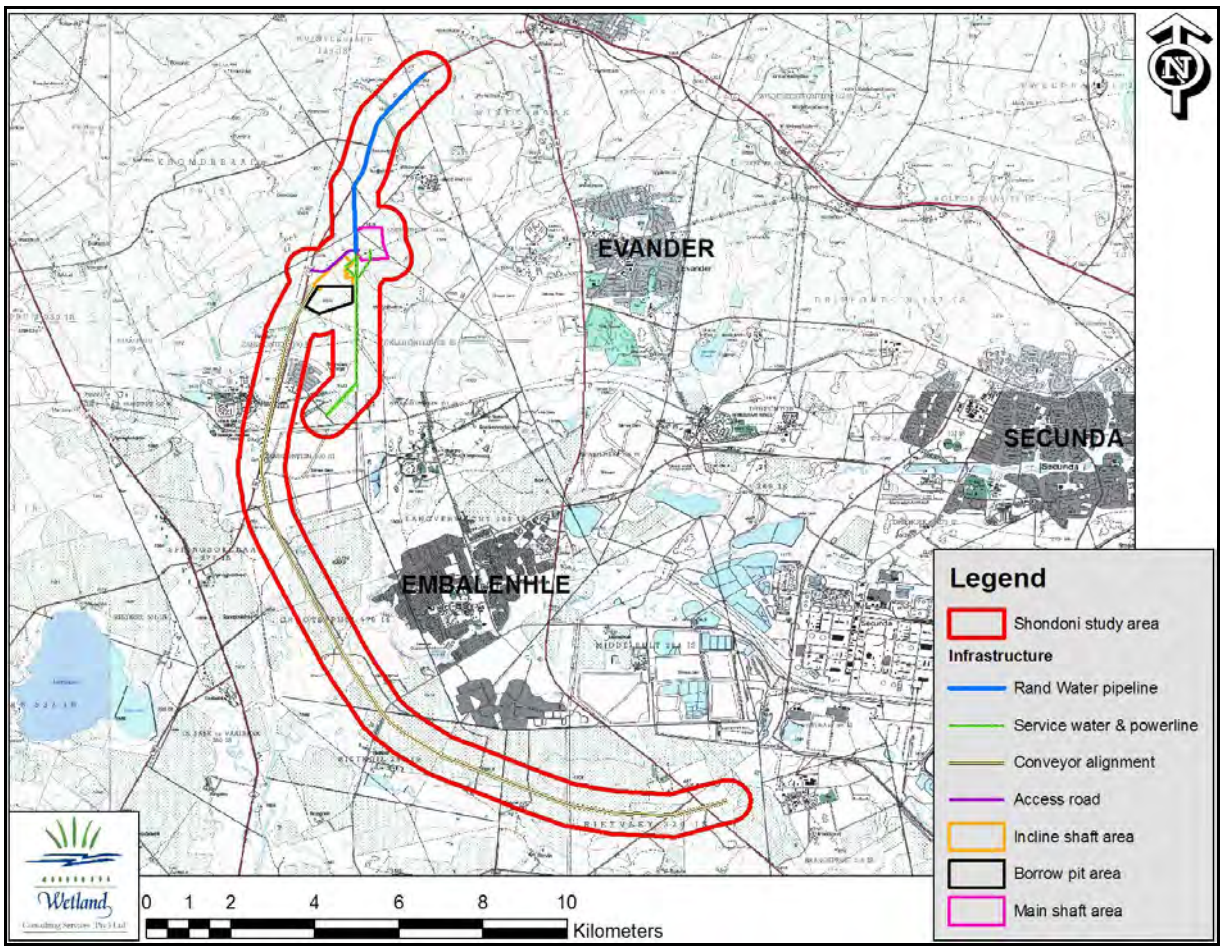


**Figure 1.** Map showing the location of the study area.

## *4.2 Catchments*

The study area is located within the Vaal River catchment (Primary Catchment C), and more specifically within quarternary catchment C12D. Information regarding mean annual rainfall, runoff and evaporation potential per quarternary catchment is provided in the table below (Middleton, B.J., Midgley, D.C and Pitman, W.V., 1990). Figure 2 indicates the position of the proposed developments in relation to the affected quarternary catchments.

**Table 1.** Table showing the mean annual precipitation, run-off and potential evaporation per quaternary catchment (Middleton, B.J., Midgley, D.C and Pitman, W.V., 1990).

| Quaternary Catchment | Catchment Surface Area (ha) | Mean Annual Rainfall (mm) | Mean Annual Run-off (mm) | Potential Evaporation (mm) |
|---|---|---|---|---|
| C12D | 81 343 | 666.88 | 59.3 | 1600-1700 |

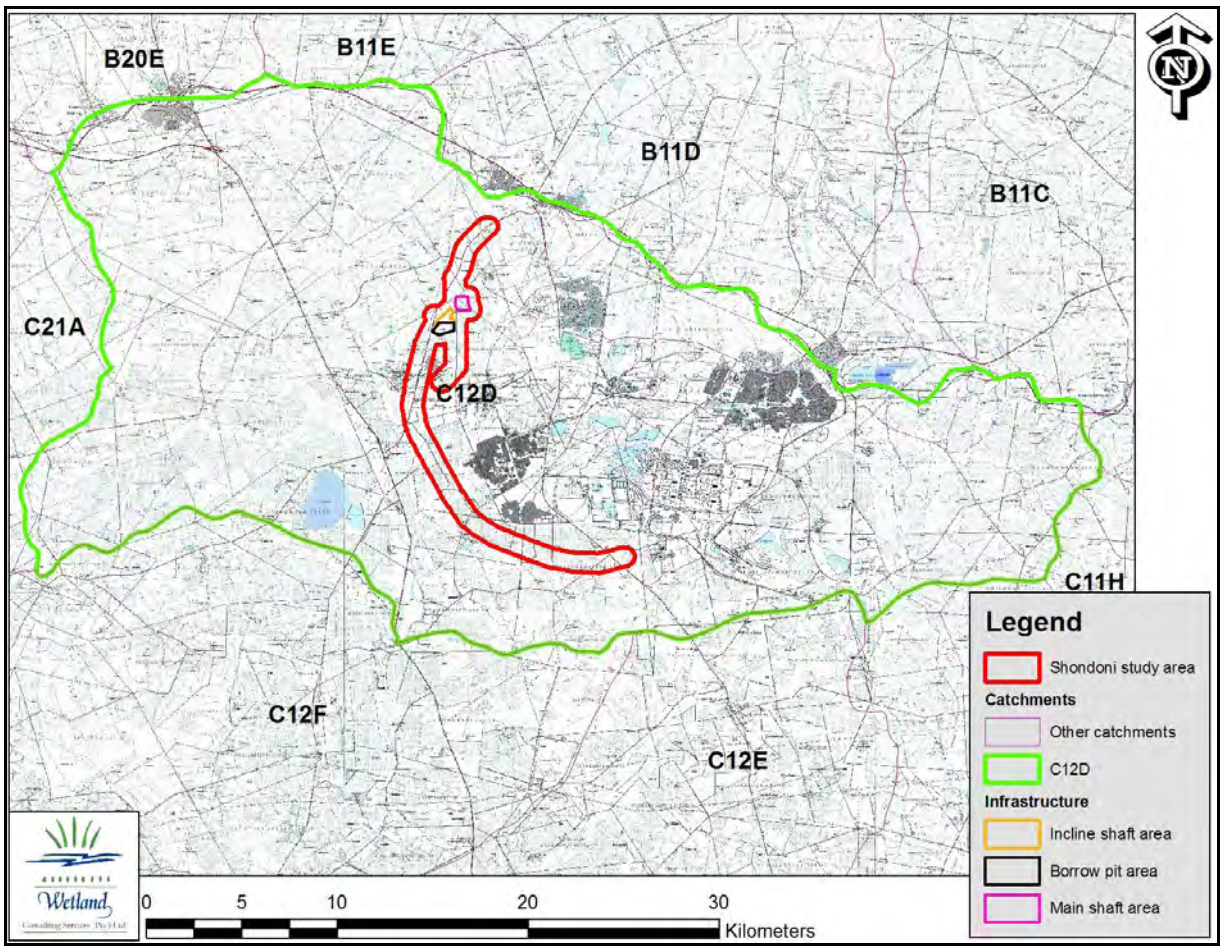


**Figure 2.** Map showing the study area in relation to the quaternary catchment C12D.

### *4.3 Geology and Soils*

The geology of the study area is typical of the geology on the coalfields of the Mpumalanga Highveld. The study area is underlain by sandstones of the Vryheid Formation (Ecca Group, Karoo Sequence) and dolerite, also of the Karoo Sequence. Along the Grootspruit some more recent alluvial deposits occur.

Soils derived from sandstones and dolerites differ significantly, with the properties of the soil determining the way water moves through the landscape and the types of wetland systems likely to form. Sandstones weather to form sandy soils that allow easy infiltration of water into the soil and thus often support perched aquifers that can lead to the formation of extensive hillslope seepage wetlands. Dolerite derived soils in contrast are generally clayey and often vertic in nature. These expansive soils become almost impermeable to water when moist and encourage run-off, resulting in predominantly channelled valley bottom wetlands forming in these areas.

With the study area, the soils were generally clayey, with vertic soils found within all of the valley bottom wetlands on site.

### *4.4 Vegetation*

 

According to the most recent vegetation classification of the country (Mucina and Rutherford, 2006), the study area is located within the Grassland Biome and the Mesic Highveld Grassland Bioregion. The specific vegetation type is given as *Soweto Highveld Grassland*. It is considered that *Eastern Temperate Freshwater Wetland* vegetation characterises some of the drainage lines and water courses on site, though this has not been mapped as such, mostly probably due to an issue of scale.

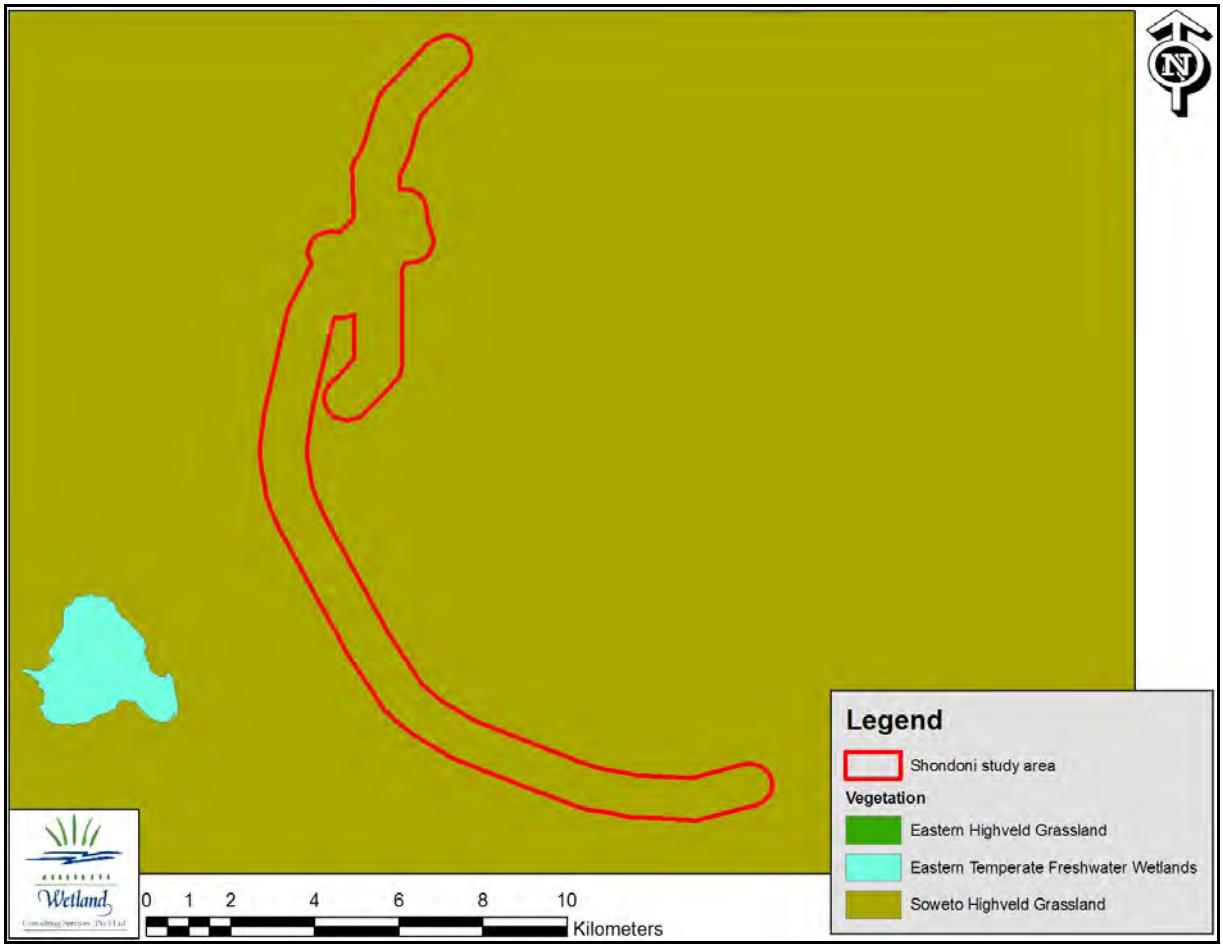


**Figure 3.** Extract from the Vegetation Map of South Africa, Lesotho and Swaziland (Mucina and Rutherford, 2006) for the study area.

*Soweto Highveld Grassland* occurs mostly within Mpumalanga and Gauteng in a broad band roughly between the N17 Ermelo to Johannesburg highway and the Vaal River, and extending westwards along the southern edge of the Johannesburg Dome as far as Randfontein. Altitude ranges from 1 420 m to 1 760 m above sea level. The landscape is gently to moderately undulating and supports a short to medium-high, dense, tufted grassland dominated by *Themeda triandra*. Dominant species listed by Mucina and Rutherford (2006) are as follows:

**Graminoids**: *Andropogon appendiculatus, Brachiaria serrata, Cymbopogon pospischilii, Cynodon dactylon, Elionurus muticus, Eragrostis capensis, E. chloromelas, E. curvula, E. plana, E. planiculmis, E. racemosa, Heteropogon contortus, Hyparrhenia hirta, Setaria nigrirostris, S. sphacelata, Themeda triandra, Tristachya leucothrix.*

 

**Herbs**: *Hermannia depressa*.

*Eastern Temperate Freshwater Wetland* vegetation occurs throughout South Africa except for the Western and Northern Cape Provinces. It is described as an intrazonal vegetation type occurring along water bodies with stagnant and slow flowing water and is embedded within the Grassland Biome of South Africa. It occurs on flat landscapes and within shallow depressions characterised by mostly temporary water bodies that support zoned systems of aquatic and hygrophilous vegetation. Dominant species listed by Mucina and Rutherford are as follows:

**Megagraminoid**: *Cyperus congestus, Phragmites australis, Schoenoplectus corymbosus, Typha capensis.*

**Graminoids**: *Agrostis lachnantha, Carex acutiformis, Eleocharis palustris, Eragrostis plana, E. planiculmis, Fuirena pubescens, Helictotrichon turgidulum, Hemarthria altissima, Imperata cylindrica, Leersia hexandra, Paspalum dilatatum, P. urvillei, Pennisetum thunbergii, Schoenoplectus decipiens, Scleria, dieterlenii, Setaria sphacelata.*

**Herbs**: *Centella asiatica, Ranunculus multifidus.*

A list of species recorded within the wetlands on site is provided in the Table below.

# 5. APPROACH

The National Water Act, Act 36 of 1998, defines wetlands as follows:

> *"Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."*

The presence of wetlands in the landscape can be linked to the presence of both surface water and perched groundwater. Wetland types are differentiated based on their hydro-geomorphic (HGM) characteristics; i.e. on the position of the wetland in the landscape, as well as the way in which water moves into, through and out of the wetland systems. A schematic diagram of how these wetland systems are positioned in the landscape is given in the figure below.

 

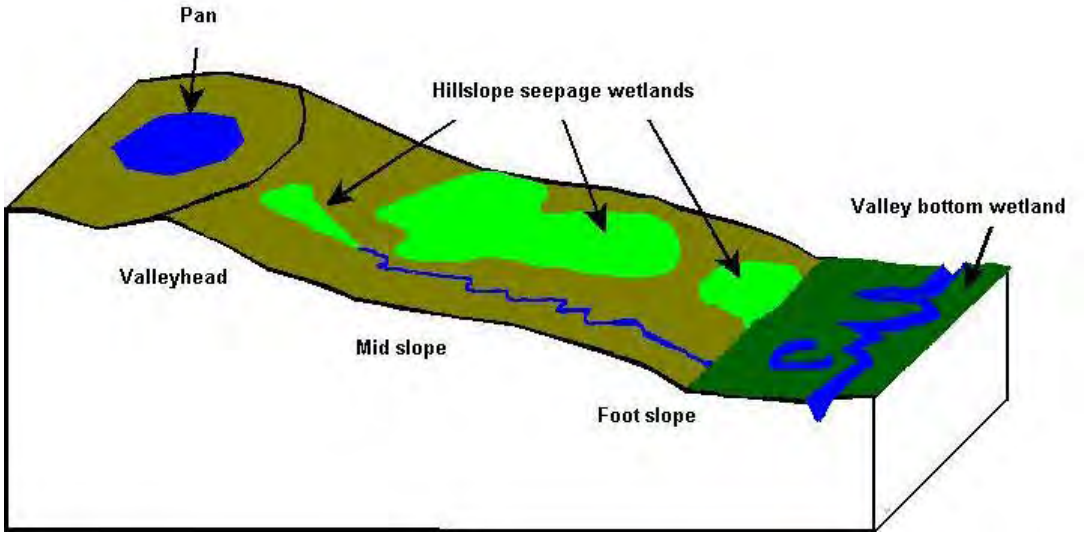


**Figure 4.** Diagram illustrating the position of the various wetland types within the landscape.

## *5.1 Wetland Delineation and Classification*

Use was made of 1:50 000 topographical maps, 1:10 000 orthophotos and Google Earth Imagery to create digital base maps of the study area onto which the wetland boundaries could be delineated using ArcMap 9.0. A desktop delineation of suspected wetland areas was undertaken by identifying rivers and wetness signatures on the digital base maps. All identified areas suspected to be wetlands were then further investigated in the field.

Wetlands were identified and delineated according to the delineation procedure as set out by the "*A Practical Field Procedure for the Identification and Delineation of Wetlands and Riparian Areas*" document, as described by DWAF (2005) and Kotze and Marneweck (1999). Using this procedure, wetlands were identified and delineated using the Terrain Unit Indicator, the Soil Form Indicator, the Soil Wetness Indicator and the Vegetation Indicator.

For the purposes of delineating the actual wetland boundaries use is made of indirect indicators of prolonged saturation, namely wetland plants (hydrophytes) and wetland soils (hydromorphic soils), with particular emphasis on hydromorphic soils. It is important to note that under normal conditions hydromorphic soils must display signs of wetness (mottling and gleying) within 50cm of the soil surface for an area to be classified as a wetland (*A practical field procedure for identification and delineation of wetlands and riparian areas*, DWAF).

The delineated wetlands were then classified using a hydro-geomorphic classification system based on the system proposed by Brinson (1993), and modified for use in South African conditions by Marneweck and Batchelor (2002).

## *5.2 Functional Assessment*

A functional assessment of the wetlands on site will be undertaken using the level 2 assessment as described in "Wet-EcoServices" (Kotze et al., 2005). This method provides a scoring system for

 

establishing wetland ecosystem services. It enables one to make relative comparisons of systems based on a logical framework that measures the likelihood that a wetland is able to perform certain functions

### *5.3 Present Ecological State and Ecological Importance & Sensitivity*

A present ecological state (PES) and ecological importance and sensitivity (EIS) assessment was conducted for every hydro-geomorphic wetland unit identified and delineated within the study area. This was done in order to establish a baseline of the current state of the wetlands and to provide an indication of the conservation value and sensitivity of the wetlands in the study area.

For the purpose of this study, the scoring system as described in the document "*Resource Directed Measures for Protection of Water Resources. Volume 4. Wetland Ecosystems*" (DWAF, 1999) was applied for the determination of the PES.

### *5.4 Impact assessment methodology*

The impact assessment methodology used in this report was based on the requirements of DWA's 'Operational Guideline (Department of Water Affairs, 2010).

The assessment process requires that all the relevant data to the water uses and to the impact of the water uses on the water resources be sourced and used in the assessment. The process included:

- Monitoring data collected and stored;
- Published data;
- Data available from the DWA or other stakeholders in the area.

The above-mentioned data was used for risk identification of the water uses on the water resource. The impact assessment will be based on the following key elements:

**Probability** of occurrence: this describes the likelihood of the impact actually occurring and is indicated as:

- Improbable, where the likelihood of the impact is very low;
- Probable, where there is a distinct possibility of the impact to occur;
- Highly probable, where it very likely that the impact will occur;
- Definite, where the impact will occur regardless any management measure.

**Consequence** of occurrence in terms of:

- Nature of the impact;
- Extent of the impact, either local, regional, national or across international borders;
- Duration of the impact, either short term (0-5 years), medium term (6-15 years) or long-term (the impact will cease after the operational life of the activity) or permanent, where mitigation measures by natural processes or human intervention will not occur;
- Intensity of the impact, either being low, medium or high effect on the natural, cultural and social functions and processes.

 

Significance level of the risk posed by the water use, this is determined through a synthesis of the probability of occurrence and consequence of occurrence.

The ranking of the risks was based on the quantitative assessment as described above and categorized into high, medium, or low risks. Management measures were then identified to mitigate, prevent and / or reduce the risk. These measures primarily focused on the risks identified as high in the ranking matrix, but will also include measures for medium and low risks. The management measures will be taken forward in the IWULA, as part of the water use authorisation process.

In order to assess each of the factors for each impact, the ranking scales as contained in Table 2 were used.

**Table 2.** Ranking Scales for impact assessment

| | |
|---|---|
| PROBABILITY = P<br>5 – Definite / don't know<br>4 – High probable<br>3 – Medium probability<br>2 – Low probability<br>1 – Improbable<br>0 – None | DURATION = D<br>5 – Permanent<br>4 – Long-term (ceases after operational life)<br>3 – Medium-term (5 – 15 years)<br>2 – Short-term (0-5 years)<br>1 - Immediate |
| EXTENT = E<br>5 – International<br>4 – National<br>3 – Regional<br>2 – Local<br>1 – Site<br>0 – None | MAGNITUDE = M*<br>10 – Very high / Don't know<br>8 – High<br>6 – Moderate<br>4 – Low<br>2 – Minor |

*Note: the magnitude is rated from 1 to 5, but this is done twice. Once for the environmental impact and once for the impact on society, thereby having a total weight of 10 points.

Once the factors had been ranked for each impact, the environmental significance of each impact could be assessed by applying the SP formula. The SP formula can be described as:

**SP** = (**magnitude** (environmental + society) + **duration** + **extent**) x **probability**

The maximum value of significance points (SP) is 100. Environmental effects could therefore be rated as either high (H), moderate (M), or low (L) significance on the following basis:

- More than 60 points indicates high (H) environmental significance
- Between 30 – 60 points indicate moderate (M) environmental significance
- Less than 30 points indicates low (L) environmental significance

These impacts are rated prior to mitigation and again post mitigation so a comparison can be drawn.

# 6. FINDINGS

## *6.1 Wetland Delineation and Classification*

A map of the wetlands delineated within the entire study area is indicated below. Two large wetland systems dominate the area, namely the floodplain wetlands associated with the Waterval River and the Grootspruit respectively. A number of small, unnamed tributaries of these larger systems further occur within the area. Special mention is made of a channelled valley bottom wetland that flows through between the Shondoni Main Shaft Area and the Shondoni Incline Shaft Area – this is as unnamed tributary of the Grootspruit. **Though unnamed on the 1:50 000 topographical maps, the channelled valley bottom wetland will be referred to as the Shondoni Spruit for ease of reference in this report as this specific wetland will be referred to on numerous occasions.**

In order to provide the level of detailed required, the wetlands affected by each of the proposed infrastructure developments will now be discussed individually. For each of the wetlands associated with a specific activity a baseline description is provided (as per the supplementary information requirements for Water Uses (c) and (i)), where after an impact assessment is undertaken for each activity.

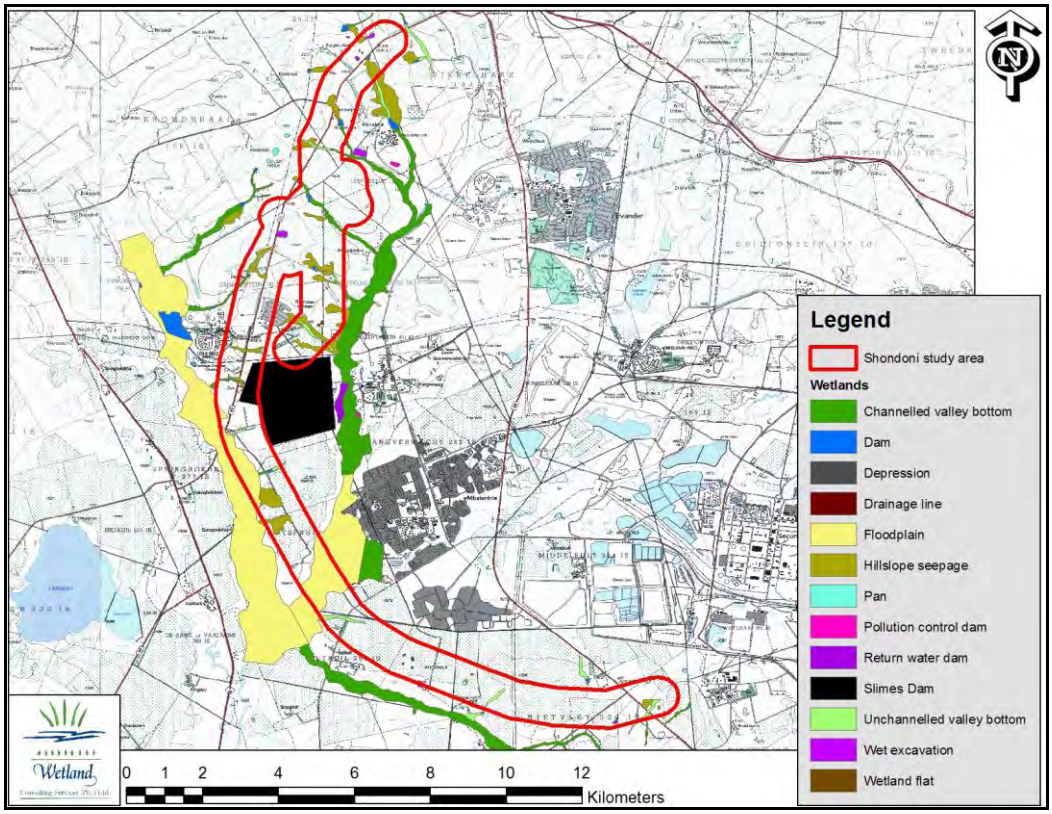


**Figure 5.** Map of the delineated wetlands within and adjacent to the study area.

### *6.1.1 Shondoni Main Shaft Area*

No wetlands fall directly within the footprint of the proposed Shondoni Main Shaft infrastructure area. However the Shondoni Spruit flows past approximately 40 m to the south-west. The location of the Shondoni Spruit and its associated valley bottom wetland in relation to the Shondoni Main shaft is illustrated in below, with photographs (dated November 2011) of the wetland also provided.

**Figure 6.** Photographs of the Shondoni Spruit downslope of the Main Shaft Area. Left: looking downstream; right: looking upstream, with Main Shaft area to be located on the northern banks (right-hand side of right photo).

 

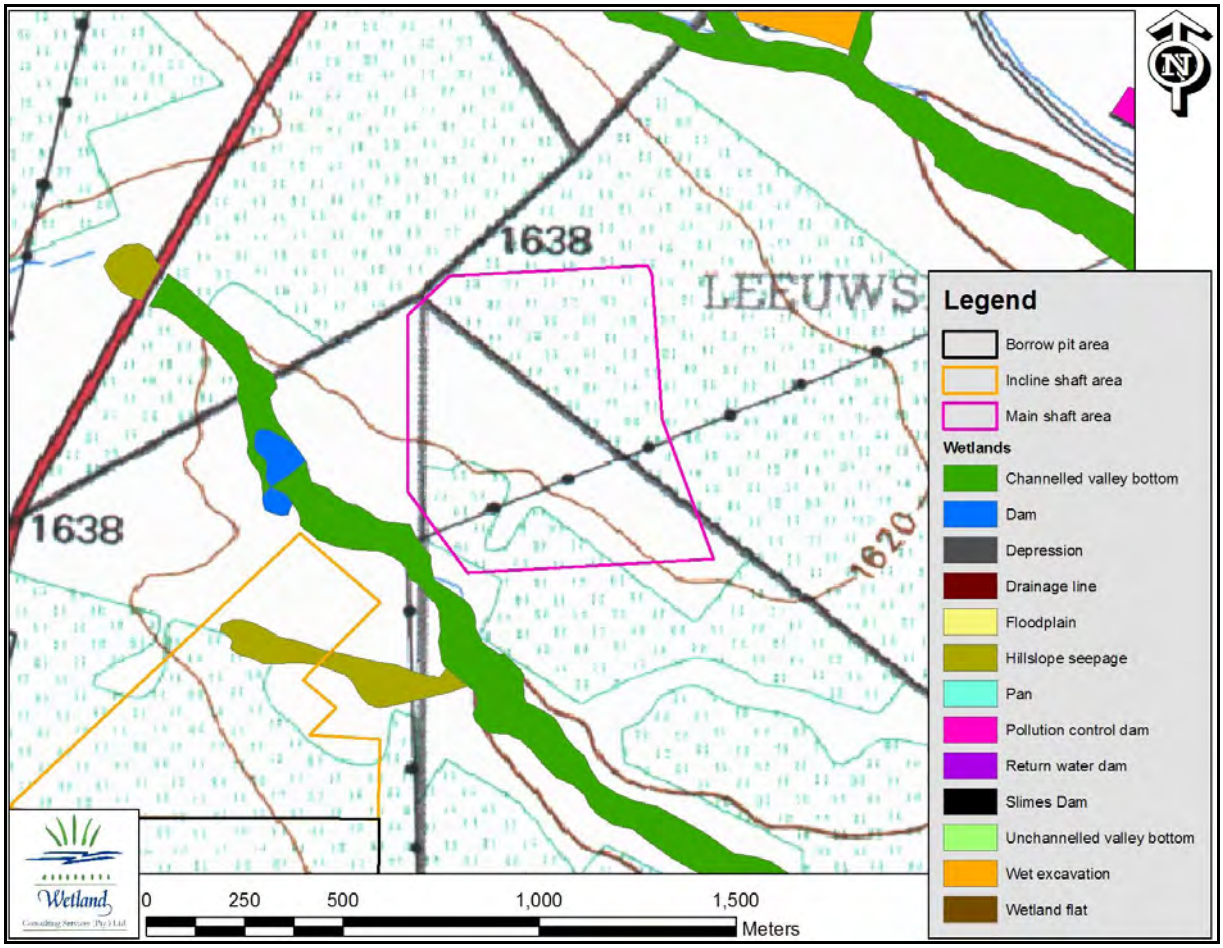


**Figure 7.** Map of the Shondoni Main Shaft area indicating the wetlands adjacent to the site.

The affected reach of the Shondoni Spruit is described as the extreme upper reach of a seasonal channelled valley bottom wetland, with the head of the system located only approximately 1 km upstream of the affected reach and just upstream of the R547 road crossing across the wetland. A single culvert conveys flows underneath the R547 and has resulted in the erosion of a small channel both upstream and downstream of the crossing. Flows then enter a small farm dam which was presumably constructed in the past to ensure extended presence of surface water for livestock watering as the channelled valley bottom wetland itself tends to dry out in the winter months. A small quarry/excavation which appears to intercept a shallow, perched groundwater table is located adjacent to the dam. Downstream of the dam the channel within the wetland becomes more defined and a number of deeper pools and cut-off meanders that retain water for extended periods occur.

At the time of the site visit the vegetation of the Shondoni Spruit was recovering from having been burnt in winter and was characterised by short grassland. Most of the wetland is expected to be covered by medium-high grassland with species such as *Themeda triandra, Eragrostis chloromelas, Fingerhuthia africana, Cynodon dactylon, Setaria sphacelata* and *Paspalum dilatatum* common. Isolated, small, sparse stands of the reeds *Phragmites australis* and *Typha capensis* were observed, while the channel of the wetland was lined by species such as *Schoenoplectus corymbosus, S. dregeanus, Juncus dregeanus* and *Persicaria* spp. Other species observed

 

included *Crinum bulbispermum, Erythrina zeyheri, Berkheya africana, Haplocarpha scaposa* and *Helichrysum aureonitens*.

At a sub-catchment level, the catchment of the Shondoni Spruit is characterised mostly by natural grassland and cultivated areas (both past and present cultivation). This landuse is unlikely to have affected the hydrology of the system significantly, though the presence of the R547 road is likely to have contributed stormwater flows to the wetland, while the culvert under the road crossing also contributes to concentrating flows. Other than stormwater derived from the R547 road surface, no significant impacts to water quality within the catchment are expected. At the time of the field work (November 2011) no flowing water was present in the wetland; however, a water sample (Sample S3) was collected from the small farm dam which indicated fair water quality, though TDS levels (1014.9 mg/L) were somewhat elevated, probably as a result on concentration through evaporation. Full water quality results are provided in Appendix 1. The Shondoni Spruit was not suitable for sampling aquatic macro-invertebrates according to the SASS5 protocol.

In terms of the PES assessment undertaken the Shondoni Spruit is considered to be in a ***moderately modified state (PES C)*** based on the impacts described above, while it obtained an ***EIS rating of C, indicating moderate importance and sensitivity***. The wetland is considered important mostly from a biodiversity support perspective in that it provides habitat that differs from the surrounding terrestrial landscape, though these types of systems are common within the area. The wetland further plays a role in flood attenuation and sediment trapping when flows overtop the channel banks, though these functions are limited by the relatively low surface roughness of the wetland (the wetland is characterised by short to medium-high grassland, with no reed beds). In terms of direct use values the wetland provides livestock grazing. No other uses were observed on site.

#### 6.1.1.1 Impact Assessment – Shondoni Main Shaft Area

The Shondoni Main shaft area will involve the clearing of approximately 40 ha of grassland, most of which has been previously cultivated. *No wetland falls within the footprint of the main shaft area*. A number of facilities will be constructed within the main shaft area, some of which include waste storage and handling facilities, bulk fuel storage, wash bay, workshops, waste rock stockpiles, sewage plant and the main shaft pollution control dam (PCD). A full list of facilities is provided in the IWULA document.

The following impacts are expected to occur as a result of the proposed activities. Decommissioning impacts are expected to be largely the same as the construction impacts and all construction impacts and mitigation measures should thus also be applied to the decommissioning phase. Where additional measures are required, these will be listed under the heading “Decommissioning Phase”.

**Construction Phase:**

- Disturbance to wetland habitat and biota;
- Increased sedimentation; and
- Deterioration in water quality.

 

**Operational Phase:**

- Increased flows within the Shondoni Spruit;
- Erosion and increased sedimentation within the Shondoni Spruit wetland; and
- Deterioration in water quality.

#### *6.1.1.1.1 Construction Phase – Disturbance to wetland habitat and biota*

While no direct wetland loss will occur as a result of the construction of the Shondoni Main Shaft area, adjacent wetland habitat is likely to be disturbed during construction activities through movement of machinery and construction workers, and incorrect waste disposal (littering), leading to further impacts such as an increase in alien and invasive species and increasing the risk of erosion.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 1 | 5 | 40 |

*Mitigation*

The wetland area associated with the Shondoni Spruit should be clearly demarcated in the field prior to the onset of construction activities. The wetland and a 20m buffer zone should be fenced off using standard 5 strand cattle fencing to prevent access to the wetland area to vehicular and human traffic, but to allow free movement of small mammal species. No access should be allowed into the fenced off wetland area. No construction camps or temporary stockpiling of material may take place within the fenced-off wetland and buffer zone. Clearly demarcated waste disposal facilities should be provided on the construction site and no dumping of any waste material into the wetland area is allowed. Following completion of construction activities a litter removal operation should be undertaken for the wetland area. Burning of the wetland area should be prohibited, unless required as part of a pasture management plan compiled by a suitably qualified professional.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.1.1.2 Construction Phase – Increased sedimentation*

The clearing of 40 ha of vegetation for the establishment of the main shaft area will expose large areas of bare, disturbed soil to erosion by wind and water. Though the clayey soils of the area tend to be fairly resistant to erosion when undisturbed, disturbance of the soil and clearing of vegetation will increase the erosion risk significantly. In addition, vegetation clearing and compaction of soils

 

will also increase surface run-off volumes and velocities, further increasing the erosion risk. Preferential flow paths are also likely to be formed in vehicle tracks, where concentrated flows could lead to gully erosion. Sediment eroded off the construction site is also likely to be transported into the wetlands by surface run-off and deposited in the wetlands. Deposition zones are likely to experience changes in vegetation composition, with species such as *Typha capensis* or possibly *Phragmites australis*, currently uncommon within the wetland, becoming dominant in these areas and excluding other species.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 2 | 5 | 45 |

*Mitigation*
Construction activities should take place during the dry season as far as possible to limit erosion due to surface runoff after storm events. As construction activities are likely to extend across a longer timeframe than 1 dry season, it is recommended that clearing of the vegetation is phased and limited to as small an area at any one time as possible. Where not absolutely necessary for the purposes of construction, vegetation should not be cleared. Bare soil areas should be re-vegetated as soon as possible following construction. Where necessary, soils will need to be ripped, scarified and landscaped to the natural landscape profile prior to re-vegetation. To prevent concentration of flows all access roads and roads on site should incorporate regular low level humps to slow down flows and direct flows into adjacent grassland. Water management infrastructure with the associated sediment traps should be completed as soon as possible into the construction phase of the project and not as a final addition. This will aid in limiting and managing sediment loss of the site.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 2 | 4 | 28 |

#### *6.1.1.1.3 Construction Phase – Deterioration in water quality*

During construction activities potentially polluting substances such as cement, oil, diesel etc will be utilised and stored on site. Leaks or spills of these materials could lead to pollutants being washed into downslope wetlands via surface run-off. In addition, incorrect disposal of waste poses a further pollution risk. Erosion off bare soil areas following vegetation clearing is also likely to result in increased turbidity.

 

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 2 | 4 | 44 |

*Mitigation*

- Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities;
- Hazardous substances should be stored in clearly demarcated areas with suitable spill and leak containment measures (ideally bunded areas);
- Limit quantities of hazardous substances stored on site to the volumes used during 1 days work, unless suitably bunded storage areas have been installed on site;
- Dispose of all soil due to spills or leaks of polluting material as hazardous waste;
- Stormwater should be diverted around areas where polluting substances are stored to prevent contamination; and
- Waste should be stored on site in clearly marked containers in a demarcated area. All waste must be disposed of offsite.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 2 | 3 | 27 |

#### *6.1.1.1.4 Operational Phase – Increased flows within the Shondoni Spruit*

The increase in hardened surfaces that will result from the construction of the main shaft area will increase surface run-off volumes from the site. Clean stormwater will be discharged into the Shondoni Spruit valley bottom wetland, increasing flow within the wetland. In addition, treated sewage effluent will also be discharged in the wetland, further increasing flows.

Increased flows in the wetland are likely to result in increased erosion risk and channel incision within the wetland. Channel incision will lower the local water table and decrease the occurrence of bank-overtopping events, leading to partial desiccation of the wetland verges and resultant changes to the wetland vegetation. Within the channel and pools, species adapted to permanent saturation such as *Typha capensis* and *Phragmites australis* are likely to increase.

This impact is expected to be of High significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 2 | 5 | 65 |

*Mitigation*

- Minimise extent of hardened surfaces;
- Implement a detailed stormwater management plan which aims to retain the pre-development run-off characteristics of the site for regular return storm events;
- Convey stormwater in grassed swales rather than lined canals/trenches as far as possible to maximise infiltration and minimise erosion;
- Stormwater discharge points should be protected against erosion and incorporate energy dissipaters. Flows should be encouraged to disperse across a wide an area of the wetland as possible;
- Stormwater should be discharged into adjacent grassland and not directly into the delineated wetlands as far as possible;
- Volumes of sewage effluent should be minimised by implementing measures to minimise use of water within the shaft area (e.g. dual flush toilets, low flow showers, etc.) and maximise re-use (option of irrigating lawns with treated effluent should be investigated);
- Discharge point of the treated effluent should be protected against erosion as for the stormwater discharge points
- Fixed point photography should be undertaken of the discharge points as well as at designated points along the main channel of the Shondoni Spruit 50 m and 250 m downstream of the discharge points to monitor for erosion damage. Photographs should be taken pre-development to provide a baseline, and then in December and March during the rainy season. If vertical and/or lateral erosion of the channel is observed, corrective measures should be implemented via the appointment of a wetland rehabilitation specialist.

After mitigation, the impact is expected to be of Moderate significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 4 | 2 | 5 | 50 |

#### *6.1.1.1.5 Operational Phase – Erosion and increased sedimentation*

Increased flow volumes within the valley bottom will increase the erosive capacity of the flows. In addition, stormwater discharges are likely to be concentrated, point source discharges with high velocity flows, further increasing the erosion risk, especially at the point of discharge. Eroded sediments are likely to be transported downstream and deposited lower down the system or in the Grootspruit, leading to changes in habitat through altering the substrate and encouraging species such as Typha capensis and Phragmites australis to colonise areas of deposited sediments.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 5 | 60 |

*Mitigation*

- Minimise extent of hardened surfaces
- Implement a detailed stormwater management plan which aims to retain the pre-development run-off characteristics of the site for regular return storm events
- Convey stormwater in grassed swales as far as possible to maximise infiltration
- Stormwater discharge points should be protected against erosion and incorporate energy dissipaters. Flows should be encouraged to disperse across the full width of the wetland
- Stormwater should be discharged into grassland and not directly into the delineated wetlands as far as possible

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 4 | 2 | 4 | 40 |

#### *6.1.1.1.6 Operational Phase – Deterioration in water quality*

Discharge of stormwater and treated sewage effluent into the Shondoni Spruit will likely lead to deteriorating water quality with deleterious impacts to aquatic biodiversity. The storage of fuel on site, the wash bay and workshops provide sources of hydrocarbon pollution, while the waste rock dumps could potentially lead to the formation of acid rock drainage. The waste storage and handling facilities also pose a source of a number of pollutants and toxicants that could potentially enter Shondoni Spruit.

This impact is expected to be of High significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 2 | 5 | 65 |

*Mitigation*

A detailed surface water management plan should be drawn up for the main shaft area that complies fully with GN704 in terms of the separation of clean and dirty stormwater. Dirty stormwater should be captured in a pollution control dam on site and no discharge of dirty stormwater should be allowed into the wetlands on site. The dirty water management system should have a minimum capacity to cope with a 1:50 year storm event without overflow. Dirty water should be re-used as far as possible within the mining operations.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 4 | 2 | 3 | 30 |

### *6.1.2 Shondoni Incline Shaft Area*

The Shondoni Incline Shaft Area is located across the Shondoni Spruit from the Main Shaft Area. The Incline Shaft Area footprint does not impact directly on the Shondoni Spruit channelled valley bottom wetland; however, a hillslope seepage wetland feeding into the valley bottom wetland does fall within the footprint of the Incline Shaft Area as illustrated below.

The Shondoni Spruit channelled valley bottom wetland was described in detail above (refer to Section 6.1.1 Shondoni Main Shaft Area).

The hillslope seepage wetland is characterised by fairly clayey soils that are almost vertic in nature in some areas. Hillslope seepage wetlands on such clayey soils are unusual as the soils do not generally permit the lateral seepage of water through the soil. However, water movement can occur along the contact between the soil and the underlying rock. The seepage wetland occurs in a shallow depression downslope of cultivated fields and shows signs of erosion in the form of shallow gullies that extend out of the seepage wetland and into the upslope cultivated fields. It is likely that that the removal of vegetation and disturbance of the soil through cultivation, as well as the concentration of flows in ruts and plough lines resulted in the erosion gullies. Disturbances associated with cultivation have also resulted in the increased presence of alien and weedy species within the wetland.

The hillslope seepage wetland is expected to be a temporary to seasonally wet system that is characterised by the sub-surface movement of water, with surface water only expected to be present for short periods due to surface run-off following heavy rains. The seasonal nature of saturation is reflected in the vegetation of the wetland which to a large part resembled the adjacent terrestrial vegetation, with species such as *Themeda triandra*, *Eragrostis chloromelas*, *Paspalum dilatatum*, *Nidorella anomala*, *Helichrysum aureonitens* and *Bidens formosa* common.

The absence of surface water did not allow for the collection of water samples. However, as the catchment is only characterised by grasslands and cultivated areas, no significant deterioration in water quality is expected to have taken place within the wetland.

In terms of the PES assessment undertaken the Shondoni Spruit is considered to be in a ***moderately modified state (PES C)***, while it obtained an ***EIS rating of C, indicating moderate importance and sensitivity*** (see above for more detail). The hillslope seepage wetland is considered to be ***largely modified (PES D) and obtained an EIS rating of D, indicating low importance and sensitivity***.

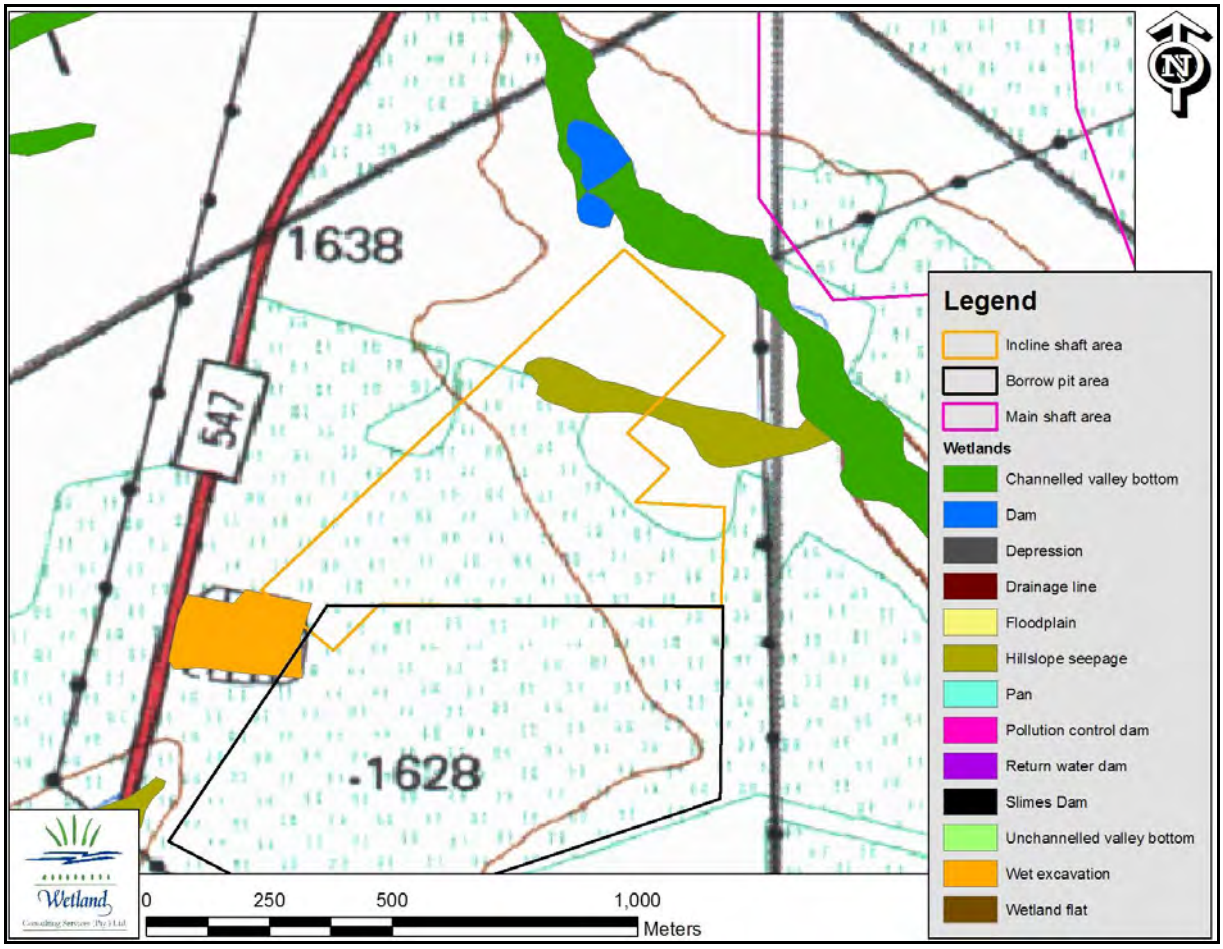


**Figure 8.** Map of the Shondoni Incline Shaft area indicating the wetlands on site.

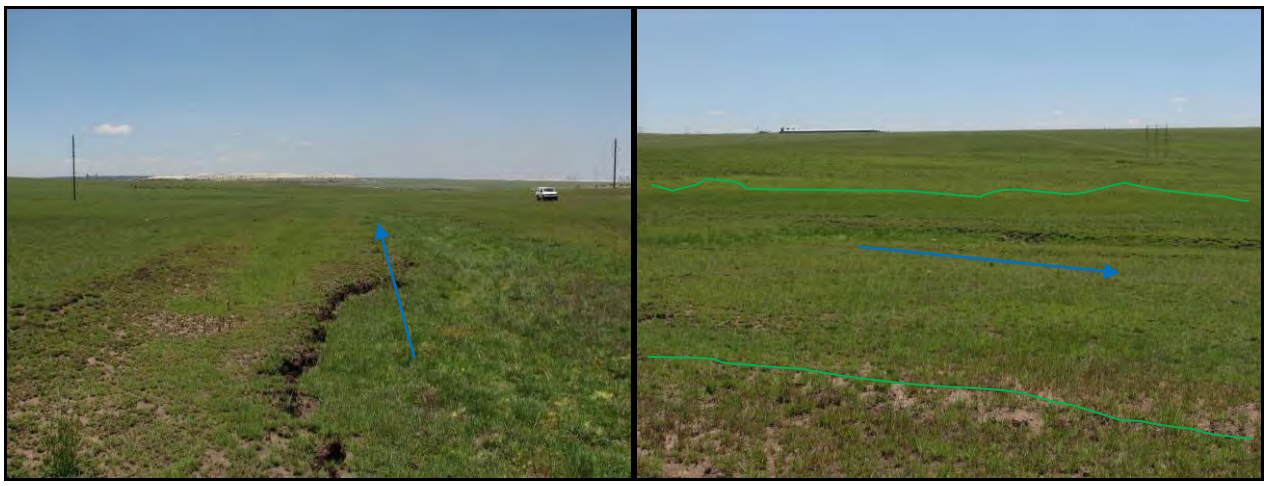

**Figure 9.** Photographs of the hillslope seepage wetland falling within the incline shaft footprint. Photographs were taken during field work in November 2011. Left – looking downslope towards the Shondoni Spruit, right – looking across the seepage wetland from south to north, approx wetland boundaries indicated in green, flow direction in blue.

#### 6.1.2.1 Impact Assessment – Shondoni Incline Shaft Area

The Shondoni Incline Shaft area will occupy a footprint of approximately 30 ha, with the extent of hillslope seepage wetland falling within the direct footprint being approximately 1.4 ha. The following activities will take place within the incline shaft area:

- Access road
- Incline shaft box cut
- Incline shaft portal
- Workshops
- Security offices
- Parking areas
- Electrical substation
- Surface bunker
- ROM Tip PCD
- Waste Rock stockpile
- Emergency coal stockpile

The following impacts are expected to occur as a result of the proposed activities. Decommissioning impacts are expected to be largely the same as the construction impacts and all construction impacts and mitigation measures should thus also be applied to the decommissioning phase. Where additional measures are required, these will be listed under the heading "Decommissioning Phase".

**Construction Phase:**

- Loss and disturbance of wetland habitat and biota;
- Increased sedimentation;
- Decreased flows within the Shondoni Spruit; and
- Deterioration in water quality.

**Operational Phase:**

- Erosion and increased sedimentation within the Shondoni Spruit wetland; and
- Deterioration in water quality.

##### *6.1.2.1.1 Construction Phase – Loss and disturbance of wetland habitat and biota*

Approximately 1.4 ha of hillslope seepage wetland habitat will be permanently lost as a result of the construction of the Shondoni Incline Shaft area, while adjacent wetland habitat is also likely to be disturbed during construction activities through movement of machinery and construction workers, and incorrect waste disposal (littering), leading to further impacts such as an increase in alien and invasive species and increasing the risk of erosion. The affected hillslope seepage wetland, though considered to be in a largely modified state (PES D) and of low ecological importance and sensitivity (EIS D) is still considered to perform the functions of water retention and slow release of good quality water into the downstream Shondoni Spruit and some biodiversity support. These functions will also be lost. It is further likely that the section of hillslope seepage wetland downslope of the incline shaft area will also be significantly affected by decreased flows and decrease in extent.

 

This impact is expected to be of High significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 5 | 2 | 5 | 70 |

*Mitigation*
There is no means to mitigate against the loss of the hillslope seepage wetland other than moving the location of the incline shaft. This however is not feasible.

The wetland area associated with the Shondoni Spruit and the remaining extent of hillslope seepage wetland should be clearly demarcated in the field prior to the onset of construction activities. The wetland and a 20m buffer zone should be fenced off using standard 5 strand cattle fencing to prevent access to the wetland area to vehicular and human traffic, but to allow free movement of small mammal species. No access should be allowed into the fenced off wetland area. No construction camps or temporary stockpiling of material may take place within the fenced-off wetland and buffer zone. Clearly demarcated waste disposal facilities should be provided on the construction site and no dumping of any waste material into the wetland area is allowed. Following completion of construction activities a litter removal operation should be undertaken for the wetland area. Burning of the wetland area should be prohibited, unless required as part of a pasture management plan compiled by a suitably qualified professional.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 5 | 1 | 5 | 55 |

#### *6.1.2.1.2 Construction Phase – Increased sedimentation*

The clearing of 30 ha of vegetation for the establishment of the incline shaft area will expose large areas of bare, disturbed soil to erosion by wind and water. Though the clayey soils of the area tend to be fairly resistant to erosion when undisturbed, disturbance of the soil and clearing of vegetation will increase the erosion risk significantly. In addition, vegetation clearing and compaction of soils will also increase surface run-off volumes and velocities, further increasing the erosion risk. Preferential flow paths are also likely to be formed in vehicle tracks, where concentrated flows could lead to gully erosion. Sediment eroded off the construction site is also likely to be transported into the wetlands by surface run-off and deposited in the wetlands. Deposition zones are likely to experience changes in vegetation composition, with species such as *Typha capensis* or possibly *Phragmites australis*, currently uncommon within the wetland, becoming dominant in these areas and excluding other species.

This impact is expected to be of Moderate significance.

 

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 2 | 5 | 45 |

*Mitigation*

Construction activities should take place during the dry season as far as possible to limit erosion due to surface runoff after storm events. As construction activities are likely to extend across a longer timeframe than 1 dry season, it is recommended that clearing of the vegetation is phased and limited to as small an area at any one time as possible. Where not absolutely necessary for the purposes of construction, vegetation should not be cleared. Bare soil areas should be re-vegetated as soon as possible following construction. Where necessary, soils will need to be ripped, scarified and landscaped to the natural landscape profile prior to re-vegetation. To prevent concentration of flows all access roads and roads on site should incorporate regular low level humps to slow down flows and direct flows into adjacent grassland. Water management infrastructure with the associated sediment traps should be completed as soon as possible into the construction phase of the project and not as a final addition. This will aid in limiting and managing sediment loss of the site.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 2 | 4 | 28 |

#### *6.1.2.1.3 Construction Phase – Decreased flows in the Shondoni Spruit*

The construction of the incline shaft will result in interception of the perched water table that is expected to occur on site and play a role in supporting the Shondoni Spruit wetland. A local cone of depression of the groundwater table will extend around the incline shaft during construction. This could lead to decreased flows in the Shondoni Spruit. Following completion of the shaft, the shaft will be grouted and sealed to prevent ingress of water, thus allowing the local water table to return to its natural levels. The decreased flows will thus be temporary.

However, the decreased flows are likely to be offset by increased surface runoff from the site, much of which will be discharged into the Shondoni Spruit as clean stormwater (only dirty water will be captured and excluded from the Shondoni Spruit). Discharge of treated sewage effluent will further increase flows in the wetland.

The impact of decreased flows is thus expected to be Low and no mitigation is required.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |

 

| | | | | | |
|---|---|---|---|---|---|
| Negative | 2 | 3 | 1 | 2 | 12 |

#### *6.1.2.1.4 Construction Phase – Deterioration in water quality*

During construction activities potentially polluting substances such as cement, oil, diesel etc will be utilised and stored on site. Leaks or spills of these materials could lead to pollutants being washed into downslope wetlands via surface run-off. In addition, incorrect disposal of waste poses a further pollution risk. Erosion off bare soil areas following vegetation clearing is also likely to result in increased turbidity.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 2 | 4 | 44 |

*Mitigation*

- Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities;
- Hazardous substances should be stored in clearly demarcated areas with suitable spill and leak containment measures (ideally bunded areas);
- Limit quantities of hazardous substances stored on site to the volumes used during 1 days work, unless suitably bunded storage areas have been installed on site;
- Dispose of all soil due to spills or leaks of polluting material as hazardous waste;
- Stormwater should be diverted around areas where polluting substances are stored to prevent contamination; and
- Waste should be stored on site in clearly marked containers in a demarcated area. All waste must be disposed of offsite.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 2 | 3 | 27 |

#### *6.1.2.1.5 Operational Phase – Erosion and increased sedimentation*

Increased flow volumes within the valley bottom will increase the erosive capacity of the flows. In addition, stormwater discharges are likely to be concentrated, point source discharges with high velocity flows, further increasing the erosion risk, especially at the point of discharge. Eroded sediments are likely to be transported downstream and deposited lower down the system or in the Grootspruit, leading to changes in habitat through altering the substrate and encouraging species such as *Typha capensis* and *Phragmites australis* to colonise areas of deposited sediments.

 

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 5 | 60 |

*Mitigation*

- Minimise extent of hardened surfaces.
- Implement a detailed stormwater management plan which aims to retain the pre-development run-off characteristics of the site for regular return storm events.
- Convey stormwater in grassed swales as far as possible to maximise infiltration.
- Stormwater discharge points should be protected against erosion and incorporate energy dissipaters. Flows should be encouraged to disperse across the full width of the wetland.
- Stormwater should be discharged into grassland and not directly into the delineated wetlands as far as possible.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 4 | 2 | 4 | 40 |

#### *6.1.2.1.6 Operational Phase – Deterioration in water quality*

Discharge of stormwater into the Shondoni Spruit will likely lead to deteriorating water quality with deleterious impacts to aquatic biodiversity. Various activities on site provide potential sources of pollution, while the waste rock dumps and emergency coal stockpile could potentially lead to the formation of acid rock drainage. The waste storage and handling facilities also pose a source of a number of pollutants and toxicants that could potentially enter Shondoni Spruit.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 4 | 1 | 5 | 50 |

*Mitigation*

A detailed surface water management plan should be drawn up for the incline shaft area that complies fully with GN704 in terms of the separation of clean and dirty stormwater. Dirty stormwater should be captured in a pollution control dam on site and no discharge of dirty stormwater should be allowed into the wetlands on site. The dirty water management system

 

should have a minimum capacity to cope with a 1:50 year storm event without overflow. Dirty water should be re-used as far as possible within the mining operations.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 4 | 2 | 3 | 30 |

### *6.1.3 Shondoni Borrow Pit Area*

The Shondoni Borrow Pit Area is located immediately to the south of the Incline Shaft Area and is located on high ground away from any wetlands or water courses on cultivated lands. However, a number of wetlands occur within 500 m of the proposed borrow pits. These wetlands include the Shondoni Spruit valley bottom wetland and hillslope seepage wetland as discussed for the main and incline shaft areas above, as well as a further two hillslope seepage wetlands associated with the extreme upper reaches of small, unnamed tributaries of the Waterval River and Grootspruit respectively. The borrow pit will be located on a crest in the landscape and thus affects three sub-catchments with flows off the borrow pit site draining north, south-east and west.

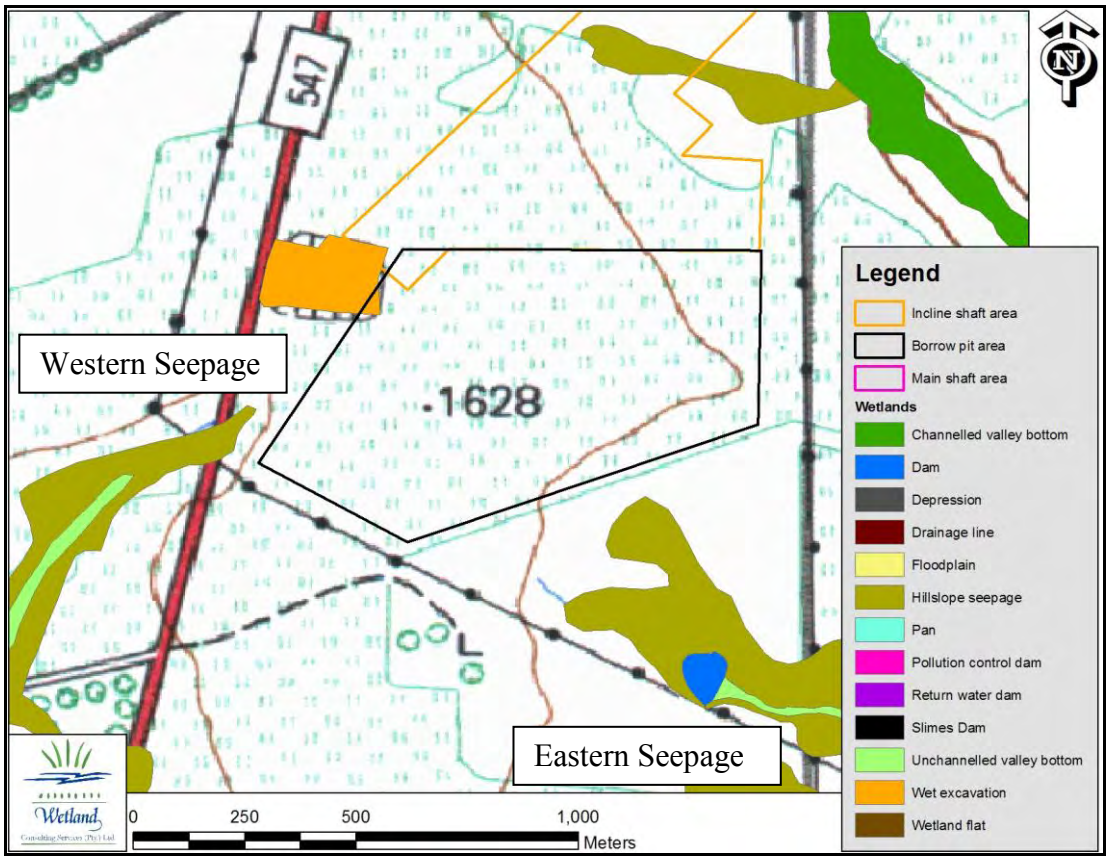


**Figure 10.** Map of the Shondoni Borrow Pit area indicating surrounding wetlands.

The upper reaches of the western seepage wetland (upslope of the R547) and most of its catchment have been completely cultivated and no natural vegetation remains. Flows pass via a

 

culvert underneath the R547. Downstream of the crossing the wetland consists of a narrow strip of natural vegetation in between cultivated fields and has been considerably disturbed by the adjacent cultivation through direct disturbance and increased sedimentation. This is a temporary to seasonally saturated wetland system that is supported by subsurface seepage of water. No surface water was observed at the time of the field work (November 2011). Catchment land use is expected to have resulted in a moderate deterioration of water quality (stormwater run-off from road and increased turbidity due to cultivation). The wetland is considered to be ***largely modified (PES D)***, and due to this modification and its small size, is considered to be of ***low ecological importance and sensitivity (EIS D)***.

The eastern seepage wetland represents the headwaters of an unnamed tributary of the Grootspruit. The wetland and a large part of its catchment are still characterised by natural grassland and other than a powerline and a small farm road that cross the wetland, no significant impacts appear to have occurred within this wetland. The seepage wetland feeds into a small farm dam that was probably constructed to supply surface water for livestock as the temporary to seasonally saturated seepage wetland is maintained by subsurface movement of water and no surface water occurs under normal conditions. The wetland is considered to be ***largely natural (PES B)*** and of ***moderate ecological importance and sensitivity (EIS D).***

For details regarding the northern seepage wetland and the Shondoni Spruit, refer to the discussion for the main and incline shaft areas.

#### 6.1.3.1 Impact Assessment

The proposed borrow pits will be in operation only during the construction phase of the project after which they will be shaped to be free-draining, re-soiled and re-vegetated. The borrow pits will be serviced from the existing infrastructure and will not require additional infrastructure.

The following impacts are expected to occur as a result of the proposed activities. Decommissioning impacts are expected to be largely the same as the construction impacts and all construction impacts and mitigation measures should thus also be applied to the decommissioning phase. Where additional measures are required, these will be listed under the heading “Decommissioning Phase”.

**Construction Phase:**

- Disturbance to wetland habitat and biota;
- Increased sedimentation;
- Altered flows within the downslope wetlands; and
- Deterioration in water quality.

##### *6.1.3.1.1 Construction Phase – Disturbance to wetland habitat and biota*

 

No wetlands fall within the footprint of the proposed borrow pits, and the location of the borrow pits on the crest of the landscape makes it unlikely that any direct disturbance of wetland habitat will occur.

This impact is expected to be of Low significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

*Mitigation*
The proposed borrow pit footprint should be fenced off prior to the commencement of any activities on site. All activities associated with the borrow pits should be restricted to the fenced off area and designated access roads.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 2 | 2 | 1 | 1 | 5 |

#### *6.1.3.1.2 Construction Phase – Increased sedimentation*

The clearing of 42 ha of vegetation for the establishment of the borrow pit will expose large areas of bare, disturbed soil to erosion by wind and water, though it is unlikely that the entire extent will be cleared at once. It is expected that clearing will commence at one end and progress across the site as needed. Though the clayey soils of the area tend to be fairly resistant to erosion when undisturbed, disturbance of the soil and clearing of vegetation will increase the erosion risk significantly. Cleared topsoil will be stockpiled during operation of the pit to be used in rehabilitation; stockpiles are likely to be steep sided and prone to erosion. In addition, vegetation clearing and compaction of soils will also increase surface run-off volumes and velocities, further increasing the erosion risk in downslope areas. Preferential flow paths are also likely to be formed in vehicle tracks, where concentrated flows could lead to gully erosion. Sediment eroded off the construction site is also likely to be transported into the wetlands by surface run-off and deposited in the wetlands.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 2 | 5 | 45 |

*Mitigation*

 

During operation of the borrow pit, the borrow pit should be maintained as an inwardly draining pit to prevent the runoff of sediment rich water into downslope wetlands. This will result in the exclusion of part of the downslope wetlands' catchment, though the decrease in flows is expected to be minimal and will only be temporary (the borrow pit will only be operational during the construction phase of the Shondoni Shafts, and then will be landscaped to be free-draining). During landscaping of the pit to be free-draining, care should be taken that no flow concentration occurs that could lead to erosion. Erosion nick-points will need to be stabilised. As far as possible, rehabilitation of the pit should commence as soon as one area of the pit has been mined out. Monitoring of rehabilitated areas should be undertaken during and after the rainy season to ensure establishment of vegetation to stabilise the replaced soils. Any erosion damage observed during monitoring should be repaired immediately.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 2 | 4 | 28 |

#### *6.1.3.1.3 Construction Phase – Altered flows in downslope wetlands*

The construction of the borrow pit might result in interception of a perched water table or shallow groundwater. No information regarding groundwater of the area was available. However, given the location of the borrow pit on the crest of the landscape, it is considered unlikely that a significant perched water table exists. Despite this, the old, existing quarry located just to the south of the proposed borrow pit appears to intercept ground water as evident through the permanent presence of water in the old quarry. The role of this groundwater in supporting the wetlands on site is unknown. Post rehabilitation when the pit is landscaped to be free-draining, intercepted groundwater might be discharged into downslope wetlands, resulting in slightly increased flows in the receiving wetland that might lead to wetland expansion.

The impact of altered flows is thus expected to be Low.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 2 | 5 | 55 |

*Mitigation*

No mitigation possible.

#### *6.1.3.1.4 Construction Phase – Deterioration in water quality*

 

During construction activities potentially polluting substances such as cement, oil, diesel etc will be utilised and stored on site. Leaks or spills of these materials could lead to pollutants being washed into downslope wetlands via surface run-off. In addition, incorrect disposal of waste poses a further pollution risk. Erosion off bare soil areas following vegetation clearing is also likely to result in increased turbidity.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 2 | 4 | 44 |

*Mitigation*

- No hazardous substances (oil, diesel etc.) should be stored on the borrow pit site.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| Nature | Magnitude | Duration | Extent | Probability | Significance |
| Negative | 5 | 2 | 2 | 3 | 27 |

### *6.1.4 Shondoni Access Road*

An access road, approximately 1.25 km in length, will be constructed from the R547 to the Shondoni Main Shaft complex and will require a crossing of the Shondoni Spruit. The proposed crossing will be located immediately downstream of the small farm dam.

The affected reach of the Shondoni Spruit is described as the extreme upper reach of a seasonal channelled valley bottom wetland, with the head of the system located only approximately 1 km upstream of the affected reach and just upstream of the R547 road crossing across the wetland. A single culvert conveys flows underneath the R547 and has resulted in the erosion of a small channel both upstream and downstream of the crossing. Flows then enter a small farm dam which was presumably constructed in the past to ensure extended presence of surface water for livestock watering as the channelled valley bottom wetland itself tends to dry out in the winter months. At the proposed crossing point below the small dam the Shondoni Spruit is currently unchannelled and characterised by diffuse flows across a fairly broad, flat valley, with a defined channel only reappearing roughly 100 m downstream of the crossing. A small quarry/excavation which appears to intercept a shallow, perched groundwater table is located adjacent to the dam. Downstream of the dam the channel within the wetland becomes more defined and a number of deeper pools and cut-off meanders that retain water for extended periods occur.

 

At the time of the site visit the vegetation of the Shondoni Spruit was recovering from having been burnt in winter and was characterised by short grassland. Most of the wetland is expected to be covered by medium-high grassland with species such as *Themeda triandra, Eragrostis chloromelas, Fingerhuthia africana, Cynodon dactylon, Setaria sphacelata* and *Paspalum dilatatum* common. Isolated, small, sparse stands of the reeds *Phragmites australis* and *Typha capensis* were observed, while the channel of the wetland was lined by species such as *Schoenoplectus corymbosus, S. dregeanus, Juncus dregeanus* and *Persicaria* spp. Other species observed included *Crinum bulbispermum, Erythrina zeyheri, Berkheya africana, Haplocarpha scaposa* and *Helichrysum aureonitens*.

At a sub-catchment level, the catchment of the Shondoni Spruit is characterised mostly by natural grassland and cultivated areas (both past and present cultivation). This landuse is unlikely to have affected the hydrology of the system significantly, though the presence of the R547 road is likely to have contributed stormwater flows to the wetland, while the culvert under the road crossing also contributes to concentrating flows. Other than stormwater derived from the R547 road surface, no significant impacts to water quality within the catchment are expected. At the time of the field work (November 2011) no flowing water was present in the wetland; however, a water sample (Sample S3) was collected from the small farm dam which indicated fair water quality, though TDS levels (1014.9 mg/L) were somewhat elevated, probably as a result on concentration through evaporation. Full water quality results are provided in Appendix 1. The Shondoni Spruit was not suitable for sampling aquatic macro-invertebrates according to the SASS5 protocol.

In terms of the PES assessment undertaken the Shondoni Spruit is considered to be in a ***moderately modified state (PES C)*** based on the impacts described above, while it obtained an ***EIS rating of C, indicating moderate importance and sensitivity***. The wetland is considered important mostly from a biodiversity support perspective in that it provides habitat that differs from the surrounding terrestrial landscape, though these types of systems are common within the area. The wetland further plays a role in flood attenuation and sediment trapping when flows overtop the channel banks, though these functions are limited by the relatively low surface roughness of the wetland (the wetland is characterised by short to medium-high grassland, with no reed beds). In terms of direct use values the wetland provides livestock grazing. No other uses were observed on site.

 

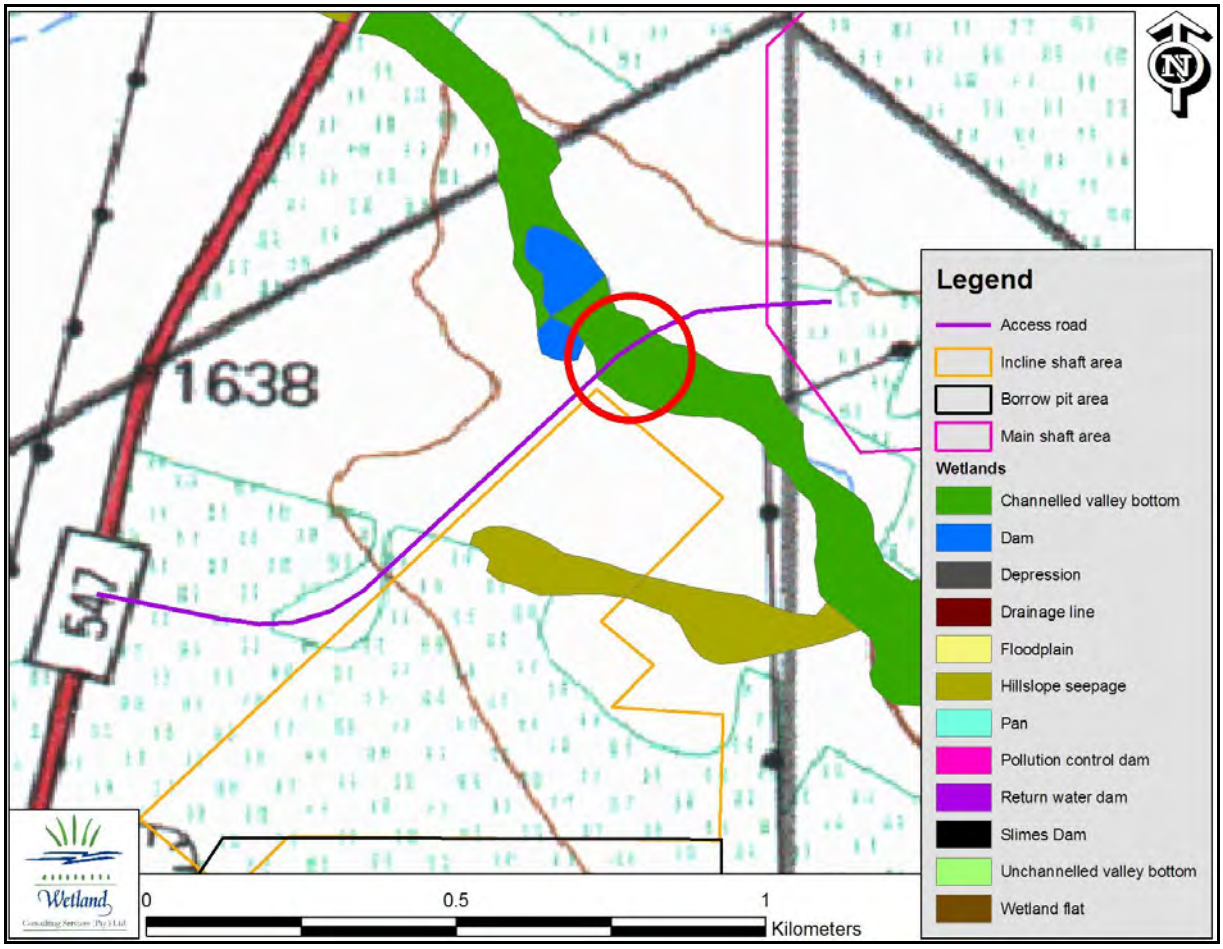


**Figure 11.** Map of the proposed Shondoni Access road indicating the wetland crossing circled in red.

#### 6.1.4.1 Impact Assessment – Shondoni Access Road

The proposed crossing will consist of a series of 3 rectangular portals, 2.4 m × 1.8 m in size, resulting in a combined crossing width of 7.2 m. This compares favourably with the existing crossing of the R547 across the wetland which is located approximately 680 m upstream along the wetland and utilises only a single pipe culvert.

The following impacts are expected:

**Construction Phase:**

- Loss and disturbance of wetland habitat; and
- Increased erosion and sedimentation.

**Operation:**

- Altered flows in the wetland; and
- Stormwater discharge into the wetland.

 

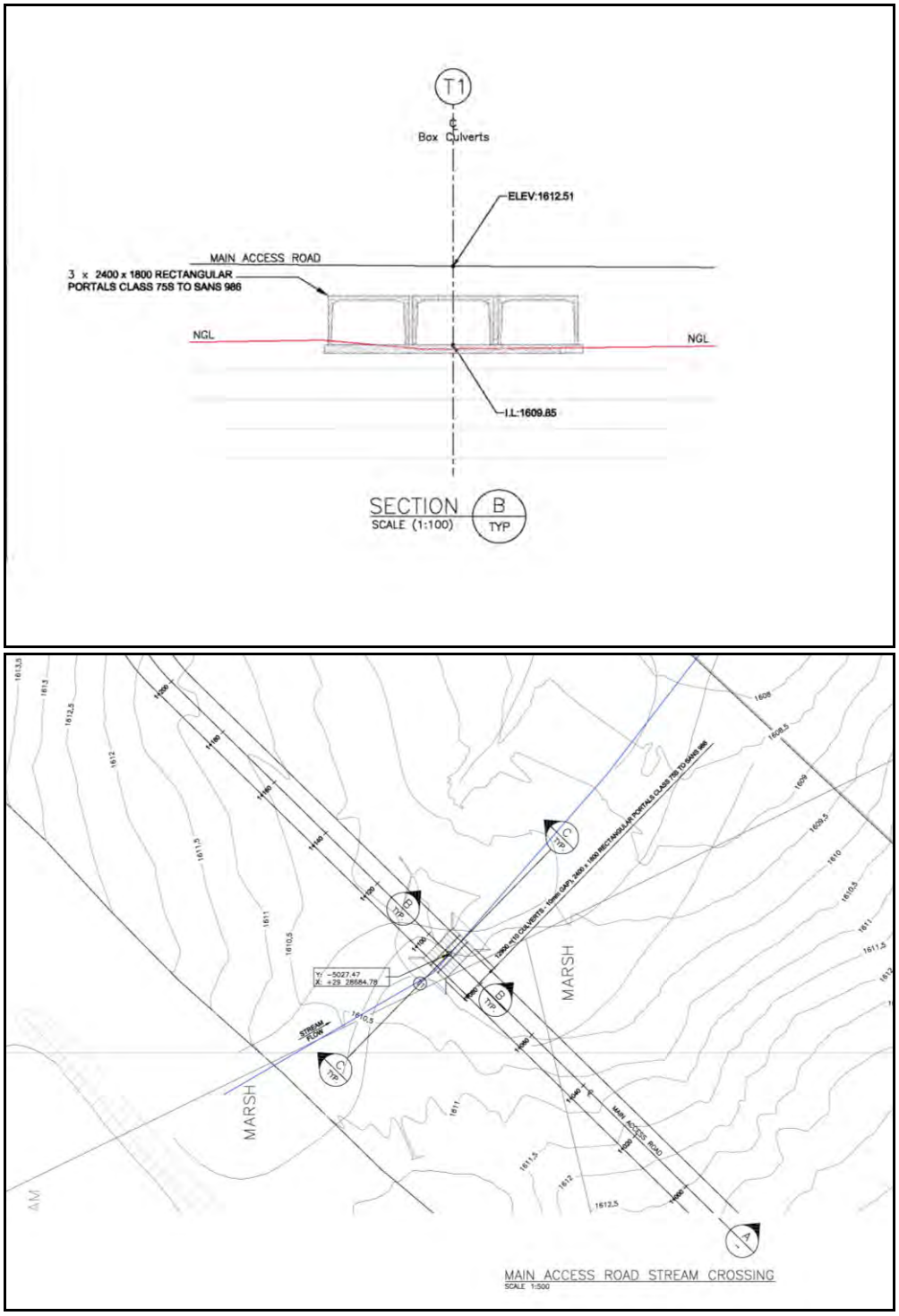


**Figure 12.** Design drawings showing details regarding the proposed access road crossing.

#### *6.1.4.1.1 Construction Phase – Loss and disturbance of wetland habitat*

The wetland habitat located directly within the footprint of the proposed crossing will be lost, while construction activities will result in the disturbance of surrounding wetland habitat. Movement of machinery through the wetland will trample vegetation, disturb soils and result in the formation of

 

ruts that could concentrate flows and encourage erosion. Disturbed areas will also be vulnerable to invasion by alien vegetation.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 5 | 45 |

*Mitigation*

- The construction servitude for the road should be kept as small as possible and should be clearly demarcated in the field.
- No activities should take place outside the construction servitude and no materials may be stockpiled in the wetland area. The small farm dam should also be located outside the construction servitude and no access to the dam should be allowed to construction machinery or personnel.
- Construction should be undertaken in the dry season.
- Following completion of construction activities, all disturbed areas should be rehabilitated – where required this will require ripping, scarifying and landscaping of the soil to the natural landscape profile and to encourage vegetation re-establishment.

After mitigation, the impact is expected to be of Moderate significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 5 | 35 |

#### *6.1.4.1.2 Construction Phase – Increased erosion and sedimentation*

Disturbances to the wetland during construction will increase the risk of erosion. This will be exacerbated if construction is undertaken with flows in the wetland that will then need to be diverted around the construction workings and will likely result in flow concentration.

Sediments are also likely to washed into the wetland from construction activities of the road approaching and departing the wetland crossing. Sediments deposited within the wetland will change the vegetation of the wetland, with species such as Typha capensis likely to establish in depositional areas.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 5 | 45 |

*Mitigation*

- The construction servitude for the road should be kept as small as possible and should be clearly demarcated in the field.
- Construction should be undertaken in the dry season. As the wetland is a seasonal system, undertaking construction during the dry season should ensure that no surface flows occur in the wetland during the time of construction.
- No activities should take place outside the construction servitude and no materials may be stockpiled in the wetland area.
- Hay bales should be put along the downslope edge of the conveyor servitude to trap any sediments that may be washed off the construction area.
- Stormwater from the approach and departure roads to the crossing should be diverted off the road and into adjacent grassland at regular intervals, already during the construction phase to prevent sediment from these areas being washed into the wetland.
- Following completion of construction activities, all disturbed areas should be rehabilitated – where required this will require ripping, scarifying and landscaping of the soil to the natural landscape profile and to encourage vegetation re-establishment.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 5 | 30 |

#### *6.1.4.1.3 Operational Phase - Altered flows in the wetland*

Construction of the road across the wetland could lead to the impoundment of flows upslope of the wetland, extending saturation of the area and encouraging sediment deposition. This will lead to changes in the wetland vegetation, most likely resulting in the formation of a *Typha capensis* reed bed.

The culverts could further lead to concentration of flows, resulting in higher velocity flows with greater erosive energy that could lead to channel incision above and below the crossing point. Channel incision will lower the local water table and lead to partial drying out of the wetland verges and terrestrialisation of the vegetation.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 2 | 4 | 52 |

*Mitigation*

The proposed bridge structure is considered sufficient for the wetland in question. Compared to the existing tar road crossing which uses a single culvert to convey flows underneath the road, the proposed crossing using three 2.4 m wide rectangular culverts will unlikely result in significant

 

impounding upslope of the crossing or concentration of flows downslope of the crossing. However, monitoring for signs of erosion should be regularly undertaken and corrective measures implemented as soon as and erosion damage is observed. Culverts should also be regularly checked to clear any debris that may have been washed against the culverts and lead to flow concentration.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 2 | 2 | 1 | 3 | 15 |

#### *6.1.4.1.4 Operational Phase - Stormwater discharge into the wetland*

The access road will generate stormwater runoff during rain events that will likely be discharged into the wetland areas. Concentrated, point source discharges will lead to erosion, while stormwater is also likely to carry hydrocarbon pollutants into the wetland.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 5 | 60 |

*Mitigation*
Stormwater should not be allowed to accumulate on the road surface. Regular discharge points into adjacent grassland should be provided. Discharge points should be protected against erosion. No stormwater should be discharged directly into the wetland.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 4 | 24 |

### *6.1.5 Rand Water Potable Water Pipeline*

Three wetland crossings were identified along the proposed pipeline route and were number 1-3 from north to south:

- Rand Water Crossing 1 – channelled valley bottom wetland
- Rand Water Crossing 2 – Hillslope seepage wetland
- Rand Water Crossing 3 – Unchannelled valley bottom wetland

 

Rand Water Crossing 1 is a small, temporary valley bottom wetland that might also be classified as a drainage line/preferential flow path that feeds into a small farm dam. The vertic soils that characterise the wetland did not show any hydromorphic features and the vegetation did not differ from the surrounding grassland, being dominated by *Themeda triandra* and *Eragrostis chloromelas*. The landform setting however indicates that water flows along the system at regular intervals, probably only after significant rainfall events, and is thus considered a water resource. Other than the R547 road which runs in close proximity to the wetland but does not cross it, the upper catchment of the wetland is characterised by natural grassland. Two small farm dams have been constructed across the wetland, probably again in an attempt to extend the presence of surface water in the wetland. Given these impacts, the wetland is considered to be in a ***moderately modified condition (PES C)***. In terms of its ecological importance and sensitivity, given the small size of the system and the limited habitat diversity offered by the wetland, the wetland is considered to be of ***Low importance and sensitivity (EIS D)***.

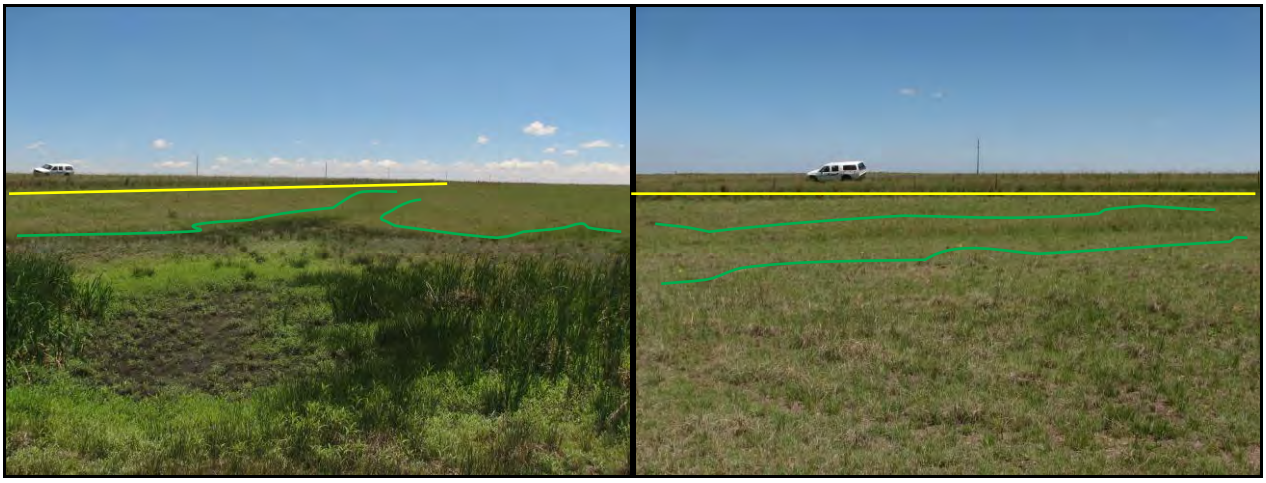

**Figure 13.** Photographs of Rand Water Crossing 1. Left – looking upstream from the dam towards the R547. Right – looking across the wetland towards the R547. Pipeline route is indicated in yellow, approximate extent of wetland in green.

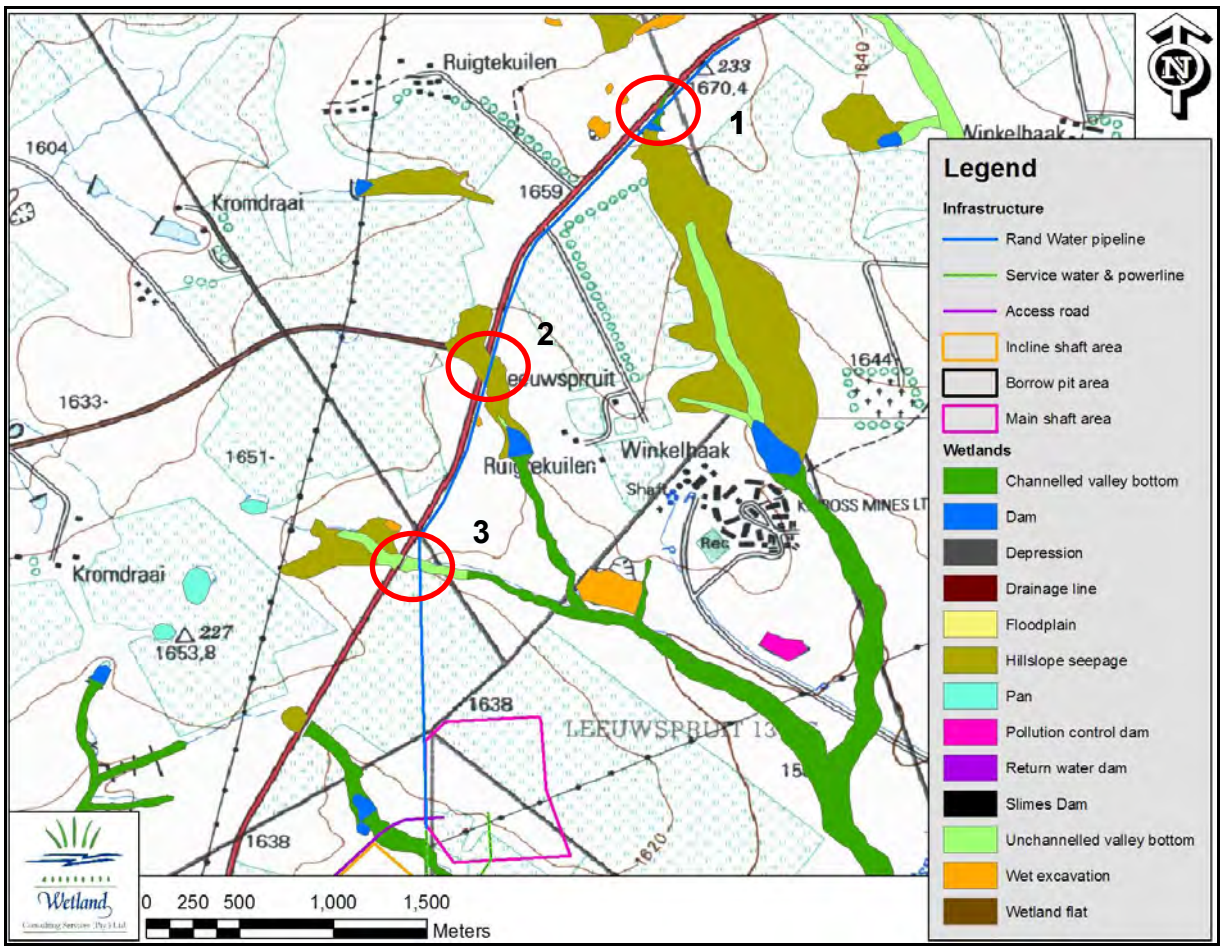


**Figure 14.** Map of the Rand Water pipeline servitude showing delineated wetlands. Crossings are circled in red and number 1 to 3 from north to south.

Rand Water Crossing 2 is a large hillslope seepage wetland that drains from the north-west under the R547 towards a farm dam to the south of the crossing. Two pipe culverts convey flows underneath the R547. As is typical for most hillslope seepage wetlands, the wetland is characterised by subsurface seepage and is a seasonal system dependant on rainfall. The wetland was dominated by a range of sedge species, most notably *Carex glomerabilis*, which indicates extended saturation of the wetland soil. The wetland verges were characterised by species such as *Hyparrhenia hirta, Themeda triandra, Cymbopogon* spp. and *Oenothera rosea*. The upper catchment of the seepage wetland has been extensively cultivated, and other than the R547, is also crossed by a public gravel road. The wetland is expected to receive some sediment rich runoff from this gravel road, as well as stormwater from the R547. However, the wetland does not appear to have been extensively modified by these impacts and is still largely unchannelled immediately below the road, with a weakly defined channel only becoming apparent immediately upstream of the farm dam. This wetland is considered to be in a ***moderately modified state (PES C)*** and of ***moderate importance and sensitivity (EIS C)***. The extended saturation of the wetland implies that the seepage wetland plays an important role in the slow release of good quality water into the downstream water resource, while the various wetness zones (from extended saturation to temporary) provide a mosaic of vegetation that contributes to biodiversity support in the landscape.

 

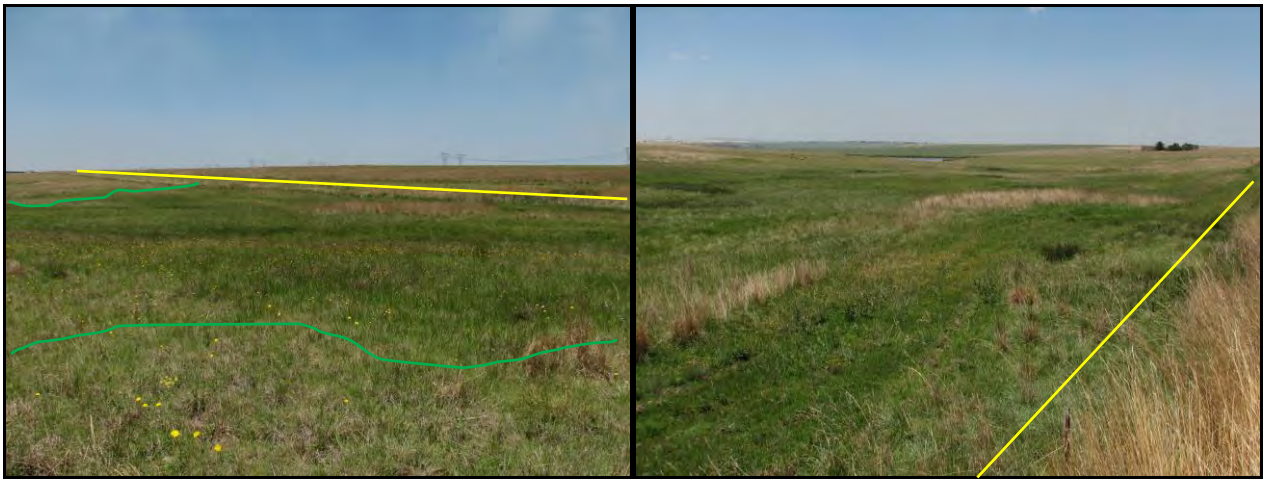

**Figure 15.** Photographs of Rand Water Crossing 2. Left – looking across the wetland with the R547 in the background. Right – looking downstream along the wetland from the R547. Pipeline route is indicated in yellow, approximate extent of wetland in green.

Rand Water Crossing 3 is a seasonal unchannelled valley bottom wetland that has been heavily impacted by the R547 crossing, the existing Rand Water pipeline crossing and physical disturbances to the wetland. The road culverts have resulted in the erosion of a channel in the wetland both upstream and downstream of the R547. Upstream of the R547 the entire wetland extent has been cultivated, while downstream a number of farm roads/ploughed fire breaks have also resulted in disturbances to the wetland habitat. A number of weedy species such as *Verbena bonariensis, Oenothera rosea, Plantago lanceoloata, Cirsium vulgare, Sonchus wilmsii, Senecio* spp. and *Paspalum urvillei* provide evidence of the disturbances. As a consequence of these impacts, the wetland is considered to be in a ***largely modified condition (PES D)*** and to be of ***Low ecological importance and sensitivity (EIS D).***

#### 6.1.5.1 Impact Assessment – Rand Water Pipeline

The proposed Rand Water Pipeline to the Shondoni Main Shaft area will follow an existing Rand Water servitude that runs from the Shondoni Main Shaft area directly northwards towards the R547 and then runs along the R547. The total length of the pipeline will be 4.1 km. A single 230 mm diameter pipe already runs along the servitude which has a width of 9.45 m and is located between the edge of the R547 and the existing fence parallel to the road. The proposed new pipeline will be 300 mm in diameter and will run parallel to the existing pipeline. For the purpose of construction a temporary construction road will be required. In addition to the rand water servitude, a 10 m construction servitude is required, resulting in a disturbance servitude of roughly 20 m. The following method statement was provided:

> The 300mm nominal bore, approximately 4,1km long, steel pipeline will be lain in a trench mechanically excavated (with a tracked bucket excavator) to a width 300mm wider than the pipe, alongside the existing Rand Water 230mm water line. Excavated material will be stockpiled along the trench to be used for backfill. The pipe will be lain on a 300mm minimum bedding cradle of compacted selected granular material (from commercial sources) and covered to a minimum thickness of 300mm over with compacted selected backfill (also from commercial sources). Stockpiled material will then be used to fill and compact back to 300mm below natural ground level with care taken to re-instate topsoil to pre-construction conditions. Minimum depth from top of pipe to

 

natural ground level is specified to be 1m. Excess excavated material will be dumped to an approved local spoil site.

For water course and road crossings the pipe line is encased for the trench width to 300mm above and below the pipe. From top of concrete to 300mm below natural ground level the trench is filled with G6 compacted material, compacted to 90% MOD AASHTO at optimum moisture content. Care will be taken to re-instate topsoil to pre-construction conditions. Again the minimum depth from top of pipe to natural ground level is specified to be 1m.

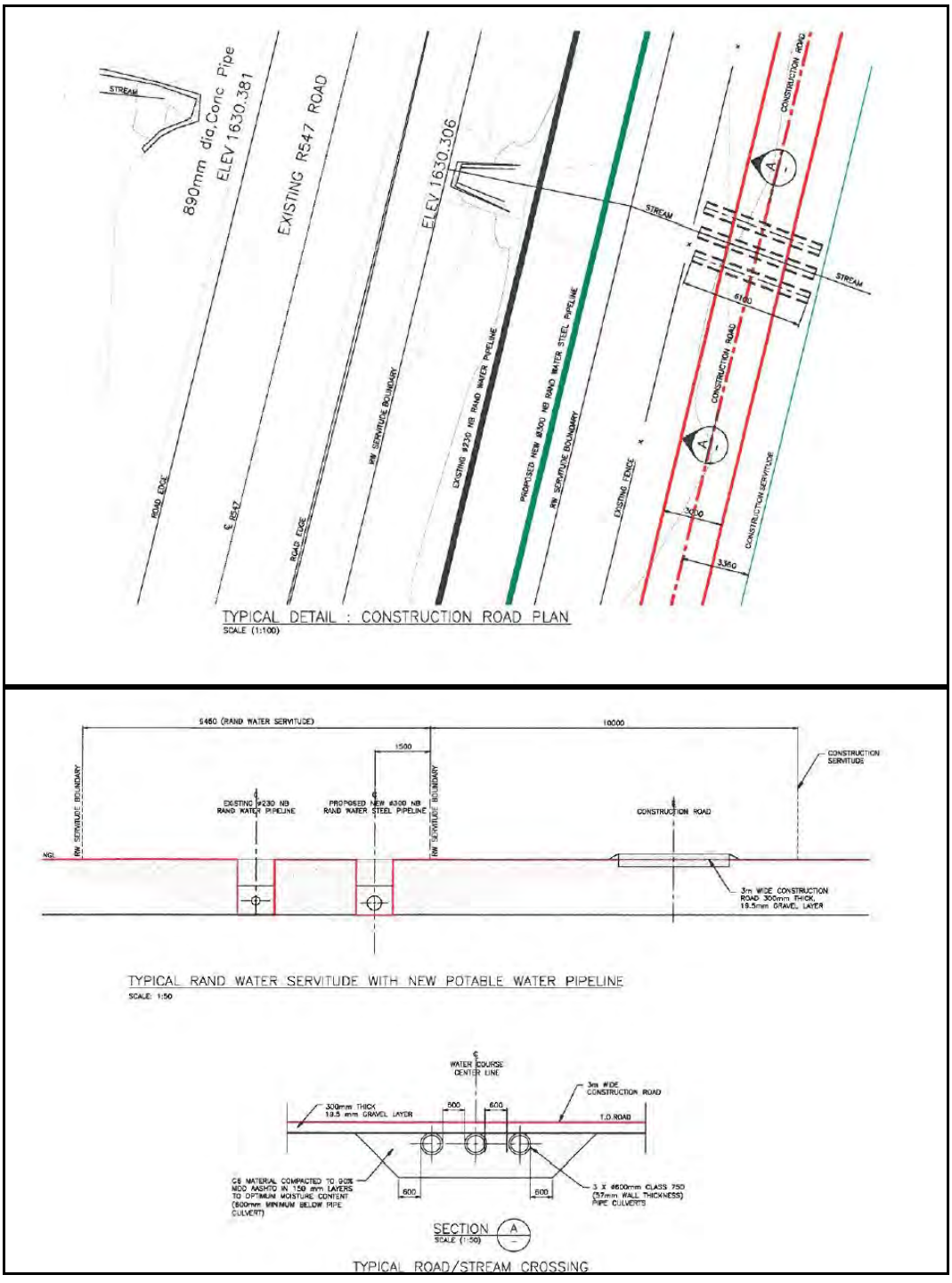


**Figure 16.** Drawings showing details regarding the Rand Water pipeline and construction road (full sized drawings are included in the IWULA document).

 

For the rand water line a construction access road is required. In essence a 3m wide, 300mm thick 19,5mm stone layer will be lain as indicated in the drawing. For the typical stream or wetlands crossing a pipe culvert crossing will be implemented as indicated in the Typical Road / Stream Crossing detail as indicated on the drawing. This entails 3 x 600mm diameter class 75 D pipe culverts per crossing with earthworks extending to a length of 5.4m, a width of 8.5m and 1.2m deep; for typically 6.1m long pipe culverts. After commissioning of the pipeline the disturbed section of earth will be returned to the original condition (i.e. condition before construction).

The biggest concern regarding the proposed pipeline and associated road is the obstruction of flows and erosion resulting from the altered flows. Both surface flows and sub-surface flows are likely to be impacted. The aim of mitigation measures should thus be to minimise the impact of the pipeline and road to the natural hydrology of the area.

The following impacts are expected (decommissioning impacts are considered to be the same as construction impacts):

**Construction:**

- Loss and disturbance of wetland habitat;
- Increased erosion and sedimentation;
- Impounding of flows;
- Piping and preferential flow paths;
- Altered water movement through the landscape; and
- Water quality deterioration.

**Operation:**

- Increased flows and erosion due to leaks or pipe failure.

#### *6.1.5.1.1 Construction Phase – Loss and disturbance of wetland habitat*

Where the pipeline and associated access road crosses wetlands, wetland vegetation will be lost and disturbed. Disturbance is also likely to extend further into the wetland due to movement of construction workforce and machinery. Disturbed areas will be more prone to erosion and invasion by alien vegetation.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 1 | 5 | 50 |

*Mitigation*

This impact cannot be avoided; however, it can be limited in extent and magnitude. The construction servitude needs to be kept to a minimum to limit vegetation destruction, and needs to be clearly demarcated in the field. No activities should be allowed outside the construction servitude. All materials stockpiles and construction camps should be located outside wetland areas. It should not be necessary to re-plant any areas, but rather allow natural re-vegetation to occur. The areas where vegetation is destroyed and disturbed will however need to be monitored

 

against invasion by alien vegetation and, if encountered, will need to be removed. If natural re-vegetation is unsuccessful, seeding and planting of the area will need to be implemented in consultation with an appropriate wetland vegetation specialist.

After mitigation this impact is expected to be Moderate.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 5 | 35 |

#### *6.1.5.1.2 Construction Phase – Increased erosion and sedimentation*

Clearing of vegetation along the pipeline servitude and disturbance to the soil through excavations will increase the risk of erosion and sediment transport into wetlands. Where sediments deposit in wetlands, changes to the wetland vegetation are expected.

This impact is expected to be Moderate

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 5 | 35 |

*Mitigation*

- Undertake construction activities in the dry season.
- Limit the extent of the construction servitude to as small an area as possible.
- Excavated soils should be stockpiled on the upslope side of the excavated trench so that eroded sediments off the stockpile are washed back into the trench.
- Concentration and accumulation of flows along the servitude should be prevented by regularly providing for surface runoff to flow into the adjacent grassland rather than along the construction servitude and into the wetlands.
- Closure and rehabilitation of the pipeline servitude should commence as soon as the pipeline has been laid in the trench.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 4 | 24 |

 

#### *6.1.5.1.3 Construction Phase – Impounding of flows*

Construction of the access road across the wetlands could lead to impoundment of flows upstream of the crossing. In addition, encasing the pipeline in cement across wetland crossing will provide an impermeable barrier to water movement within the wetland sediments that could lead to impoundment of flows upstream of the pipeline. In addition the hard edge of the cement casing could provide an erosion nick point.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 3 | 2 | 5 | 55 |

*Mitigation*
In the case of the pipeline, it is recommended that no cement casing be utilised for the wetland crossings, but rather that a permeable coarse bedding material be used as recommended for terrestrial areas. The aim should be to maintain water movement through the wetland sediments also across the pipeline trench. As all of the wetlands are close to the top of the catchment and not characterised by strong flows, the cement casing should not be necessary to protect the pipeline. This would however need to be commented on by a suitably qualified engineer.

In the case of the access road the proposed crossing is considered sufficient as all of the wetland crossings are low flow crossings and the road is only temporary. However, it is again recommended that all construction activities take place in the dry season whn little or no flows will take place within the wetlands.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 4 | 24 |

#### *6.1.5.1.4 Construction Phase – Piping and preferential flow paths*

A coarse bedding material will be utilised around the pipe within the trench. This bedding material is likely to be more permeable than the natural soils of the area and could create a preferential flow path in the subsurface which, over time, could result in erosion on the surface and even pipe failure in extreme cases.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 4 | 48 |

 

*Mitigation*
It is recommended that trench breakers be installed along the pipeline trench. A material with low hydrological conductivity (a Bentonite mix is recommended), in the form of trench breakers should be packed around the pipe and should be installed at regular intervals to prevent the pipeline behaving as a conduit and to intercept any concentrated flow down the pipeline route. Spacing between trench breakers should vary depending on the slope of the landscape – the steeper the slope the smaller the distance between trench breakers. Spacing should be such that flows backing up behind one trench breaker extend back to the base of the previous trench breaker.

#### *6.1.5.1.5 Construction Phase – Altered water movement through the landscape*

Excavation of the trench could alter water movement through the landscape where the excavation leads to the destruction of control features within the subsurface, e.g. sub-surface rock banks. Excavations that extend into such features could in effect "breach subsurface dams" and create preferential flow paths that could lead to erosion.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 4 | 48 |

*Mitigation*
Where subsurface control features such as rock banks or ledges are damaged by the trench excavations, these control features should be re-created within the trench to prevent the formation of preferential flow paths.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.5.1.6 Construction Phase – Water quality deterioration*

Use of polluting substances during construction (e.g. oil, diesel and cement) could lead to deterioration of water quality if washed into adjacent wetlands.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 1 | 5 | 40 |

 

*Mitigation*

- Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities
- Limit quantities of hazardous substances on site to the volumes used during 1 days work
- Dispose of all soil contaminated due to leaks or spills as hazardous waste
- Waste should be stored on site in clearly marked containers in a demarcated area. All waste must be disposed of offsite.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.5.1.7 Operation – Increased flows and erosion due to leaks or pipe failure*

Leaks or failure of the pipe could result in increased flows within the wetlands, which would increase the chances of erosion occurring.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 1 | 5 | 40 |

*Mitigation*

Leak detection measures should be installed along the pipeline so that pipe failure, should it occur, will be noticed immediately and water flow through the pipe can be stopped. 6 monthly checks along the route should be undertaken to scan for signs of leaks.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

### *6.1.6 Service Water Pipeline and Power Line Servitude*

 

The proposed service water pipeline and power line servitude will run northwards from the existing Ithemba Lethu Shaft to the proposed Shondoni Shaft complex. A service road for the pipeline will also be required.

A total of 11 wetland crossings were identified along the proposed servitude, numbered from 1 to 11 from south to north along the route. The entire route as well as the delineated wetlands is illustrated below. To provide more detail, a further three maps indicating sections of the route are also included.

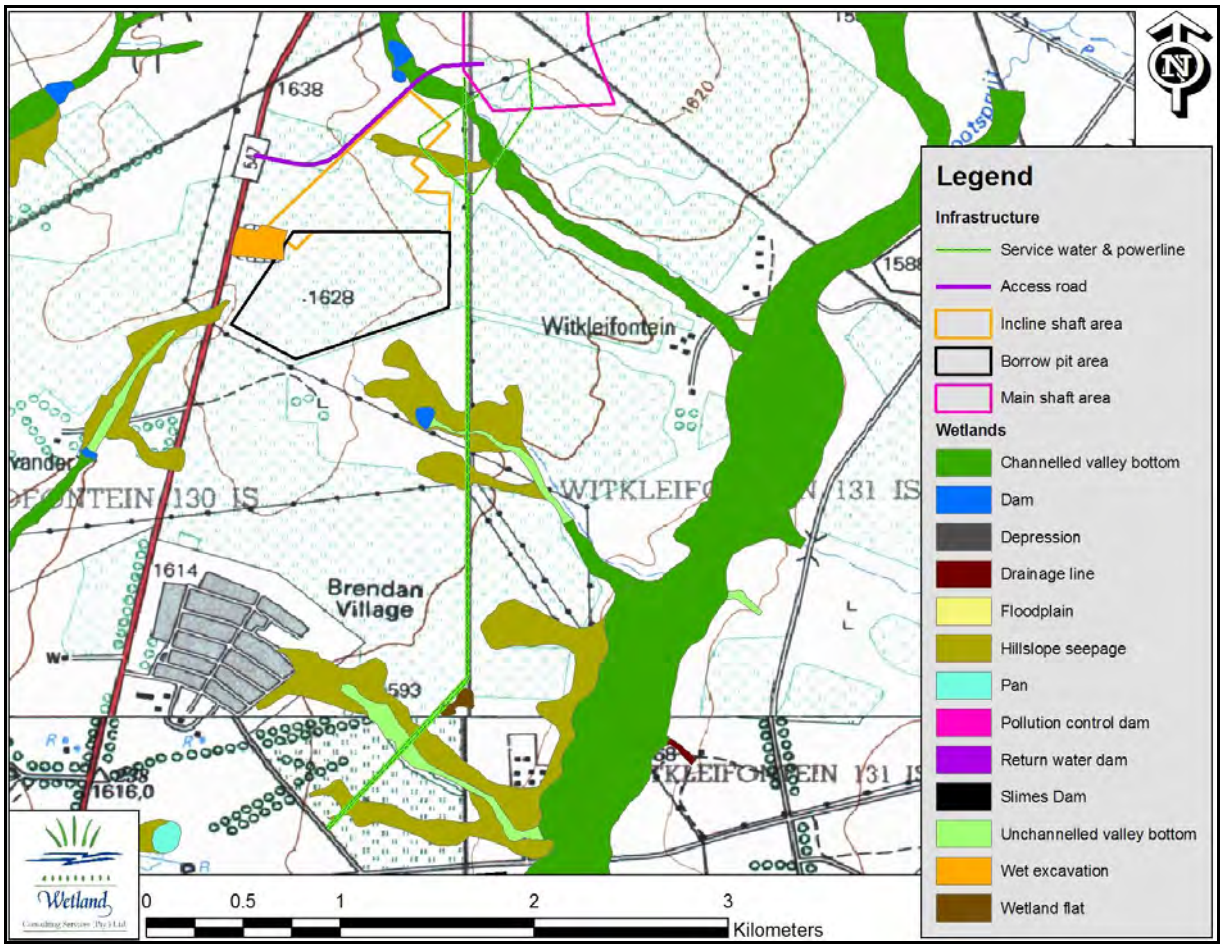


**Figure 17.** Map of the proposed service water pipeline and power line servitude showing delineated wetland areas.

Wetland crossing 1 along the servitude consists of the upper reaches of a temporary hillslope seepage wetland that drains towards the Grootspruit. The entire affected reach of the wetland has been previously cultivated and is currently characterised by secondary grassland with an abundance of weeds. Stormwater from the Ithemba Lethu shaft and access road to Brendan Village discharges into the wetland via a culvert and trench from the tar road. The sandy, shallow nature of the soils allows water to easily infiltrate into the soil but not to drain deeper into groundwater, resulting in extended wetness of the topsoil and formation of wetland conditions. The stormwater inputs likely play an important role in maintaining the wetland.

 

The wetland has departed significantly from its natural condition and is considered to currently be in a ***seriously modified condition (PES E)***. The extent of the impacts to the wetland have resulted in the wetland playing an insignificant role in biodiversity support (only general, abundant species supported). However, stormwater inputs to the wetland are likely to be carrying some pollutants and the seepage wetland provides an opportunity for some degree of toxicant trapping and water quality enhancement before flows enter the Grootspruit. The wetland was also observed to provide grazing to livestock. In the light of these functions, the wetland is considered to be of ***Low ecological importance and sensitivity***.

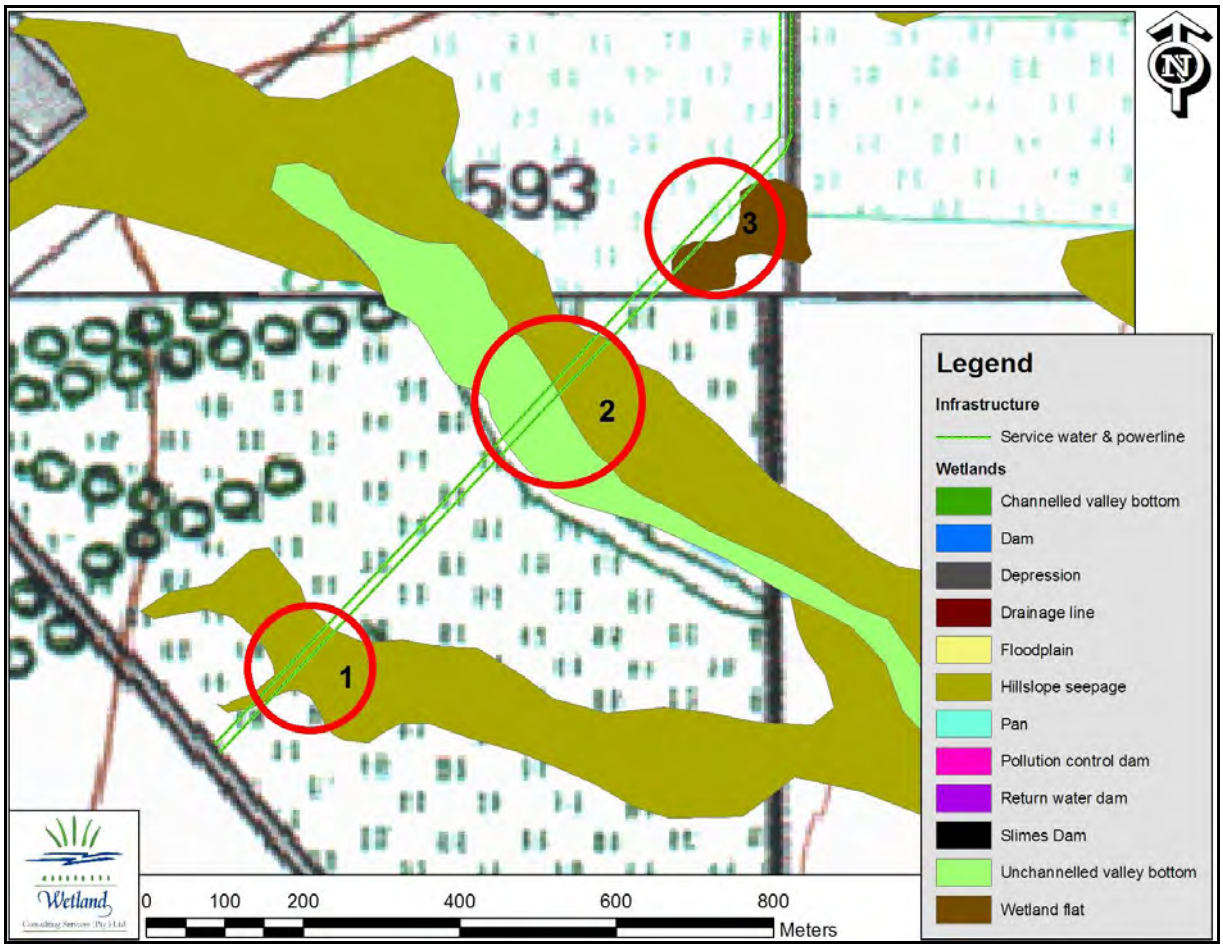


**Figure 18.** Map showing wetland crossings 1-3 along the service water pipeline and power line servitude.

Wetland crossing 2 consists of an unchannelled valley bottom wetland and associated hillslope seepage wetland along its northern bank. The wetland system forms an unnamed tributary to the Grootspruit. The town of Brendan Village is located within the upper catchment of this wetland, and the wetland receives stormwater from the village via a number of trenches. Most of the upper catchment of the wetland as well as large portions of the wetland itself, specifically the valley bottom wetland, have also been cultivated in the past. Large parts of the hillslope seepage wetland have however sufficiently recovered from previous cultivation to now be characterised by well-established grassland with few weeds. The valley bottom wetland and hillslope seepage wetland differ significantly in terms of soils, with clayey, vertic soils found in the valley bottom wetland and sandy soils in the hillslope seepage wetland.

 

Both the valley bottom wetland and the hillslope seepage wetland are temporary to seasonally saturated systems. The hillslope seepage wetland is supported by the subsurface seepage of water through the soil, while the valley bottom wetland is expected to be supported by both surface flows and subsurface seepage with surface flows likely to have been significantly increased by stormwater inputs from Brendan Village.

At the time of the site visit a long trench had been dug diagonally through the seepage wetland and most of the way across the valley bottom wetland. Discussions with people digging along the trench indicated that they were digging up an old, disused electrical cable. However, the trench poses a significant erosion risk to the wetlands as it provides a preferential flow path through especially the hillslope seepage wetland. Some lateral erosion of the trench through bank collapse was already observed on site. The trench is also a threat to livestock and biodiversity, with a dead cow observed within the trench were it crosses the valley bottom wetland.

The valley bottom wetland is considered to be in a ***largely modified state (PES D)*** and the hillslope seepage in a ***moderately modified state (PES C)***, though on a progression towards a largely modified state if no interventions are put in place to address the trench. In terms of ecological importance and sensitivity, both wetlands are considered to be in an ***EIS category D (Low)***.

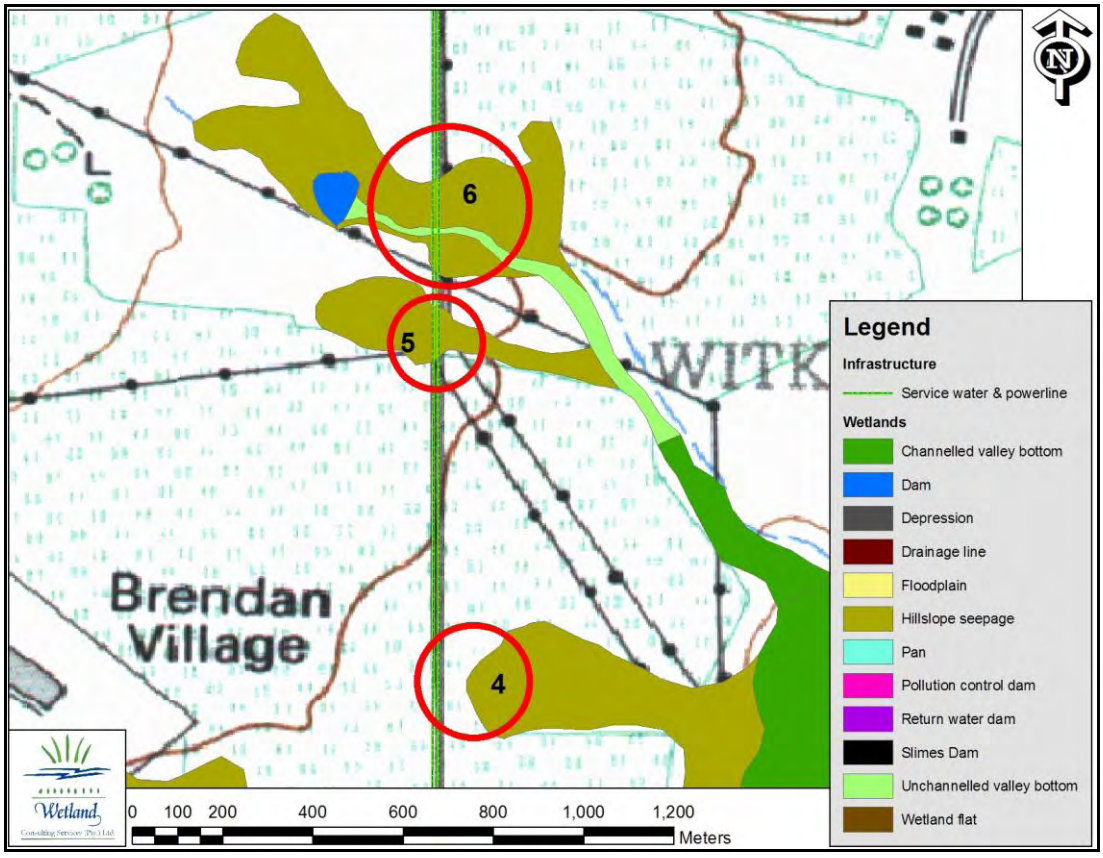


**Figure 19.** Map showing wetland crossings 4-6 along the service water pipeline and power line servitude.

Wetland crossing 3 represents a small, isolated patch of temporarily saturated soil that displays wetness characteristics. While the wetland is considered to be a natural system, the presence of

 

an existing pipeline across the wetland and a small stand of Typha capensis with a small excavation adjacent to the pipeline appears to indicate additional water inputs from pipeline leaks. Most of the wetland is currently cultivated, with the remainder having been cultivated in the past. The wetland is considered to be ***largely modified (PES D)*** and of ***low ecological importance and sensitivity (EIS D)***.

**Figure 20.** Photographs of wetlands crossings 1-3 along the servitude, Crossing 1 at the top and Crossing three at the bottom. Yellow lines indicate approximate pipeline route.

 

Crossing 4 has been included as a crossing even though the proposed pipeline does not pass through the delineated wetland area. However, the pipeline will run immediately upslope of the wetland boundary, within approximately 30 m thereof. Once again the entire hillslope seepage wetland has been previously cultivated and is characterised by secondary grassland, with the upper catchment of the wetland still under cultivation. The wetland is a temporary to seasonally saturated system that drains towards the Grootspruit. As with other hillslope seepage wetlands, the most important function of these wetlands is the slow release of good quality water (in effect infiltrated rain water) to downstream water resources and the support of biodiversity (compromised in this case by past cultivation) and productivity. ***The wetland is in a largely modified condition (PES D) and of low ecological importance and sensitivity (EIS D).***

The wetland at crossing 4 is another temporary hillslope seepage wetland that drains towards an unnamed tributary of the Grootspruit. A shallow erosion gully through the hillslope seepage wetland is as a result of past disturbances and has resulted in the partial drying out of the wetland. The upper catchment is in part cultivated and in part characterised by natural grassland, suggesting that the hydrology supporting the system is likely still largely intact, and that no serious water quality concerns are expected. The wetland has however been heavily grazed and appears over utilized. ***The wetland is in a moderately modified condition (PES C) and of low ecological importance and sensitivity (EIS D).***

Crossing 4 consists of a small unchannelled valley bottom wetland with hillslope seepage wetlands on either side. Both systems are again considered temporary to seasonal systems and form an unnamed tributary to the Grootspruit. The upper catchment of the wetlands is characterised by natural grassland with a farm dam built across the wetland several hundred meters upslope of the proposed crossing point. The seepage wetland on the northern banks of the valley bottom wetland has been previously cultivated, though the vegetation across the remainder of the wetland system is still considered natural.

The reaches of the wetland that are still characterised by natural vegetation are considered to be of importance in terms biodiversity support and large numbers of grass aloes and species such as *Boophane distichum* were observed. The grassland also provides grazing to livestock. In addition, as with other hillslope seepage wetlands, the most important function of these wetlands is the slow release of good quality water (in effect infiltrated rain water) to downstream water resources.

With the exception of the portion of hillslope seepage wetland that has been previously cultivated, this wetland is considered to be in a ***largely natural condition (PES B) and of moderate importance and sensitivity (EIS C)***.

 

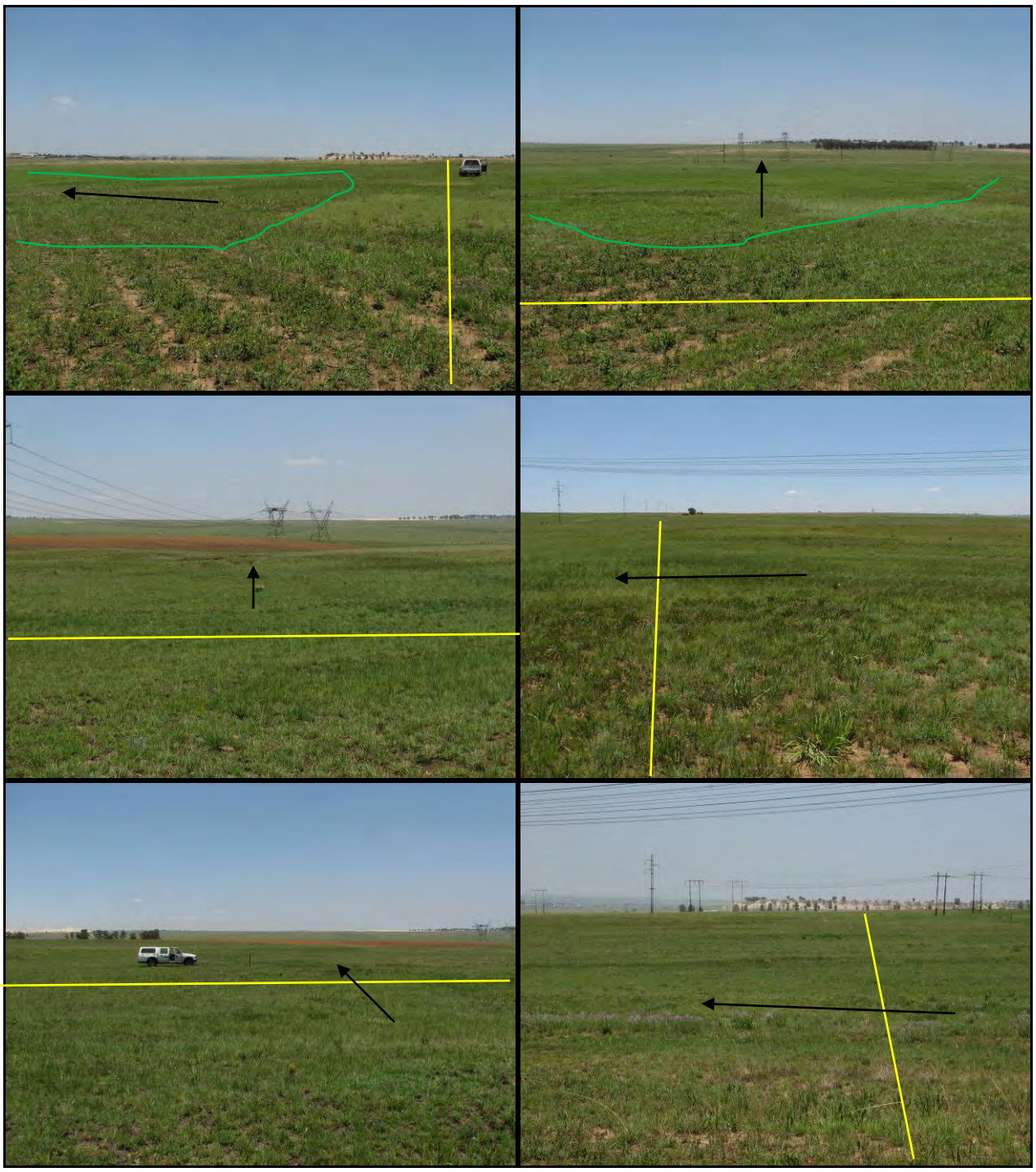

**Figure 21.** Photographs of wetlands crossings 4-6 along the servitude, Crossing 1 at the top and Crossing three at the bottom. Yellow lines indicate approximate pipeline route, flow direction in black, wetland edge in green.

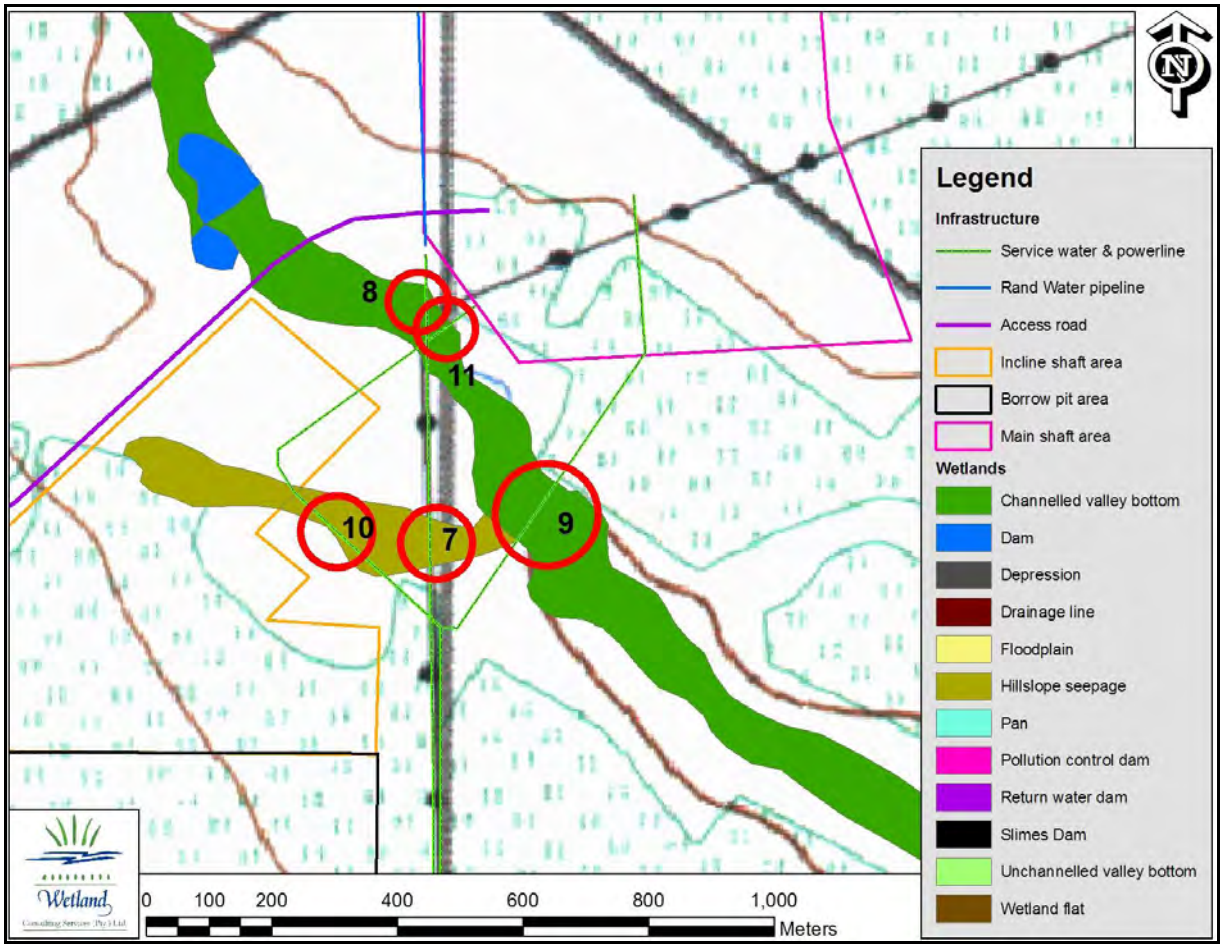


**Figure 22.** Map showing wetland crossings 7-11 along the service water pipeline and power line servitude.

Wetland crossings 7 and 10 are across the hillslope seepage wetland that will be directly affected by the proposed incline shaft complex. The upper reaches and catchment of this wetland will be permanently destroyed by the shaft complex. The hillslope seepage wetland is characterised by fairly clayey soils that are almost vertic in nature in some areas. Hillslope seepage wetlands on such clayey soils are unusual as the soils do not generally permit the lateral seepage of water through the soil. However, water movement can occur along the contact between the soil and the underlying rock. The seepage wetland occurs in a shallow depression downslope of cultivated fields and shows signs of erosion in the form of shallow gullies that extend out of the seepage wetland and into the upslope cultivated fields. It is likely that that the removal of vegetation and disturbance of the soil through cultivation, as well as the concentration of flows in ruts and plough lines resulted in the erosion gullies. Disturbances associated with cultivation have also resulted in the increased presence of alien and weedy species within the wetland.

The hillslope seepage wetland is expected to be a temporary to seasonally wet system that is characterised by the sub-surface movement of water, with surface water only expected to be present for short periods due to surface run-off following heavy rains. The seasonal nature of saturation is reflected in the vegetation of the wetland which to a large part resembled the adjacent terrestrial vegetation, with species such as *Themeda triandra*, *Eragrostis chloromelas*, *Paspalum dilatatum*, *Nidorella anomala*, *Helichrysum aureonitens* and *Bidens formosa* common.

 

The absence of surface water did not allow for the collection of water samples. However, as the catchment is only characterised by grasslands and cultivated areas, no significant deterioration in water quality is expected to have taken place within the wetland.

In terms of the PES assessment undertaken the Shondoni Spruit is considered to be in a ***moderately modified state (PES C)***, while it obtained an ***EIS rating of C, indicating moderate importance and sensitivity*** (see above for more detail). The hillslope seepage wetland is considered to be ***largely modified (PES D) and obtained an EIS rating of D, indicating low importance and sensitivity***.

Wetland crossings 8, 9 and 11 are all across the Shondoni Spruit. The affected reach of the Shondoni Spruit is described as the extreme upper reach of a seasonal channelled valley bottom wetland, with the head of the system located only approximately 1 km upstream of the affected reach and just upstream of the R547 road crossing across the wetland. A single culvert conveys flows underneath the R547 and has resulted in the erosion of a small channel both upstream and downstream of the crossing. Flows then enter a small farm dam which was presumably constructed in the past to ensure extended presence of surface water for livestock watering as the channelled valley bottom wetland itself tends to dry out in the winter months. At the proposed crossing point below the small dam the Shondoni Spruit is currently unchannelled and characterised by diffuse flows across a fairly broad, flat valley, with a defined channel only reappearing roughly 100 m downstream of the crossing. A small quarry/excavation which appears to intercept a shallow, perched groundwater table is located adjacent to the dam. Downstream of the dam the channel within the wetland becomes more defined and a number of deeper pools and cut-off meanders that retain water for extended periods occur.

At the time of the site visit the vegetation of the Shondoni Spruit was recovering from having been burnt in winter and was characterised by short grassland. Most of the wetland is expected to be covered by medium-high grassland with species such as *Themeda triandra, Eragrostis chloromelas, Fingerhuthia africana, Cynodon dactylon, Setaria sphacelata* and *Paspalum dilatatum* common. Isolated, small, sparse stands of the reeds *Phragmites australis* and *Typha capensis* were observed, while the channel of the wetland was lined by species such as *Schoenoplectus corymbosus, S. dregeanus, Juncus dregeanus* and *Persicaria* spp. Other species observed included *Crinum bulbispermum, Erythrina zeyheri, Berkheya africana, Haplocarpha scaposa* and *Helichrysum aureonitens*.

At a sub-catchment level, the catchment of the Shondoni Spruit is characterised mostly by natural grassland and cultivated areas (both past and present cultivation). This landuse is unlikely to have affected the hydrology of the system significantly, though the presence of the R547 road is likely to have contributed stormwater flows to the wetland, while the culvert under the road crossing also contributes to concentrating flows. Other than stormwater derived from the R547 road surface, no significant impacts to water quality within the catchment are expected. At the time of the field work (November 2011) no flowing water was present in the wetland; however, a water sample (Sample S3) was collected from the small farm dam which indicated fair water quality, though TDS levels (1014.9 mg/L) were somewhat elevated, probably as a result on concentration through evaporation. Full water quality results are provided in Appendix 1. The Shondoni Spruit was not suitable for sampling aquatic macro-invertebrates according to the SASS5 protocol.

 

In terms of the PES assessment undertaken the Shondoni Spruit is considered to be in a ***moderately modified state (PES C)*** based on the impacts described above, while it obtained an ***EIS rating of C, indicating moderate importance and sensitivity***. The wetland is considered important mostly from a biodiversity support perspective in that it provides habitat that differs from the surrounding terrestrial landscape, though these types of systems are common within the area. The wetland further plays a role in flood attenuation and sediment trapping when flows overtop the channel banks, though these functions are limited by the relatively low surface roughness of the wetland (the wetland is characterised by short to medium-high grassland, with no reed beds). In terms of direct use values the wetland provides livestock grazing. No other uses were observed on site.

#### 6.1.6.1 Impact Assessment – Service Water Pipeline

The service water pipeline is required to supply the Shondoni Shaft area with service water for the establishment of the shaft and for the first five years of operation, where after Shondoni Shaft will produce sufficient water itself. The pipeline will then be used to transport mine water from Shondoni Shaft to Ithemba Lethu Shaft to be stored underground. As the service water is classed as dirty water, a service road running alongside the pipeline is required for monitoring purposes.

The following details and method statements were supplied:

> The 355mm nominal bore, approximately 4,7km long, HDPE pipeline will be lain in a trench mechanically excavated (with a tracked bucket excavator) to a width 300mm wider than the pipe. Excavated material will be stockpiled along the trench to be used for backfill. The pipe will be lain on a 300mm minimum bedding cradle of compacted selected granular material (from commercial sources) and covered to a minimum thickness of 300mm over with compacted selected backfill (also from commercial sources). Stockpiled material will then be used to fill and compact back to 300mm below natural ground level with care taken to re-instate topsoil to pre-construction conditions. Minimum depth from top of pipe to natural ground level is specified to be 1m. Excess excavated material will be dumped to an approved local spoil site.
>
> For water course and road crossings the pipe line is encased for the trench width to 300mm above and below the pipe. From top of concrete to 300mm below natural ground level the trench is filled with G6 compacted material, compacted to 90% MOD AASHTO at optimum moisture content. Care will be taken to re-instate topsoil to pre-construction conditions. Again the minimum depth from top of pipe to natural ground level is specified to be 1m.

**Construction:**

- Loss and disturbance of wetland habitat;
- Increased erosion and sedimentation;
- Impounding of flows;
- Piping and preferential flow paths;
- Altered water movement through the landscape; and
- Water quality deterioration.

**Operation:**

- Increased flows and erosion due to leaks or pipe failure.

 

#### *6.1.6.1.1 Construction Phase – Loss and disturbance of wetland habitat*

Where the pipeline crosses wetlands, wetland vegetation will be lost and disturbed. Disturbance is also likely to extend further into the wetland due to movement of construction workforce and machinery. Disturbed areas will be more prone to erosion and invasion by alien vegetation.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 1 | 5 | 50 |

*Mitigation*
This impact cannot be avoided; however, it can be limited in extent and magnitude. The construction servitude needs to be kept to a minimum to limit vegetation destruction, and needs to be clearly demarcated in the field. No activities should be allowed outside the construction servitude. Access routes should be limited to the service road that will be constructed along the pipeline (see below). All materials stockpiles and construction camps should be located outside wetland areas. It should not be necessary to re-plant any areas, but rather allow natural re-vegetation to occur. The areas where vegetation is destroyed and disturbed will however need to be monitored against invasion by alien vegetation and, if encountered, will need to be removed. If natural re-vegetation is unsuccessful, seeding and planting of the area will need to be implemented in consultation with an appropriate wetland vegetation specialist.

After mitigation this impact is expected to be Moderate.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 5 | 35 |

#### *6.1.6.1.2 Construction Phase – Increased erosion and sedimentation*

Clearing of vegetation along the pipeline servitude and disturbance to the soil through excavations will increase the risk of erosion and sediment transport into wetlands. Where sediments deposit in wetlands, changes to the wetland vegetation are expected.

This impact is expected to be Moderate

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 5 | 35 |

*Mitigation*

- Undertake construction activities in the dry season.

- Limit the extent of the construction servitude to as small an area as possible.
- Excavated soils should be stockpiled on the upslope side of the excavated trench so that eroded sediments off the stockpile are washed back into the trench.
- Concentration and accumulation of flows along the servitude should be prevented by regularly providing for surface runoff to flow into the adjacent grassland rather than along the construction servitude and into the wetlands.
- Closure and rehabilitation of the pipeline servitude should commence as soon as the pipeline has been laid in the trench.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 4 | 24 |

#### *6.1.6.1.3 Construction Phase – Impounding of flows*

Encasing the pipeline in cement across wetland crossings will provide an impermeable barrier to water movement within the wetland sediments that could lead to impoundment of flows upstream of the pipeline. In addition the hard edge of the cement casing, though buried 30cm underground, could provide an erosion nick point.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 3 | 2 | 5 | 55 |

*Mitigation*
In the case of the pipeline, it is recommended that no cement casing be utilised for the wetland crossings, but rather that a permeable coarse bedding material be used as recommended for terrestrial areas. The aim should be to maintain water movement through the wetland sediments also across the pipeline trench. As all of the wetlands are close to the top of the catchment and not characterised by strong flows, the cement casing should not be necessary to protect the pipeline. This would however need to be commented on by a suitably qualified engineer.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 4 | 24 |

 

#### *6.1.6.1.4 Construction Phase – Piping and preferential flow paths*

A coarse bedding material will be utilised around the pipe within the trench. This bedding material is likely to be more permeable than the natural soils of the area and could create a preferential flow path in the subsurface which, over time, could result in erosion on the surface and even pipe failure in extreme cases.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 4 | 48 |

*Mitigation*
It is recommended that trench breakers be installed along the pipeline trench. A material with low hydrological conductivity (a Bentonite mix is recommended), in the form of trench breakers should be packed around the pipe and should be installed at regular intervals to prevent the pipeline behaving as a conduit and to intercept any concentrated flow down the pipeline route. Spacing between trench breakers should vary depending on the slope of the landscape – the steeper the slope the smaller the distance between trench breakers. Spacing should be such that flows backing up behind one trench breaker extend back to the base of the previous trench breaker.

#### *6.1.6.1.5 Construction Phase – Altered water movement through the landscape*

Excavation of the trench could alter water movement through the landscape where the excavation leads to the destruction of control features within the subsurface, e.g. sub-surface rock banks. Excavations that extend into such features could in effect “breach subsurface dams” and create preferential flow paths that could lead to erosion.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 4 | 48 |

*Mitigation*
Where subsurface control features such as rock banks or ledges are damaged by the trench excavations, these control features should be re-created within the trench to prevent the formation of preferential flow paths.

After mitigation this impact is expected to be Low.

 

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.6.1.6 Construction Phase – Water quality deterioration*

Use of polluting substances during construction (e.g. oil, diesel and cement) could lead to deterioration of water quality if washed into adjacent wetlands.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 1 | 5 | 40 |

*Mitigation*

- Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities
- Limit quantities of hazardous substances on site to the volumes used during 1 days work
- Dispose of all soil contaminated due to leaks or spills as hazardous waste
- Waste should be stored on site in clearly marked containers in a demarcated area. All waste must be disposed of offsite.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.6.1.7 Operation – Water quality deterioration due to leaks or pipe failure*

Leaks or failure of the pipe could result in water quality deterioration of affected wetlands as dirty water is discharged directly into these systems.

This impact is expected to be High.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 8 | 4 | 2 | 5 | 70 |

*Mitigation*

 

Leak detection measures should be installed along the pipeline so that pipe failure, should it occur, will be noticed immediately and water flow through the pipe can be stopped. Twice monthly checks along the route should be undertaken to scan for signs of leaks.

After mitigation this impact is expected to be Moderate.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 3 | 36 |

#### 6.1.6.2 Impact assessment - Powerlines

Two powerlines will be located within the service water pipeline and powerline servitude. The powerlines will be 22kV overhead lines located 15.m meters apart. The majority of pylons will be mono-pole structures 20 m in length and planted 2 m deep. Excavations of foundations and planting of the poles will require access to the entire route and lead to disturbances around the pole locations. All preparation work is done on site, with a truck mounted crane used to plant the poles. To string the cables along the route, specific strain locations will be selected from where cables will be strung. No overhead wires or cables will be dragged along the route. The powerline routes will be accessed via the service road that will be constructed along the service water pipeline.

Impacts associated with the powerlines are expected to mainly take place during the construction phase, though some impacts are expected to extend into the operational phase.

**Construction**:- Disturbance of wetland habitat and associated biota
- Obstruction of flows
- Increased risk of erosion
- Soil compaction
- Water quality deterioration

##### *6.1.6.2.1 Construction Phase - Disturbance to wetland habitat and associated biota*

Where the powerlines crosses wetlands, and specifically where poles need to be erected within the delineated wetlands, construction activities will result in disturbances to the wetland habitat through trampling of the vegetation, compaction of soils and also disturbance of soils where excavations are required. Given that the vegetation of the area is short to medium high grassland, no vegetation clearing will be required, though the vegetation is likely to get trampled. Disturbed areas will be more susceptible to erosion and will provide opportunity for alien invasive species to establish.

Additional disturbances to wetland habitat could result where strain locations to string the cable are located within wetland habitat.

This impact is expected to be Moderate.

 

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 2 | 1 | 5 | 50 |

*Mitigation*

- Undertake construction activities in the dry season.
- Ideally no poles should be located within any of the wetlands on site. Where this is unavoidable, poles should be located so as to avoid the active channels of all wetlands.
- No strain location should be located within any of the delineated wetlands.
- Construction activities should be limited to as small an area as possible. Vegetation clearing should only take place within the direct footprint of the excavation.
- Disturbed areas should be rehabilitated as necessary – compacted soil and disturbed soils should be ripped and landscaped.
- Removal of all waste from site.
- Monitoring of re-vegetation should be done during the first rainy season following construction. Where re-vegetation fails, seeding will need to be done
- Monitoring for signs of erosion should be done until re-vegetation has proved successful. Any erosion damage will need to be repaired

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 4 | 28 |

#### *6.1.6.2.2 Construction phase - Obstruction of flows*

Where poles are constructed within the wetlands, specifically within the active channel of valley bottom wetlands, obstruction of flows is likely to occur to allow for construction activities, and during operation when debris is washed against the poles and obstructs flows. This is likely to concentrate flows and lead to erosion of the channel bank.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 4 | 36 |

*Mitigation*

- Ideally the powerline should span all wetlands.
- No pylons may be located within the active channel of any wetland.

After mitigation this impact is expected to be Low.

 

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.6.2.3 Construction Phase - Increased risk of erosion*

Disturbances alluded to above (trampling of vegetation etc) will expose soils to erosion, with sediments washed into adjacent wetlands, leading to increased turbidity and increased sediment deposition in the wetland.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 5 | 45 |

*Mitigation*

- Undertake construction activities in the dry season.
- Ideally no poles should be located within any of the wetlands on site. Where this is unavoidable, poles should be located so as to avoid the active channels of all wetlands.
- No strain location should be located within any of the delineated wetlands.
- Construction activities should be limited to as small an area as possible. Vegetation clearing should only take place within the direct footprint of the excavation.
- Disturbed areas should be rehabilitated as necessary – compacted soil and disturbed soils should be ripped and landscaped.
- Removal of all waste from site.
- Monitoring of re-vegetation should be done during the first rainy season following construction. Where re-vegetation fails, seeding will need to be done
- Monitoring for signs of erosion should be done until re-vegetation has proved successful. Any erosion damage will need to be repaired

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.6.2.4 Construction Phase - Soil compaction*

Soils compacted by the movement of heavy machinery will prevent the rapid re-establishment of vegetation following construction, increasing the risk of erosion and establishment of alien vegetation.

This impact is expected to be Moderate.

 

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 5 | 45 |

*Mitigation*

- Undertake construction activities in the dry season to limit risk and degree of soil compaction.
- Ideally no poles should be located within any of the wetlands on site. Where this is unavoidable, poles should be located so as to avoid the active channels of all wetlands.
- No strain location should be located within any of the delineated wetlands.
- Construction activities should be limited to as small an area as possible. Vegetation clearing should only take place within the direct footprint of the excavation.
- Disturbed areas should be rehabilitated as necessary – compacted soil and disturbed soils should be ripped and landscaped.
- Removal of all waste from site.
- Monitoring of re-vegetation should be done during the first rainy season following construction. Where re-vegetation fails, seeding will need to be done
- Monitoring for signs of erosion should be done until re-vegetation has proved successful. Any erosion damage will need to be repaired

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### *6.1.6.2.5 Construction Phase - Water quality deterioration*

Use of polluting substances during construction (e.g. oil, diesel and cement) could lead to deterioration of water quality if washed into adjacent wetlands.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 5 | 2 | 1 | 5 | 40 |

*Mitigation*

- Institute environmental best practice guidelines as per the DWA Integrated Environmental Management Series for Construction Activities
- Limit quantities of hazardous substances on site to the volumes used during 1 days work
- Dispose of all soil contaminated due to leaks or spills as hazardous waste
- Waste should be stored on site in clearly marked containers in a demarcated area. All waste must be disposed of offsite.

 

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 3 | 18 |

#### 6.1.6.3 Impact assessment - Service road wetland crossings

For the service water line environmental requirements stipulate regular maintenance checks for which a permanent maintenance road is required. In essence a 3m wide, 300mm thick 19,5mm stone layer will be lain as indicated in the drawing. For the typical stream or wetlands crossing a pipe culvert crossing will be implemented as indicated in the Typical Road / Stream Crossing detail as indicated on the drawing. This entails 3 x 600mm diameter class 75 D pipe culverts per crossing with earthworks extending to a length of 5.4m, a width of 8.5m and 1.2m deep; for typically 6.1m long pipe culverts. As this road is an environmental requirement it will remain for the length of time the pipeline is operated.

The following impacts are expected:

**Construction Phase:**

- Loss and disturbance of wetland habitat;
- Increased erosion and sedimentation; and
- Altered flows within the wetland.

**Operation:**

- Stormwater discharge into the wetland.

##### *6.1.6.3.1 Construction Phase – Loss and disturbance of wetland habitat*

The wetland habitat located directly within the footprint of the proposed crossing will be lost, while construction activities will result in the disturbance of surrounding wetland habitat. Movement of machinery through the wetland will trample vegetation, disturb soils and result in the formation of ruts that could concentrate flows and encourage erosion. Disturbed areas will also be vulnerable to invasion by alien vegetation.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 5 | 45 |

*Mitigation*

- The construction servitude for the road should be kept as small as possible and should be clearly demarcated in the field.

 

- No activities should take place outside the construction servitude and no materials may be stockpiled in the wetland area. The small farm dam should also be located outside the construction servitude and no access to the dam should be allowed to construction machinery or personnel.
- Construction should be undertaken in the dry season.
- Following completion of construction activities, all disturbed areas should be rehabilitated – where required this will require ripping, scarifying and landscaping of the soil to the natural landscape profile and to encourage vegetation re-establishment.

After mitigation, the impact is expected to be of Moderate significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 5 | 35 |

#### *6.1.6.3.2 Construction Phase – Increased erosion and sedimentation*

Disturbances to the wetland during construction will increase the risk of erosion. This will be exacerbated if construction is undertaken with flows in the wetland that will then need to be diverted around the construction workings and will likely result in flow concentration.

Sediments are also likely to washed into the wetland from construction activities of the road approaching and departing the wetland crossing. Sediments deposited within the wetland will change the vegetation of the wetland, with species such as Typha capensis likely to establish in depositional areas.

This impact is expected to be of Moderate significance.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 2 | 1 | 5 | 45 |

*Mitigation*

- The construction servitude for the road should be kept as small as possible and should be clearly demarcated in the field.
- Construction should be undertaken in the dry season. As the wetland is a seasonal system, undertaking construction during the dry season should ensure that no surface flows occur in the wetland during the time of construction.
- No activities should take place outside the construction servitude and no materials may be stockpiled in the wetland area.
- Hay bales should be put along the downslope edge of the conveyor servitude to trap any sediments that may be washed off the construction area.
- Stormwater from the approach and departure roads to the crossing should be diverted off the road and into adjacent grassland at regular intervals, already during the construction phase to prevent sediment from these areas being washed into the wetland.

 

- Following completion of construction activities, all disturbed areas should be rehabilitated – where required this will require ripping, scarifying and landscaping of the soil to the natural landscape profile and to encourage vegetation re-establishment.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 5 | 30 |

#### *6.1.6.3.3 Operational Phase - Altered flows in the wetland*

Construction of the road across the wetland could lead to the impoundment of flows upslope of the wetland, extending saturation of the area and encouraging sediment deposition. This will lead to changes in the wetland vegetation, most likely resulting in the formation of a *Typha capensis* reed bed.

The culverts could further lead to concentration of flows, resulting in higher velocity flows with greater erosive energy that could lead to channel incision above and below the crossing point. Channel incision will lower the local water table and lead to partial drying out of the wetland verges and terrestrialisation of the vegetation.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 2 | 4 | 52 |

*Mitigation*
Given the nature of the majority of wetland crossings, the proposed bridge structure is considered to be sufficient. Of concern are only the crossing over the unchannelled valley bottom wetland at crossing 2, and the crossing of the Shondoni Spruit at crossing 8, though it is not known if the service road will be required to cross the Shondoni Spruit. To limit the possibility of flow impoundment and concentration at crossing 8, a bridge structure similar to the one recommended for the Shondoni shaft access road is recommended, while for crossing 2, a larger number of pipe culverts is recommended to ensure flows across the full wetland width are maintained.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 2 | 2 | 1 | 3 | 15 |

 

#### *6.1.6.3.4 Operational Phase - Stormwater discharge into the wetland*

The road will generate stormwater runoff during rain events that will likely be discharged into the wetland areas. Concentrated, point source discharges will lead to erosion, while stormwater is also likely to carry hydrocarbon pollutants into the wetland.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 2 | 5 | 60 |

*Mitigation*
Stormwater should not be allowed to accumulate on the road surface. Regular humps on the road and discharge points into adjacent grassland should be provided. Discharge points should be protected against erosion. No stormwater should be discharged directly into any wetland.

After mitigation, the impact is expected to be of Low significance.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 3 | 2 | 1 | 4 | 24 |

### *6.1.7 Overland Coal Conveyor*

The proposed overland coal conveyor will run southwards from the proposed Shondoni Shaft along the R547 and pass to the west of Brendan Village. Once past the slimes dam, the conveyor turns eastwards to eventually link up with the Impumelelo Conveyor in close proximity to the Brandspruit Complex. A service road will run parallel to the conveyor.

A total of 15 wetland crossings were identified along the proposed servitude, numbered from 1 to 15 from north to south along the route. The entire route as well as the delineated wetlands is illustrated below. To provide more detail, seven further maps indicating specific sections of the route are also included.

 

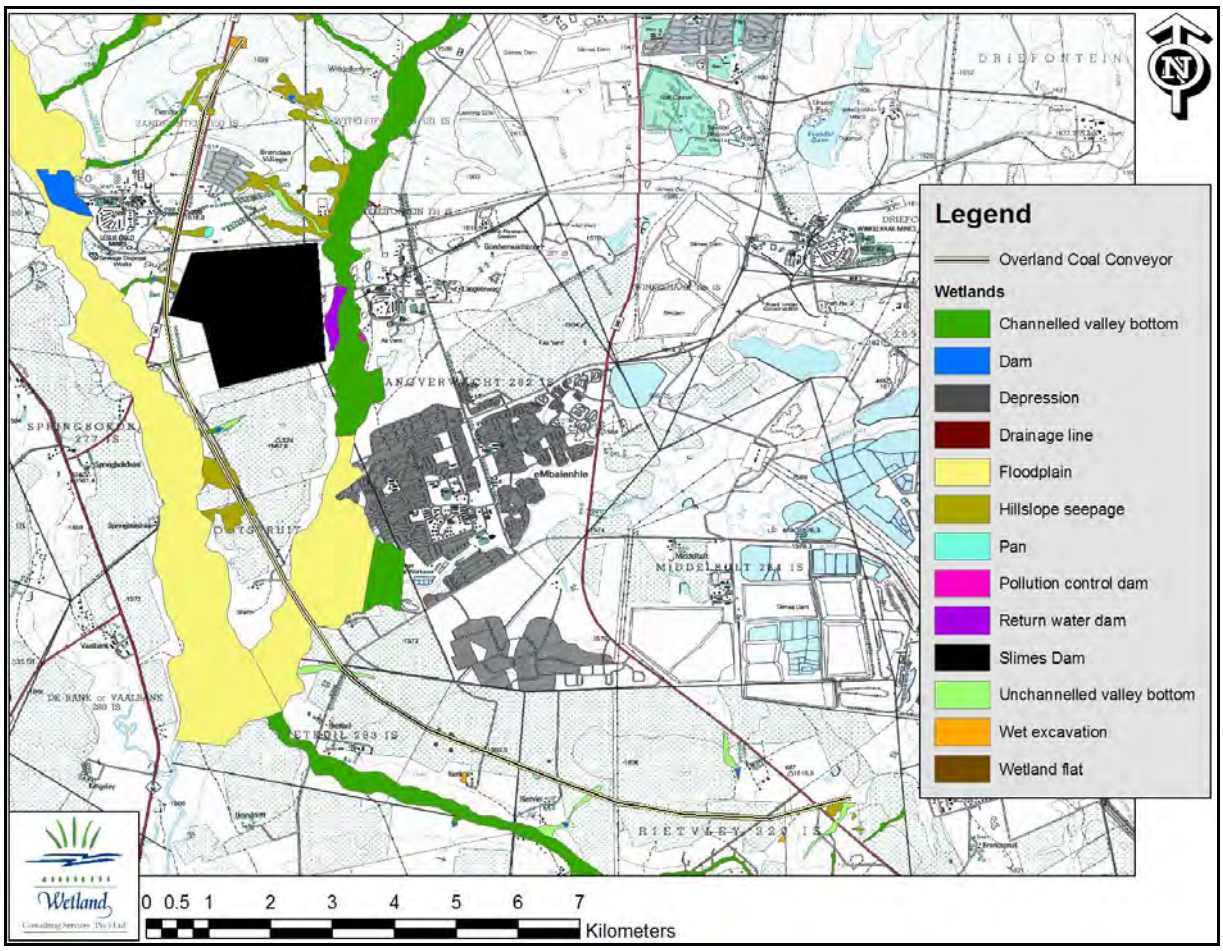


**Figure 23.** Map of the proposed overland coal conveyor showing the delineated wetlands along the route.

The upper reaches of the seepage wetland at crossing 1 (upslope of the R547) and most of its catchment have been completely cultivated and no natural vegetation remains. This is where the proposed conveyor will cross the wetland and no loss of natural wetland vegetation will thus occur. Flows pass via a culvert underneath the R547. Downstream of the crossing the wetland consists of a narrow strip of natural vegetation in between cultivated fields and has been considerably disturbed by the adjacent cultivation through direct disturbance and increased sedimentation. This is a temporary to seasonally saturated wetland system that is supported by subsurface seepage of water. No surface water was observed at the time of the field work (November 2011). Catchment land use is expected to have resulted in a moderate deterioration of water quality (stormwater run-off from road and increased turbidity due to cultivation). The wetland is considered to be ***largely modified (PES D)***, and due to this modification and its small size, is considered to be of ***low ecological importance and sensitivity (EIS D)***.

 

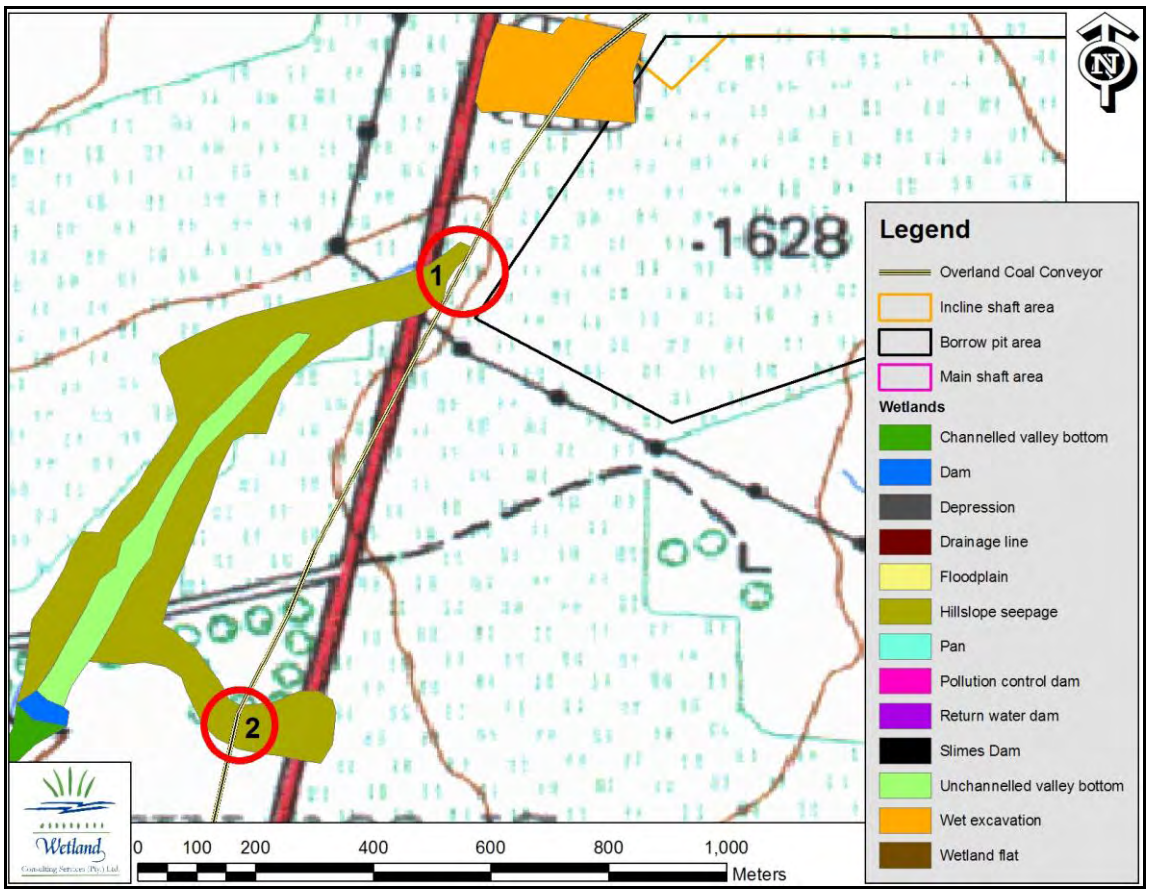


**Figure 24.** Map of crossings 1 and 2 along the conveyor route.

Crossing 2 is another temporary hillslope seepage wetland that drains towards an unnamed tributary of the Waterval River. Upstream of the R547 the wetland and its entire catchment have been previously cultivated. Flows then pass via three culverts underneath the tar road and flow along the edge of a large stand of alien *Eucalyptus* trees. Before entering a valley bottom wetland. The wetland is considered to be ***largely modified (PES D)***, and due to this modification and its small size, is considered to be of ***low ecological importance and sensitivity (EIS D)***.

**Figure 25.** Photographs of crossing 2. Black line indicates approximate conveyor route and blue indicates flow direction.

 

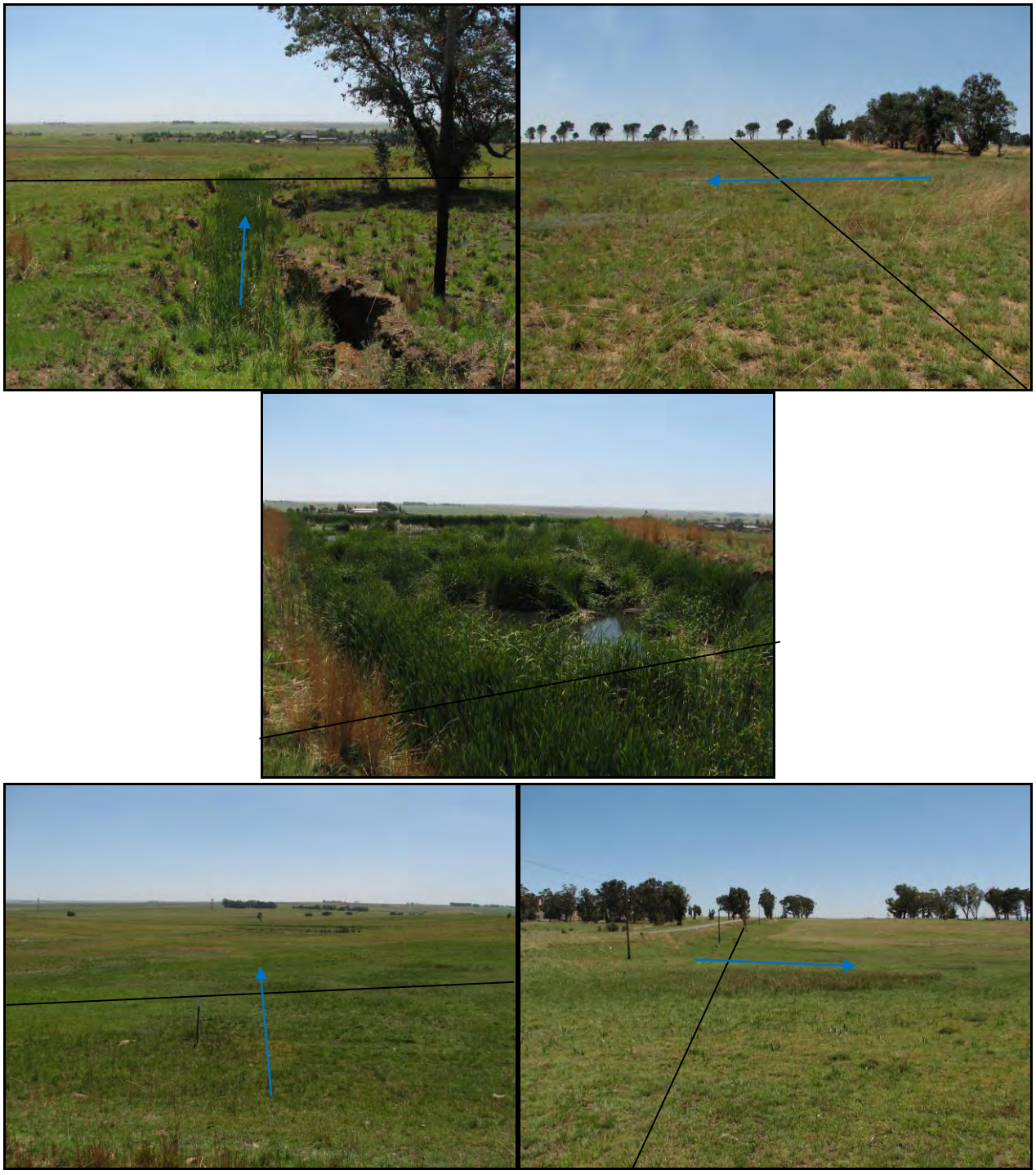

**Figure 26.** Photographs of crossings 3 (top), 4 and 5 (bottom) along the conveyor route. Black line indicates approximate conveyor route and blue indicates flow direction.

Wetland crossing 3 is a temporary hillslope seepage wetland that drains towards the Waterval River (but disappears into the Leslie Gold Mine surface infrastructure) from a small pan located to the east of the R547 road. A trench has been excavated from the small pan along the full length of the hillslope seepage wetland most probably in an attempt to drain the pan and seepage wetland. The wetland is characterised by secondary grassland that resembles the surrounding terrestrial vegetation, with the exception of some stands of *Imperata cylindrica* as well as *Typha capensis* along the trench. Other species included *Themeda triandra, Stoebe vulgaris, Helichrysum*

 

*aureonitens, Hyparrhenia hirta* and *Nidorella anomala*. The upper catchment of the seepage wetland is mostly natural grassland and as such largely intact, however the wetland has been significantly impacted by the drainage trench and overutilization of the vegetation through heavy grazing and frequent burning. The wetland is considered to be in a ***largely modified condition (PES B) and of Low ecological importance and sensitivity (EIS D).***

Crossing 4 is a small triangular irrigation dam which is fed via a pipe and which has no discernable outflow. This is a man-made water resource and a PES and EIS assessment is thus not applicable.

Crossing 5 represents a channelled valley bottom wetland and associated seepage wetlands on the sideslopes. Almost the entire upper catchment of this wetland is occupied by a large gold mining slimes dam, and seepage from this slimes dam is expected to play an important role in maintaining the wetland and to have altered the natural hydrology of the system significantly. At the time of the site visit no surface water was present in the system to test this assumption. As with most of the other systems along the conveyor route, this is also an unnamed temporary to seasonal wetland that drains towards the Waterval River. This wetland will be crossed immediately adjacent to the R547 crossing over the wetland as it represents the point where the conveyor starts turning eastward and thus crosses the R547 road again.

The R547 crossing has resulted in some erosion within the wetland downstream of the road with an incised channel leading towards the downstream farm dam. The wetland was characterised by species such as *Typha capensis, Imperata cylindrica, Eragrostis chloromelas, Helictotrichon turgidulum, Hyparrhenia hirta, Themeda triandra, Sonchus wilmsii, Haplocarpha scaposa* and a number of *Cyperaceae* species.

The wetland is expected to play some role in trapping pollutants and sediments derived from the slimes dam before these reach the downstream Waterval River, as well as in the provision of grazing. The wetland is considered to be ***largely modified (PES D) and of Low ecological importance and sensitivity (EIS D)***.

Crossings 6 and 7 along the conveyor route are very similar systems and will be discussed together. These systems are probably more correctly considered drainage lines rather than wetlands as they do not show signs of hydromorphic features in the soils and their vegetation does not differ significantly from the surrounding terrestrial vegetation. Both systems are unnamed tributaries of the Waterval River that are expected to convey flows only immediately following rainfall events. Both systems occur downslope of the slimes dam but have catchments characterised by grassland and the systems do not appear significantly impacted by the slimes dam. Dams have been constructed across both drainage lines, with the dam along the drainage line at crossing 6 located downstream of the proposed conveyor crossing being breached, while the dam at crossing 7 is located upstream of the proposed conveyor crossing. Both systems have also been impacted by historic cultivation and are crossed by a gravel farm road. The system are considered to still be mostly intact and are considered ***moderately modified (PES C)***. Given their small size and the ephemeral nature of these systems they are considered to be of ***Low ecological importance and sensitivity (PES D)***.

 

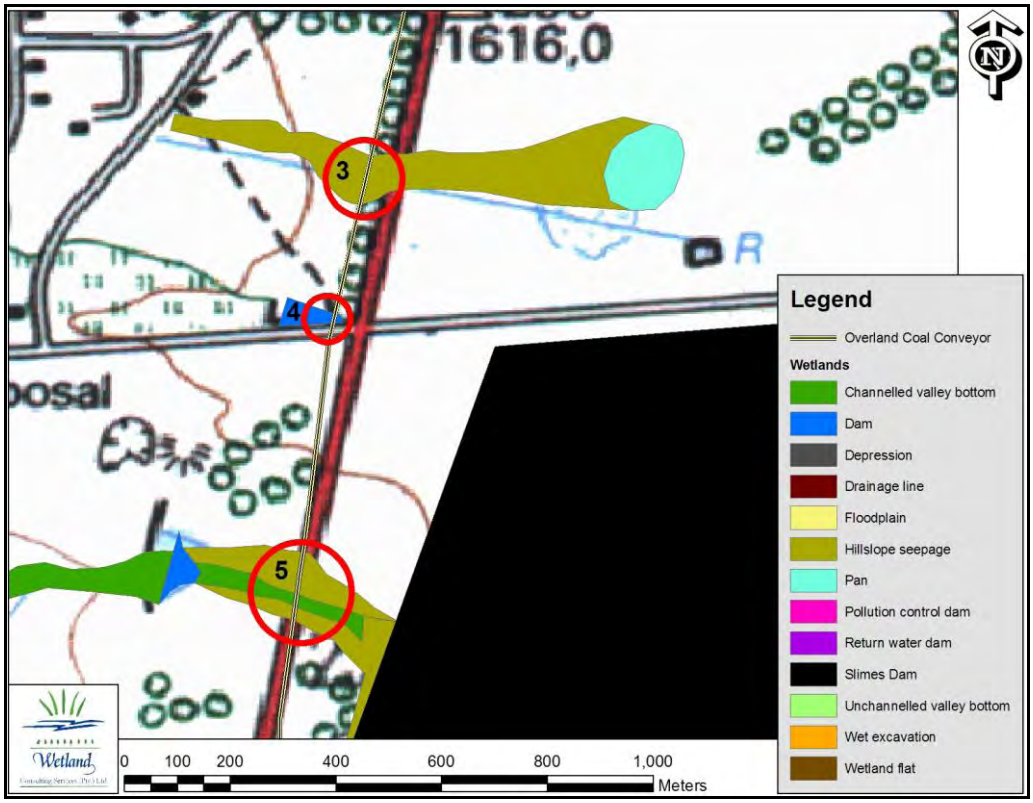


**Figure 27.** Map of crossings 3, 4 and 5 along the conveyor route.

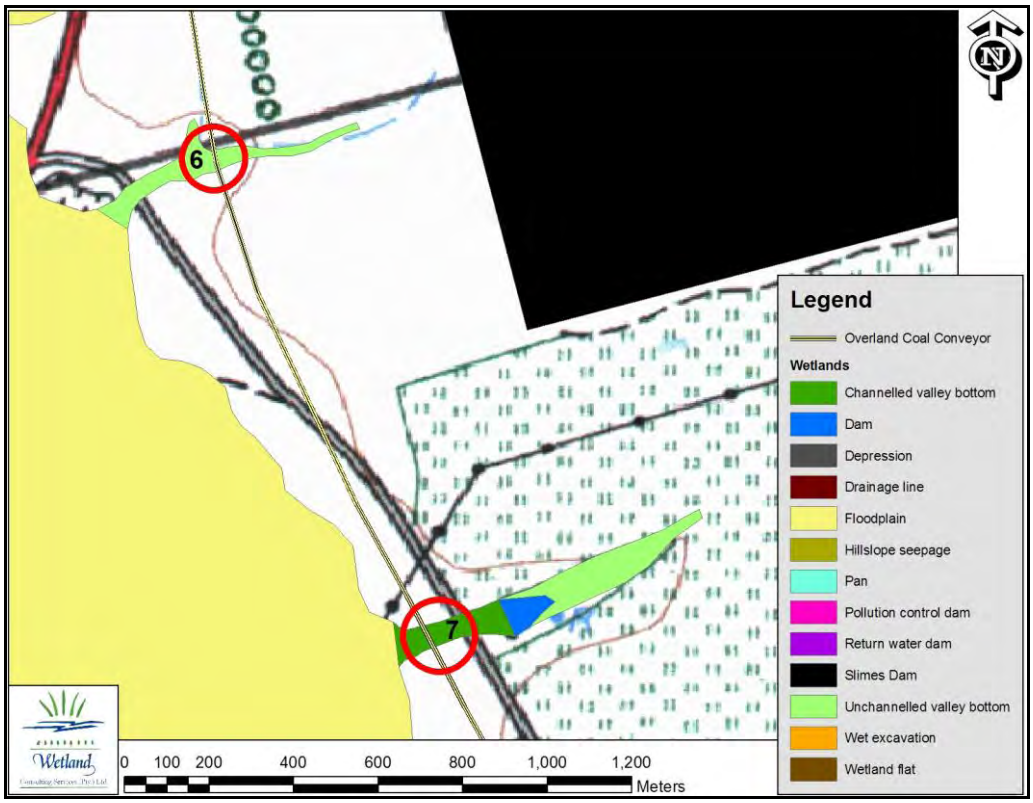


**Figure 28.** Map of crossings 6 and 7 along the conveyor route.

**Figure 29.** Photographs of crossing 6 and 7 along the conveyor route. Black line indicates approximate conveyor route and blue indicates flow direction.

Crossing 8 and 9 are again two very similar systems that will be discussed together. Both these crossings involve large temporary to seasonal hillslope seepage wetlands that could also be called wetland flats as they are located on the flat crest of the landscape. The entire seepage wetlands and their catchments were historically cultivated and linear disturbances assumed to be old roads and contour lines are still visible on site. The wetlands are characterised by shallow sandy soils that are poorly drained due to underlying rock. The fact that rainfall cannot infiltrate deeply into these soils due to the shallow soils, as well as the low slope of the area, results in rainfall being retained in the soils near the soil surface for extended periods, resulting in wetland formation. Past cultivation has resulted in secondary vegetation dominating these wetlands, with species such as *Eragrostis* grasses, *Helichrysum aureonitens* and *Stoebe vulgaris* dominant. Most of the water within these wetlands is expected to be lost to evapo-transpiration, and the main function of these systems is considered to be support of biodiversity and productivity; biodiversity support has however been compromised by past cultivation. Any flows that do discharge out of the wetlands drain towards the Waterval River. The wetlands are considered to be ***moderately modified (PES C) and of low ecological importance and sensitivity (EIS D)***.

 

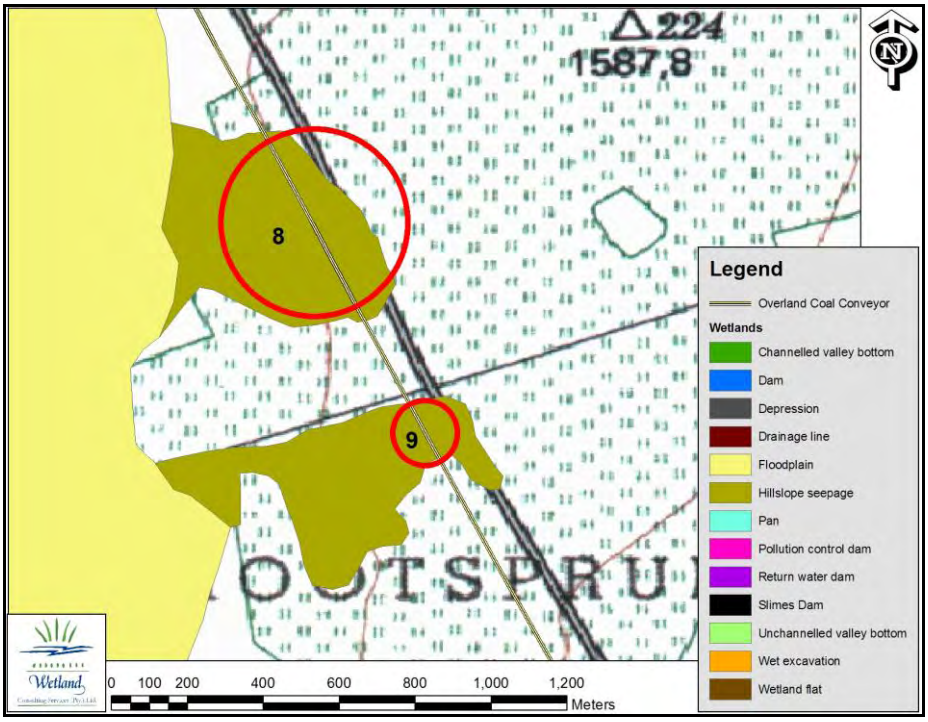


**Figure 30.** Map of crossings 8 - 9 along the conveyor route.

**Figure 31.** Photographs of crossings 8 and 9 along the route.

 

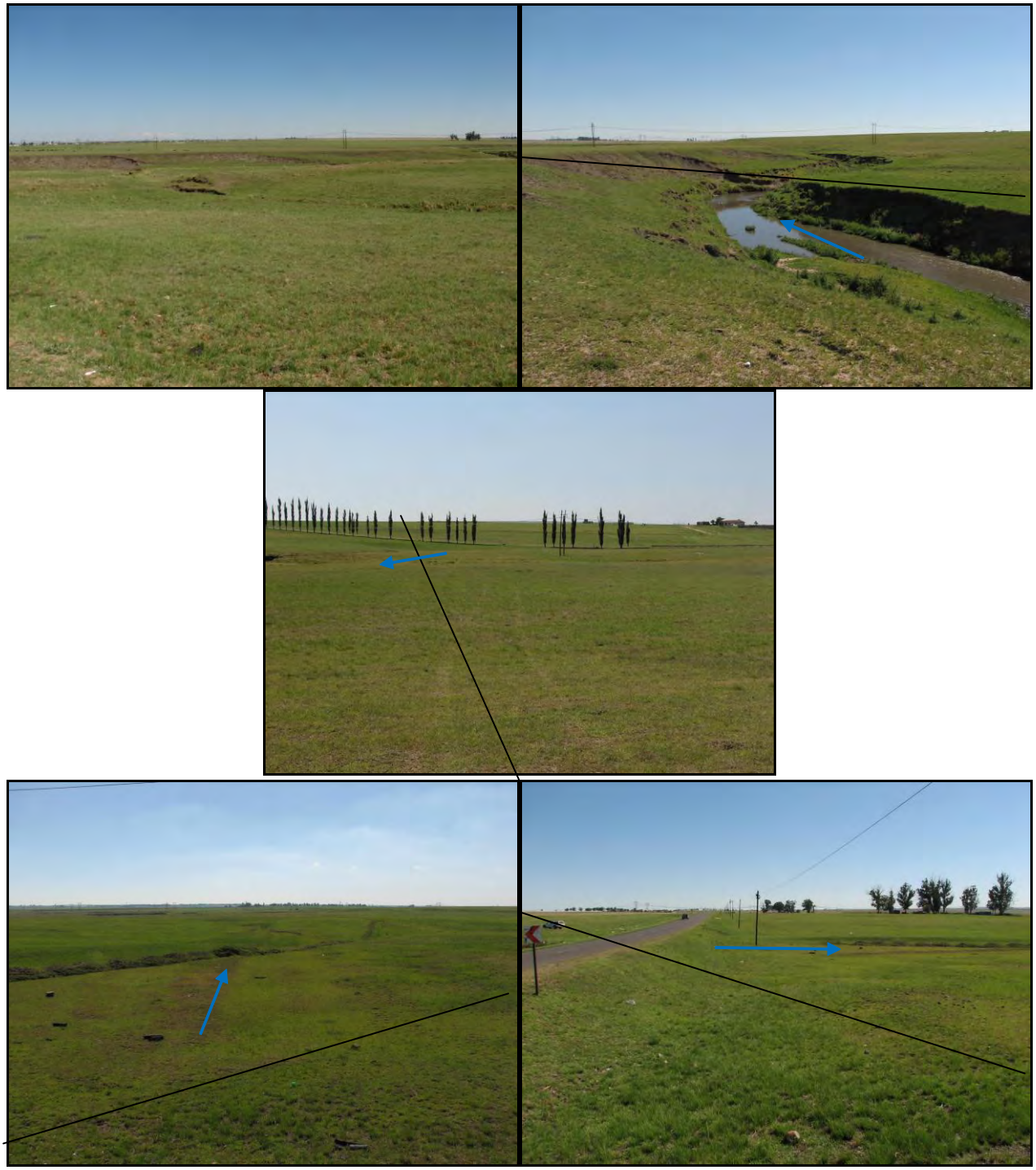

**Figure 32.** Photographs of crossing 10 (top and middle) and crossing 11 (bottom).

Crossing 10, the crossing of the conveyor over the Grootspruit floodplain wetland, is considered to be the most significant wetland crossing along the proposed route. The conveyor will cross the wetland diagonally, resulting in an approximately 800m length of conveyor falling within the delineated floodplain wetland. At the crossing point, which is located just downstream of the tar access road to one of the Sasol Mining shafts, the active channel of the Grootspruit is approximately 20 m wide and approximately 4 m incised. A large, shallow cut-off meander is located within the floodplain to the east of the active channel and will be marginally impacted by

 

the proposed conveyor, roughly where the ends of the cut-off meander approach the main channel.

Given the deeply incised nature of the active channel, overtopping of the channel and flooding of the floodplain from the channel is considered to be a rare occurrence. This has resulted in most of the floodplain wetland resembling terrestrial grassland on vertic clay soils, with the exception of the active channel, the cut-off meander, and shallow depressions along the floodplain edge that are wetted by flows from the side slopes and minor tributaries into the floodplain.

During the EIA/EMP studies that were undertaken for the proposed Shondoni Mine and Shaft Complex, aquatic biomonitoring studies were undertaken at a location immediately upstream of the bridge. Water quality analysis indicated elevated salinities with TDS levels of 436.08 mg/L (mostly sulphates, 136.39mg/L), as well as elevated nitrates (16.39mg/L) and phosphates (4.65mg/L), indicating impacts from mining activities as well as sewage. Habitat integrity assessments (Index of habitat integrity, DWAF1999) indicated largely natural conditions in terms of riparian habitat, and largely modified conditions in terms of instream habitat, resulting in an overall habitat integrity PES of C/D (moderately to largely modified). In terms of SASS5 results, only 8 taxa were recorded (ASPT 3.5), resulting in a PES score for aquatic macroinvertebrates of F (critically modified). ***The overall PES of the Grootspruit at this location was thus given as E – Seriously Modified***.

Given the size of the floodplain wetland and its importance as a tributary of the Waterval River, a major tributary of the Vaal River, the floodplain wetland is considered to be of ***Moderate ecological importance and sensitivity (EIS C)*** despite its seriously modified state.

 

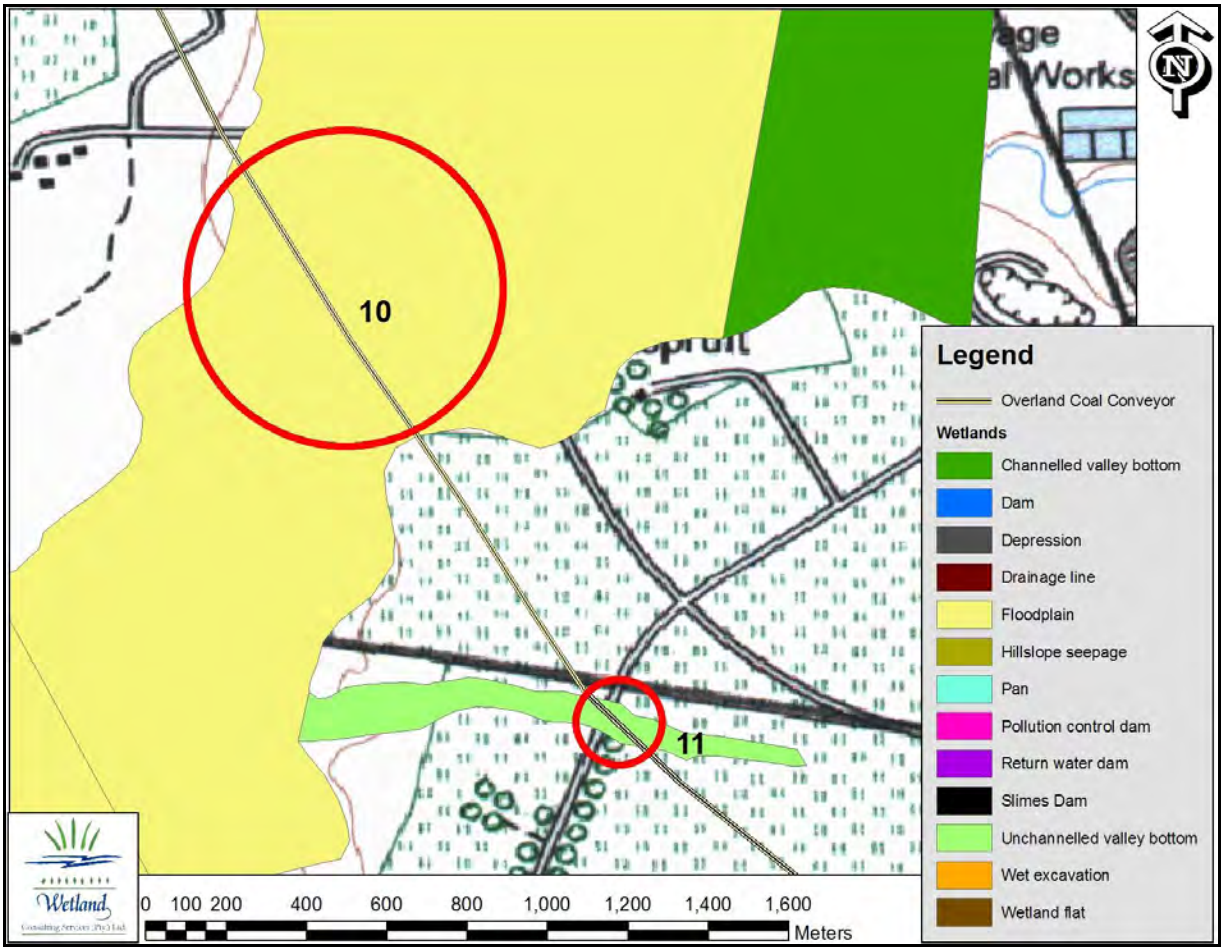


**Figure 33.** Map of crossing 10, the Grootspruit, and 11 along the conveyor route.

Crossing 11 is a small, seasonal valley bottom wetland that drains into the Waterval River. The proposed conveyor crossing will be located exactly at the existing crossing of the tar road across the wetland within an area that is further disturbed by a breached berm across the wetland immediately upstream of the tar road. Higher up, the wetland and its entire catchment have been historically cultivated and a number of linear disturbances, presumably old roads, provide preferential flow paths through the wetland. Heavy utilisation of the wetland vegetation through livestock grazing and regular burning have also resulted in degradation of the wetland habitat which is characterised by secondary vegetation. ***The wetland is considered to be in a largely modified state (PES D) and of Low ecological importance and sensitivity (EIS D)***.

 

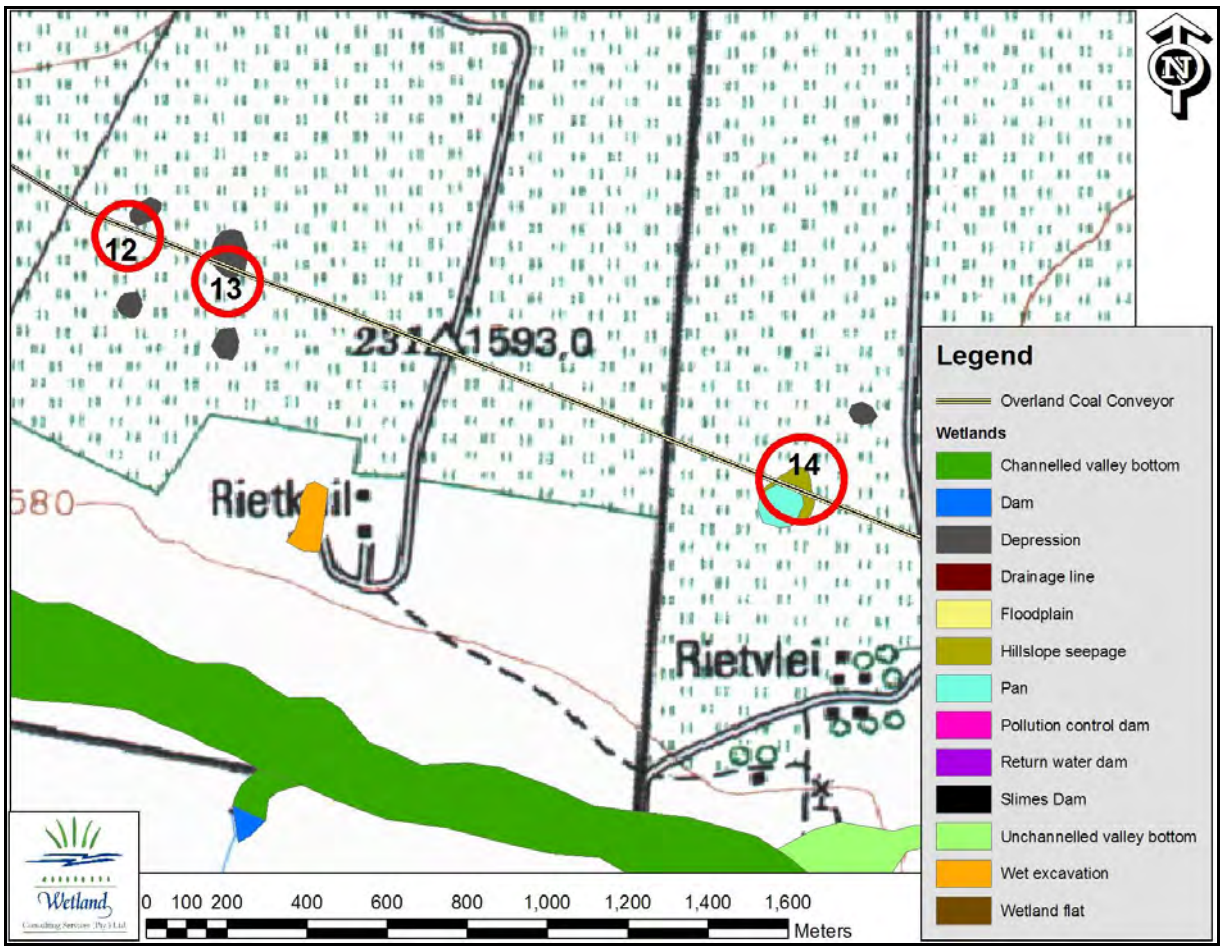


**Figure 34.** Map of crossings 12, 13 and 14 along the conveyor route.

Crossings 12 and 13 are small depressions in the landscape that accumulate water, resulting in wetland vegetation having become established in these areas. Based on their landform setting these areas are considered in our opinion to have formed as a result of surface subsidence due to underground mining and as such represent artificial wetland systems that are not considered sensitive. However, no evidence to support or disprove the assumption regarding surface subsidence was available at the time of compiling this report. The systems are located within a previously cultivated area and appear unconnected to any other water resources. ***Given that these systems are considered artificial, no PES assessment was possible. The systems are considered to be of low ecological importance***.

Crossing 14 appears to be a natural pan with associated seepage wetland feeding into the pan. However, while the pan is visible on recent aerial imagery of the site, Google Earth imagery of 2003 does not show a pan, neither does black and white aerial imagery of the late 90's. This might be due to complete cultivation of most of the pan obscuring the wetness signature of the pan on the Google Earth photograph, or it might point towards the pan having formed as a result of surface subsidence, which is considered the more likely scenario, as recent imagery shows a second depression to the north of the pan which is also not visible on older imagery. The so-called pan is thus considered to be an artificial wetland formed as a result of surface subsidence. ***Given that these systems are considered artificial, no PES assessment was possible. The systems are considered to be of low ecological importance***.

 

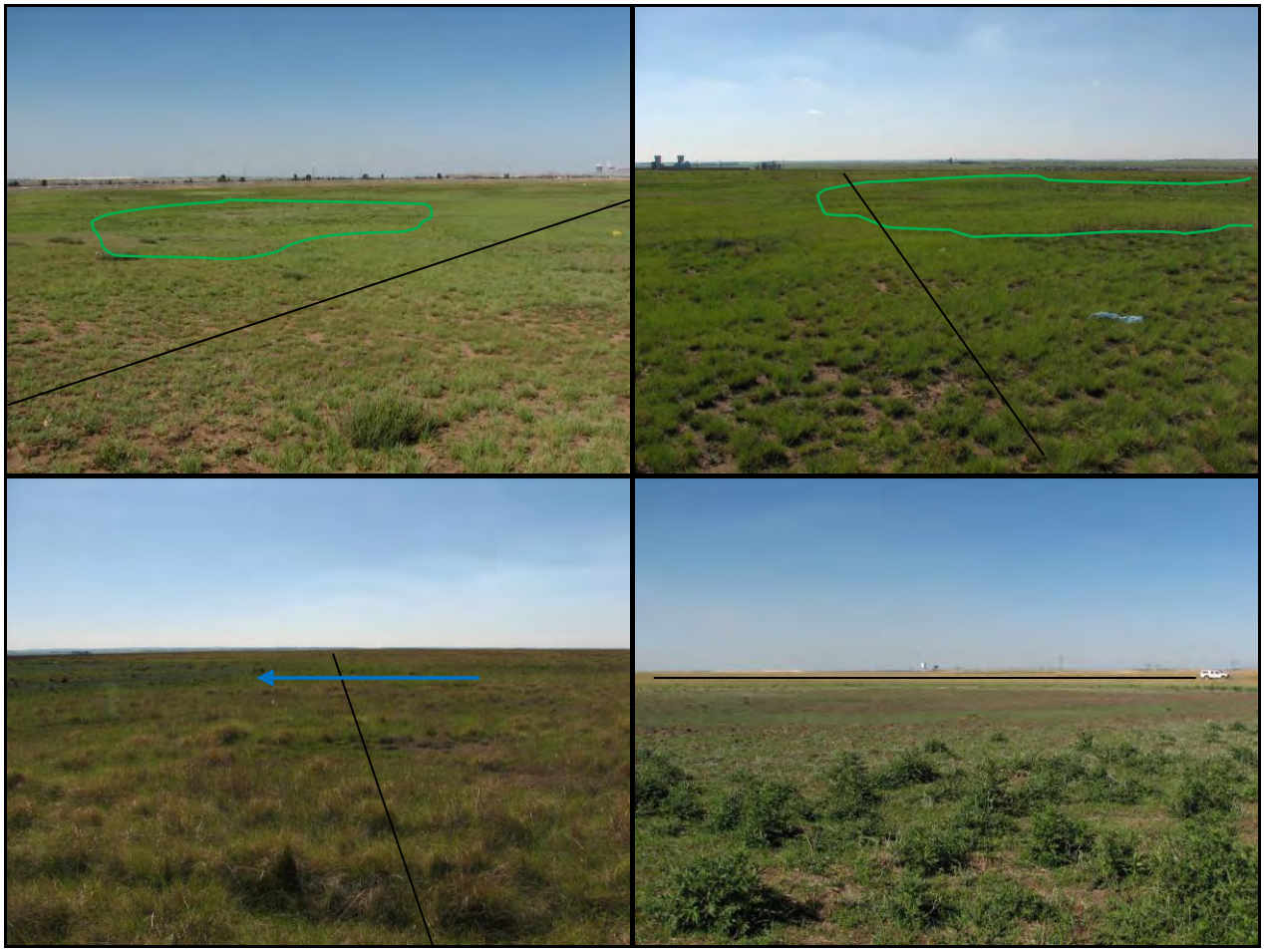

**Figure 35.** Photographs of crossing 12, 13 and 14 (bottom).

The final wetland identified along the conveyor route is a small, temporary unchannelled valley bottom that has been completely cultivated. While the wetland was completely cultivated in the past, during the site visit it was observed that the wetland had been excluded from ploughing due to the wetness of the soils preventing access to the area to tractors. The wetland drains in a south westerly direction into a small farm dam, and then on into an unnamed tributary of the Waterval River. The complete cultivation of the wetland and its catchment in the past has resulted in the wetland being considered ***largely modified (PES E) and of Low ecological importance and sensitivity (EIS D)***.

 

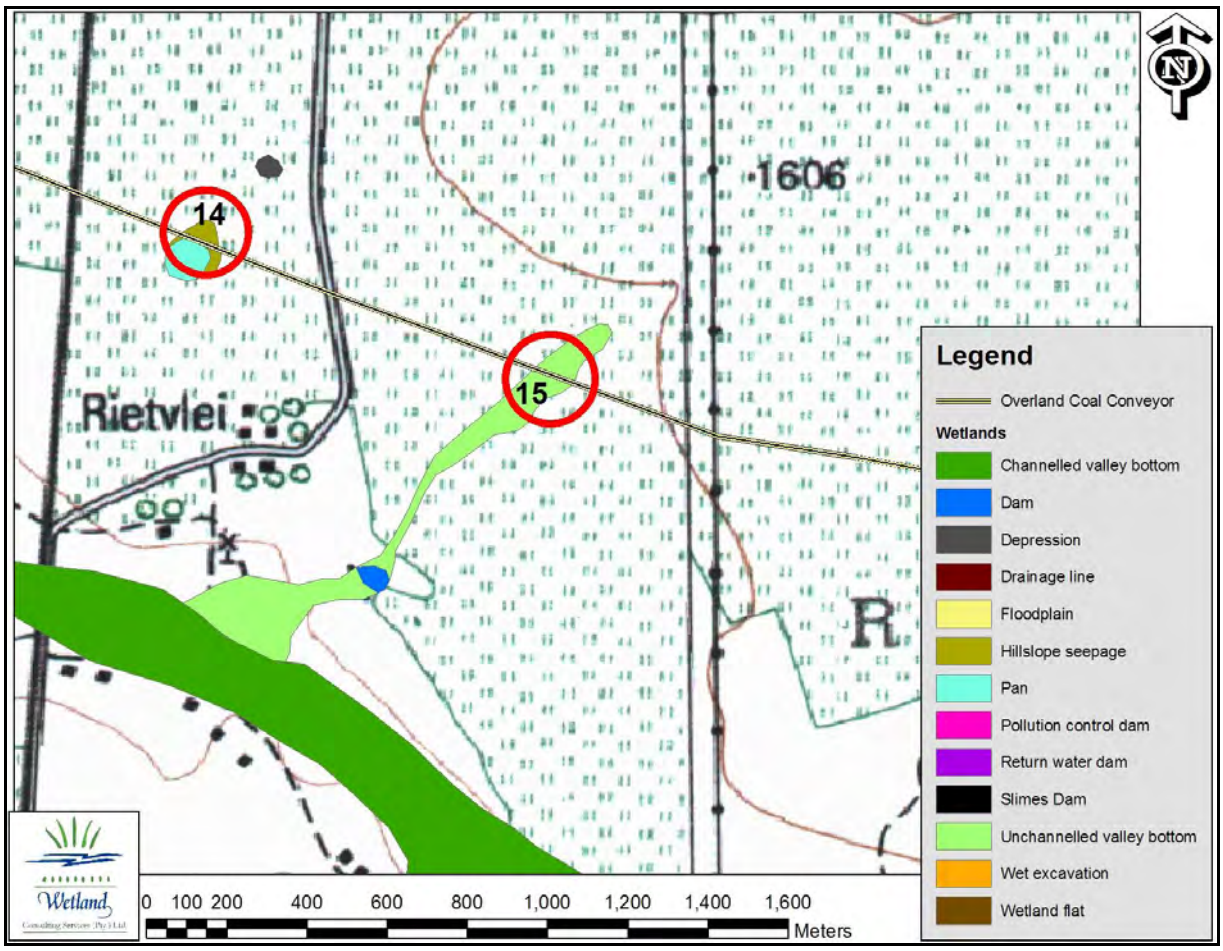


**Figure 36.** Map of crossing 15 along the conveyor route.

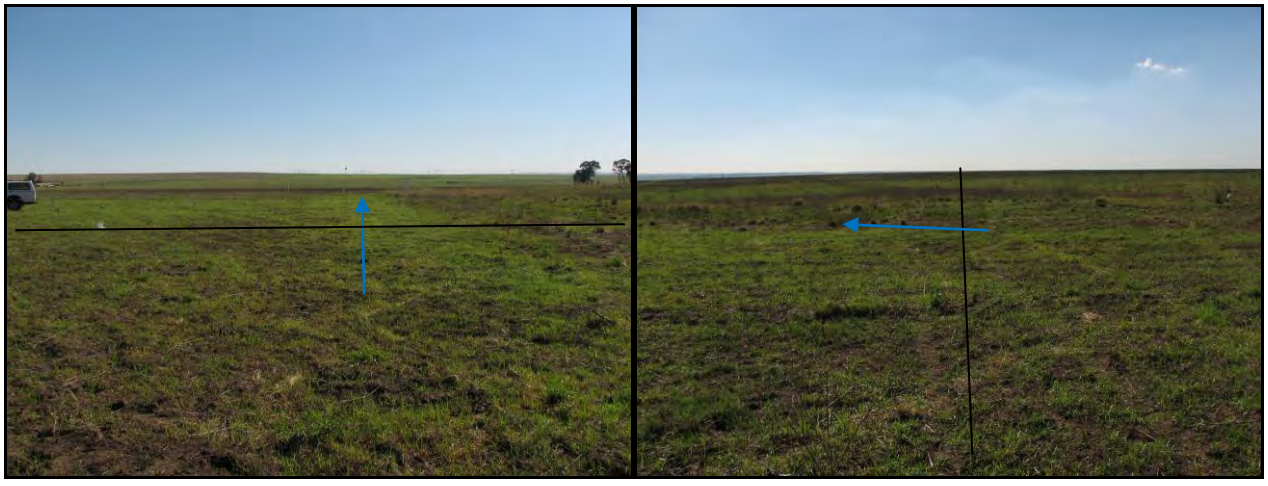

**Figure 37.** Photographs of crossing 15.

#### 6.1.7.1 Impact Assessment - Overland Coal Conveyor

 

Detailed design drawings of the proposed coal conveyor and associated maintenance road are included as part of the IWULA documentation. Basic drawings of the conveyor and associated service road, as well as the conveyor footings that will be used for wetland crossings are however shown below.

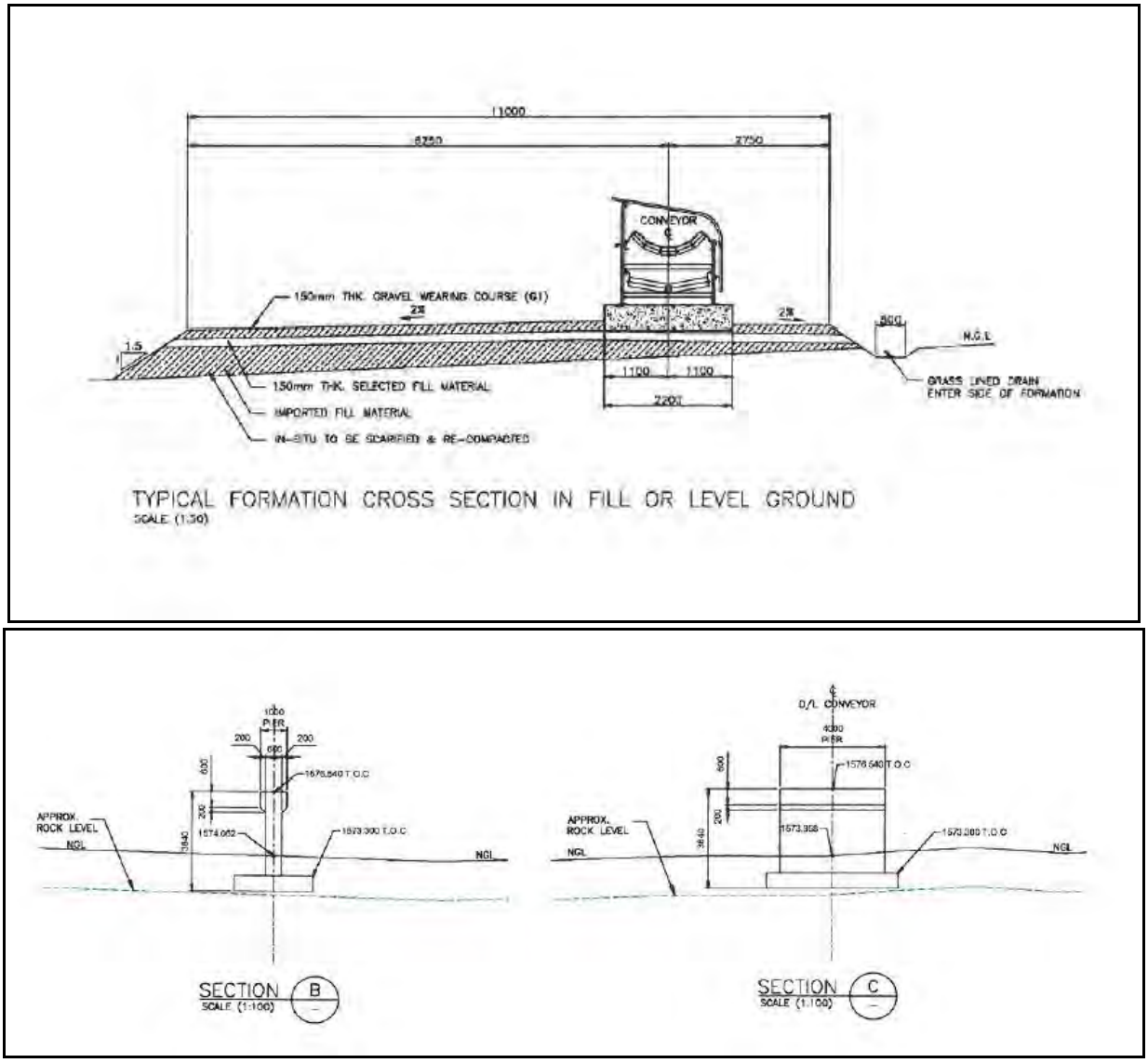


**Figure 38.** Basic design drawings for the overland coal conveyor.

From the drawings above it is clear that the conveyor and associated service road will require an 11 m wide bed of imported fill material and gravel. In situ material will be ripped and compacted and covered by imported fill material to provide a level platform that will be covered a further layer of 150 mm imported fill material, followed by 150mm of imported gravel as the road surface. Conveyor footings will be place on 1 side of the 11 m wide prepared surface, with the remainder forming the maintenance road. Conveyor footings will consist of 2.2 m wide concrete slabs positioned on the prepared surface. The maintenance road will however not cross any wetlands (see method statement below). In wetland crossings, the conveyor will be constructed on pedestals only, as per the drawings above.

 

The following method statement was provided for the maintenance road:

> The Overland Conveyor maintenance road will not cross streams, water courses or areas demarcated by a specialist as wetlands. Instead a Cul-de-sac detail is provided at each water crossing point to both ends of the water course where vehicles are forced to turn around. A fence demarcating the 200m long no-access zone over a stream crossing will be provided to both ends.
>
> Service water (originally obtained from the iThemba Lethu Mine; and after 5 years of mine operation originating from the Shondoni Mine itself), filtered for solids, will be sprayed onto the conveyor belt at all transfer points. This will occur from underground at the Shondoni Mine up to the surface coal bunker at Sasol Coal Supply (SCS), including all transfer points in between. Dust controlling water will be absorbed by transported coal. At points where service water drains of the conveyor belt it will be directed into bunded areas from where it will be routed to conventional silt traps and dealt with as dirty water.

#### 6.1.7.2 Impact Assessment – Overland Coal Conveyor

The most significant impacts are expected to occur during the construction phase and include the following:

- Loss of wetland vegetation and destruction of wetland habitat;
- Impedance and concentration of flow across wetlands resulting in loss of wetland vigour followed by increase in erosion risk and/or vegetation change from predominantly wetland to weeds and dry land species;
- Increased sediment movement off the sites due to erosion on bare soil surfaces and increased sediment load in the valley bottoms;
- Soil compaction in areas traversed by heavy machinery; and
- Water quality deterioration.

##### *6.1.7.2.1 Loss of natural wetland vegetation*

The construction of the conveyor will result in the disturbance and destruction of wetland habitat as well as the complete loss of wetland habitat within the direct footprint of the conveyor footings. It is expected that a servitude approximately 10m in width will be required for the proposed conveyor route. In addition, construction vehicles accessing the route, turning, offloading materials on site etc. are also likely to contribute to disturbance and destruction of wetland habitat outside the conveyor servitude. Disturbance of the wetland vegetation is also likely to provide opportunity for invasion by alien vegetation as well as increase the erosion risk.

The impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 1 | 5 | 60 |

*Mitigation*

 

Should the proposed conveyor route be approved, the loss of wetland vegetation within the footprint of the conveyor footings will be unavoidable and cannot be mitigated. While different alignments could be investigated, it is considered unlikely that a more favourable route could be found. The following mitigation measures should however be strictly enforced:

- The extent of disturbance should be limited by limiting all construction activities to a 10m wide servitude as far as practically possible.
- No materials should be stockpiled within the wetland areas along the route and driving within the wetland areas should be kept to an absolute minimum.
- Ideally, the conveyor should span the entire width of the valley bottom and floodplain wetlands along the route. As this is not possible given the width of the wetland systems the conveyor should be clear span across the active channel and should be raised above the 1:100 year floodline. Conveyor footings within the wetlands should be kept to a minimum. No infilling should take place within wetland areas.
- No service road should be constructed across the wetlands.
- Post construction all alien invasive vegetation should be removed from site. This will also require long-term follow up to ensure establishment of natural vegetation in all disturbed areas.
- Construction activities preferably only take place in winter during the dry season (May to September).

After mitigation this impact is expected to be Moderate.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 4 | 1 | 5 | 45 |

#### *6.1.7.2.2 Impedance and Concentration of Flows*

Construction of the service road and the conveyor across the valley bottom and hillslope seepage wetlands could impede flows resulting in impoundment upslope of the crossings, while the use of culverts would concentrate flows on the downslope side of the crossing leading to an increased erosion risk and a change is species composition of the wetland vegetation in response to the altered flows. However, it has been indicated that the service road will not cross any wetland along the route and that the conveyor will only require footings in the wetland crossings, no imported fill. It is thus considered unlikely that flow impedance and concentration will occur, unless conveyor pedestals are located within the active channel of wetlands.

This impact is expected to be Low.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 1 | 2 | 24 |

*Mitigation*

 

- No conveyor footings may be place within the active channels of wetlands – these should be clear spanned, most importantly the Grootspruit channel, which will require a minimum span length of 25 m between conveyor footings.
- No infilling should take place within the wetland areas on site and no cut should take place anywhere along the route.
- The original wetland geometry and topography in both cross-sectional and longitudinal profile altered during construction of a conveyor crossing must be reinstated at closure;

After mitigation the impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 7 | 4 | 1 | 1 | 12 |

#### *6.1.7.2.3 Increased sediment movement off the site*

Any bare soil areas resulting from vegetation clearing or disturbance during the construction process will be susceptible to erosion, especially during the rainy season. The increased quantity and velocity of run-off from bare soil areas together with the unprotected soil will significantly raise the erosion risk of these areas, as well as downstream areas. This will further result in increased sediment loads in the wetlands crossed by the conveyor as well as adjacent wetland systems. Increased sediment loads in the valley bottom wetlands could lead to changes within the biodiversity supported by the wetlands through changes to the bed of the stream channel as well as increased turbidity.

This impact is considered to be moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 1 | 5 | 55 |

*Mitigation*

All construction activities should be undertaken during the dry season in winter (May to September) and before the onset of the first summer rains as this would markedly reduce the likelihood of erosion caused by surface run-off and rainfall. Construction activities should also be limited to the 10m wide servitude as far as practically possible. In addition, all bare soil areas should be ripped and re-vegetated as soon as possible following completion of construction activities. Re-vegetated areas should be monitored to ensure successful establishment of natural vegetation, and all alien vegetation should be removed from these areas, with long-term follow up.

After mitigation this impact is expected to be Moderate.

| Impact - After mitigation |
|---|

 

| Nature | Magnitude | Duration | Extent | Probability | Significance |
|---|---|---|---|---|---|
| Negative | 4 | 4 | 1 | 4 | 36 |

#### *6.1.7.2.4 Soil Compaction*

The use of heavy machinery during the construction process will result in the compaction of soil, resulting in decreased infiltration of rain water and increased surface run-off volumes and velocities leading to a greater erosion risk.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 1 | 5 | 55 |

*Mitigation*

All areas not directly within the footprint of the proposed infrastructure where the soil has been compacted will need to be ripped to break up the compacted soil surface. This will aid infiltration and decrease run-off. All ripped areas need to be re-vegetated with a suitable mix of plant species as determined by a qualified botanist. All re-vegetated areas should be monitored to ensure successful re-establishment of natural vegetation and to prevent invasion by alien species.

After mitigation this impact is expected to be Low.

| Impact - After mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 4 | 2 | 1 | 3 | 21 |

#### *6.1.7.2.5 Deteriorating Water Quality due to Coal Spillages*

Coal spillages and coal dust from the conveyor and especially belt transfer areas along the conveyor can lead to pollution of wetlands and other water resources along the conveyor route. However, coal spillages from coal transported via conveyor are generally considered to be less than spillages from coal trucks.

This impact is expected to be Moderate.

| Impact - Before mitigation | | | | | |
|---|---|---|---|---|---|
| **Nature** | **Magnitude** | **Duration** | **Extent** | **Probability** | **Significance** |
| Negative | 6 | 4 | 1 | 5 | 55 |

*Mitigation*

Gantries should be used for all wetland crossings to minimise spills and dust. Should larger spillages occur due to malfunctioning of the conveyor or for any other reason, clean up of the spillages should be undertaken as soon as possible following the event. In this regard regular inspection of the entire conveyor route should be undertaken. No belt transfers are to be located within the wetland areas on site. Where belt transfers are located in close proximity to wetland areas a small, shallow berm should be constructed between the belt transfer site and the wetland area to prevent direct run-off of storm water from the belt transfer site into the valley bottom wetland.

## *6.2 Aquatic ecology assessment*

The majority of wetlands affected by the proposed activities are the small, upper reaches of wetland systems that form unnamed tributaries to the Grootspruit. These wetlands, though visited in summer (November 2011), did not have surface water that could be sampled and are also not suitable for biomonitoring. In order to obtain an idea of water quality of wetlands within the general area of the proposed activities, a number of points along the Grootspruit, both upstream and downstream of the affected area were sampled, with results summarised below.

A summary and description of sampling sites relative to proposed activities is given below.


**Figure 39.** Position of aquatic sampling sites relevant to proposed pipeline and powerline routes (Red = powerline and dirty water pipeline; Green= Rand Water Pipeline). S3 is located directly upstream of the proposed shaft complex.

**Table 3.** Description of aquatic sampling sites for the proposed Shondoni pipeline route

| | |
|---|---|
| Site 1 | Drainage line potentially affected by the proposed dirty water pipeline. |
| Site 2 | Grootspruit, downstream of proposed developments. |
| Site 3 | Drainage line affected by the shaft area (including clean and dirty water pipeline, sewage effluent and powerlines). |
| Site 4 | Grootspruit upstream of the shaft area, powerline and dirty water pipeline but downstream of the Rand Water pipeline. This site receives storm water effluent from Evander. |
| Site 5 | Grootspruit upstream of all proposed developments. |

### *6.2.1 Water Quality*

**Table 4.** Water quality results for aquatic sampling sites for the proposed Shondoni pipeline project. DL denotes drainage lines draining into the Grootspruit. S2 is located downstream of developments and S5, upstream.

| | S1 (DL) | S2 | S3 (DL) | S4 | S5 |
|---|---|---|---|---|---|
| **pH** | 7.2 | 7.37 | 7.97 | 7.88 | 7.97 |
| **Ec (mS/m)** | 172 | 215 | 134 | 338 | 92 |
| **Fluoride (1.5)** | 0.54 | 1.91 | 0.94 | 1.45 | 0.38 |
| **Nitrite (4.0)** | 0 | 0 | 0 | 0 | 0 |
| **Nitrate (44.0)** | 3.04 | 37.51 | 3.67 | 8.49 | 1.02 |
| **Chloride (250)** | 18.68 | 531.72 | 91.67 | 405.76 | 102.88 |
| **Sulphate (500)** | 573.33 | 201.18 | 409.25 | 773.05 | 38.86 |
| **Phosphate** | 0 | 0 | 0 | 0 | 0 |
| **Carbonate (20.0)** | 0 | 0 | 0 | 0 | 0 |
| **Bicarbonate** | 274.5 | 259.86 | 422.12 | 328.18 | 549 |
| **Sodium Carbonate** | 0 | 1032.18 | 0 | 0 | 0 |
| **Sodium Bicarbonate** | 0 | 0 | 188.51 | 0 | 84.54 |
| **Alkalinity** | 225 | 0 | 346 | 269 | 450 |
| **Temp. Hardness** | 225 | 213 | 346 | 269 | 399.68 |
| **Perm. Hardness** | 183.29 | 213 | 87.79 | 375.67 | 0 |
| **Sodium (400)** | 205.35 | 295.02 | 174.18 | 482.67 | 68.97 |
| **Potassium (400)** | 24.38 | 15.75 | 2.91 | 21.66 | 13.26 |
| **Calcium (200)** | 73.33 | 108.34 | 42.02 | 168.62 | 36.42 |
| **Magnesium (100)** | 54.34 | 19.63 | 79.14 | 29.73 | 74.89 |
| **Boron (1.5)** | 0.11 | 4.11 | 0.24 | 7.27 | 0.05 |
| **Total dissolved solids** | 1089.75 | 1345.1 | 1014.9 | 2061.91 | 610.5 |

Salinities were high within the Grootspruit downstream of a tributary carrying stormwater effluent from Evander (S2 and S4), probably containing sewage-related contaminants. These sites also had high levels of mining-related salts and metals, such as boron, chlorides, sulphates. In addition,

 

site S2 had high levels of sodium carbonate, probably as a result of detergents used by residents at the settlement immediately upstream of the site.

The site upstream of Evander (S5) had a far lower salinity and was considered to be only moderately impacted by agriculture and roads.

The two drainage lines (S1 and S2) also had relatively high salinities but this was probably a reflection of natural salinization as a result of evaporation from seasonal water bodies. This is confirmed by the lower chloride levels at these sites (elevated chloride concentrations usually being an indication of contamination from industrial, sewage or agricultural sources). S2 did however have elevated sodium bicarbonate levels, possibly due to poultry farming and other agricultural activities within the sub-catchment.

### *6.2.2 Aquatic Macroinvertebrates*

SASS5 results for Grootspruit aquatic sampling sites are given in Appendix A and summarised below.

**Table 5.** Summary of SASS5 results for the Grootspruit aquatic sampling sites upstream (S5) and downstream (S2 and S4) of the proposed Shondoni dirty water pipeline and powerlines.

| SITE | | S2 | S4 | S5 |
|---|---|---|---|---|
| | pH: | 7.4 | 7.9 | 8 |
| | Cond (mS/m): | 215 | 338 | 93 |
| Biotopes | Stones | 2 | 1 | 1 |
| Rated 1-5 | Aquatic vege | 0 | 0 | 0 |
| | Marginal vege | 4 | 3 | 3 |
| | Gravel/Sand/Mud | 2 | 3 | 1 |
| | TOTAL No. SASS TAXA | 13 | 11 | 19 |
| | SASS Score | 60 | 51 | 100 |
| | Average Score per Taxon | 4.6 | 4.6 | 5.3 |

The site upstream of proposed developments had a far higher diversity, with more sensitive taxa, than downstream sites. This is because the Grootspruit receives polluted water from a tributary draining from Evander and joining the Grootspruit directly upstream of S4. In addition, contamination from mining activities is evident between sites S4 and S5. Sensitive SASS5 taxa that are lost include atyid shrimps and hydraenid beetles (lost between sites S5 and S4) and dixid midges (absent from the most polluted site, S4). It should be noted that otter spoor were recorded from the Grootspruit, together with crab remains. As such, the macro-invertebrate fauna (especially crabs and shrimps) form an important food source for these animals and the system should be managed with this in mind.

Site S5 was considered Category B (Largely Natural) for aquatic macroinvertebrates. Site S4 was considered Category C/D (Moderately to Largely Modified), while Sites S2 was classified as Category C (Moderately Modified) for aquatic macroinvertebrates (based on the SASS interpretation guidelines, Dallas 2007).

 

## 6.3 Sensitive Habitats

Other than the delineated wetland areas discussed above, no further sensitive habitats or protected areas are known to occur within close proximity to the affected area.

## 6.4 Monitoring Plan

In terms of a water quality and biomonitoring plan it is recommended that monitoring focus on the Shondoni Spruit where the impacts will be concentrated and are most likely to lead to deterioration. Biomonitoring and water quality monitoring within the larger Grootspruit and Waterval River are unlikely to be of much use as the impacts associated with the proposed activities are unlikely to be noticed within the already largely modified habitats of these systems, and if changes are noticed, it might be difficult to find the source of the changes due to the range of activities and pollution sources within the catchments of these larger systems.

Water quality and biomonitoring is thus recommended for the Shondoni Spruit only. The following should be done within the Spruit downstream of all proposed activities. SASS5 biomonitoring should be done in the Shondoni Spruit if possible, otherwise in the Grootspruit immediately below the confluence with the Shondoni Spruit.

| Variables | Target endpoint | Frequency |
|---|---|---|
| EC, pH, TDS, major anions and cations. | No sudden spikes in salinity should be detected and it is recommended salinity should not increase by more than 15%, as per the DWAF guidelines for aquatic ecosystems (DWAF 2005), or as prescribed by DWA. | Monthly |
| ICP-MS scans for metals | Compliance with DWAF guidelines for aquatic ecosystems (2005), or as prescribed by DWA. | Monthly |
| Visual inspections of pipeline to detect leaks | All leaks immediately detected and repaired. | Monthly |
| SASS5 | No further loss of sensitive species; and PES category should not drop more than one level. | Biennially |

# 7. REFERENCES

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# EIA AMENDMENT CONSULTATION PROCESS

**Shondoni EIA Amendment – Public Participation**

**27th of August 2012**

JMA Consulting together with Tholeka Mafanya from Sasol Mining held a meeting with the relevant Ward Councillors of Wards 4, 8, 12, 13, 19 and 31 at the eMbalenhle Municipality. During this meeting the following documentation were made available to them for review and commenting:

1. The formal submission letter to the Department of Economic Development, Environment and Tourism (DEDET)
2. The formal Application Form for the Amendment of Environmental Authorisation
3. A Certified Copy of the granted EIA Authorisation before the amendment.
4. Copies of the following specialist studies: Noise Study, Heritage Study, Wetland Study
5. A Comment form for their use.

During this meeting JMA explained the Amendment proses and documentation made available to them. Afterwards they were given the opportunity to raise issues, concerns and ask questions. The following was recorded at the meeting:

The ward councillors present at the meeting held on the 27th of August 2012 at the eMbalenhle Municipality raised the following issues and agreed that they would like the following from Sasol for the Shondoni EIA Amendment for the Conveyor Route project:

- Establishment of a forum (which its members will mostly be the councillors or community members) that will serve as the communication channel between the project team/ personnel and the community during the construction phase. Community concerns can be communicated to this forum and ultimately to the Shondoni Project team.
- If the forum mentioned above is not possible, a community liaison officer whom will be onsite to address any queries/ concerns that the community might have during construction phase will need to be appointed.
- They would further like the commencement date for the construction phase of the project to be announced/made known to them (ward councillors) so that the communities can be informed on time.
- They raised the issue of dust pollution and wanted to know if they are going to be affected by it?
- The affected landowners (by the conveyor route) must be consulted directly.
- A 2 week (14 days) commenting period on the documents they received was requested as they will consult relevant and knowledgeable people on the subject matter.
- The next meeting will be held at the eMbalenhle Municipality on the **10th of September 2012 @ 13h00**. Feedback will be given by the different Ward Councillors regarding the project.

**04th of September 2012**

JMA consulted with the occupants Houses 1, 2 and 3 separately as identified on the map. During this consultation the following documentation were made available to them for review and commenting:

1. The formal submission letter to the Department of Economic Development, Environment and Tourism (DEDET)
2. The formal Application Form for the Amendment of Environmental Authorisation
3. A Certified Copy of the granted EIA Authorisation before the amendment.
4. Copies of the following specialist studies: Noise Study, Heritage Study, Wetland Study
5. A Comment form for their use.

During this consultation JMA explained the Amendment proses and the documentation mentioned above. Afterwards they were given the opportunity to raise issues, concerns and to ask questions. The following was recorded at the meetings:

**House 1:**

JMA met with the house and property owner and his son as well as the residents living in the house. They were Mr Elphas Mthau, Mr Thomas Villakazi, the property owner and his son, Mr Sibusiso Dalcile.

They requested until the 13th of September to go through the documentation and to comment. It was agreed to meet again on the 13th of September at 11h00 to answer questions and to collect the comment forms.

**House 2:**

JMA met with the property owner, Ms Christina Thwala.

After the documentation was explained to her she had no comments and indicated that she was happy with the process to continue.

**House 3:**

During this consultation JMA met the residents which requested JMA not explain the documentation to them at that stage but asked for the documentation in order to study it.

They requested a meeting with JMA and Sasol on the 10th of September at 11h00, for the Siyalenga Committee, which also consist out of the residents of House 3, to be present.

**10th of September 2012**

**House 3:**

JMA Consulting held a meeting with the residents as well as one of the co-owners, of House 3 and the Siyalenga Committee, Lettie Malhala. JMA handed out the same documentation as mentioned earlier. JMA then gave her the opportunity to raise issues and questions.

She requested another meeting at 15h00 on the 13th of September 2012, for the other Siyalinga Committee members to be present.

**Meeting with Ward Councillors:**

JMA Consulting together with Tholeka Mafanya from Sasol Mining held a follow-up meeting with the Ward Councillors of eMbalenhle Municipality, on their request, at the same venue as previous, the eMbalenhle Municipality. Everyone confirmed the date, time and venue and that they would be present, except Councillor Johan Nkosi from Ward 31 who informed JMA of his absence in advance. However after phoning every councillor on the day of the meeting not a single one arrived for the scheduled meeting.

Councillor Johan Nkosi, Ward 31 gave feedback to JMA on the 11/09/2012 stating that they are happy for the project to continue. No feedback was received from any of the other Councillors. They stated that if they had any comments they will submit it before 17h00 on the 10th of September 2012.

**13th of September 2012**

**House 1:**

JMA together with Mr Jacques du Plessis and Mr Rio Kgatle from Sasol mining met at 11h00 on the 13th of September 2012 for a follow up meeting with Mr Mthau and Mr Sibusiso. This was to give them the opportunity to give feedback and to raise any issues and concerns that they might have. Mr Rio Kgatle from Sasol, acted as a translator during the discussion.

After the questions were answered they were happy for the project to continue.

**House 3:**

JMA together with Mr Rio Kgatle from Sasol, who acted as a translator, met with the Siyalinga Committee and residents of House 3. After again explaining the documentation to them they were given the opportunity to ask questions and to fill in the comments form. At the end of the meeting they asked until Monday, 17th of September before submitting the comment forms to JMA.

**Govan Mbeki Municipality:**

JMA met with Mr Rohan Kamesh, Manager of the Physical Development department of the Govan Mbeki Municipality. After explaining the documentation he requested until Monday, 17th of September 2012 before submitting any comments to JMA. Feedback was received from Mr Rohan Kamesh on 21/09/2012. He raised a few issues that he wanted JMA to keep in mind during the process but confirmed that the project can continue. Please see Issues and Response Register for comments.

**Summary:**

The following outcomes were reached during the additional Public Participation Process.

| I&AP's | Consulted on: | Outcomes: | Property owners: |
|---|---|---|---|
| Ward Councillors 4, 8, 12, 13, 19 and 31 | 27th of August 2012 | Requested another meeting. | |
| | 10th September 2012 | Confirmed that project can continue. | |
| House 1: | 04th September 2012 | Requested another meeting. | Mr Elphas Mthau, Mr Thomas Villakazi, Mr Sibusiso Dalcile. |
| | 13th September 2012 | Confirmed that project can continue. | |
| House 2: | 04th September 2012 | Confirmed that project can continue. | Ms Christina Thwala. |
| House 3 and Siyalinga Committee: | 04th September 2012 | Requested another meeting. | Siyalinga Committee, Residents of House 3 |
| | 10th September 2012 | Requested another meeting. | |
| | 13th September 2012 | Confirmed that project can continue. Please see **Issues and Response Register** for comments. | |
| Govan Mbeki Municipality: | 13th September 2012 | Confirmed that project can continue. Please see **Issues and Response Register** for comments. | Mr Rohan Kamesh |

Please find attached the documentation received from the I&AP's during the consultation proses.

# EIA AMENDMENT GRAVE RELOCATION

## Grave Re-location Process

### Protocol followed by Sasol Mining for the Relocation of the Influenced Graves

This protocol was followed for the graves already relocated, and will also be followed for any additional re-locations:

1. Identification and documentation of the graves by counting them, taking photos etc.
2. Appointment of a consultant by Sasol Mining.
3. Consultation Process
    a. The consultation process requires the involvement of the local community through community meetings, advertising in the local newspaper as well as over the radio station. Through this process the goal is to find any possible family members or descendants. If any is located the goal is to obtain their consent and approval for relocating the graves to an area of their choice. When no descendants of family can be found, the graves, which most of the time is unmarked graves, will be handled as "unknown graves" and be relocated to the nearest graveyard.
    b. The public have 30 days to respond and during this 30 day period the applicant, in this case Sasol Mining must make an effort to find any family or descendants.
4. As soon as the consultation with the community and public is completed Sasol Mining must apply for permits for the relocation of the graves from SAHRA and the Provincial Department of Health. This process can take up to three months.
5. As soon as the permits are issued the families are consulted as to what date will suite them for the relocation to take place.
6. After relocation is completed the relevant documentation will be delivered to SAHRA, the client, families and other parties involved.

# EIA AMENDMENT ISSUES & RESPONSE REGISTER

# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

## ISSUES, COMMENTS AND RESPONSE REGISTER

| Authority Meetings: | | | |
|---|---|---|---|
| **Govan Mbeki Municipality, Secunda** | | | |
| **13 September 2012** | | | |
| **NAME** | **COMPANY** | **ISSUES/CONCERNS RAISED** | **RESPONSE FROM JMA** |
| Mr Rohan Kamesh | Govan Mbeki Municipality.<br>Manager: Physical Development | Previous comments are still applicable.<br><br>The following must be taken note of and adhered too:<br>• Dust of the material to be transported on the conveyor belt must be controlled and monitored at all times.<br>• Approved Servitude Diagrams must be submitted to the Municipality.<br>• Grave Sites and exist future grave sites must not be disturbed or divided.<br>• Applicant must comply with ROD conditions.<br>• Applicant needs to comply with the Govan Mbeki Land use Scheme 2010. The conveyor belt falls within the Land use for a utility. As per the Scheme and thus the necessary applications must be submitted to OMM for the affected farm properties. | Noted |
| **Authority Meetings:** | | | |
| **eMbalenhle Ward Councillors** | | | |
| **27 August 2012 and 10 September 2012** | | | |
| **NAME** | **COMPANY** | **ISSUES/CONCERNS RAISED** | **RESPONSE FROM JMA** |
| Ward Councillors Meeting on the 27th August 2012. | eMbalenhle Ward Councillors | The ward councillors present at the meeting held on the 27th of August 2012 at the eMbalenhle Municipality raised the following issues and agreed that they would like the following from Sasol for the Shondoni EIA Amendment for the Conveyor Route project:<br>• Establishment of a forum (which its members will mostly be the councillors or community members) that will serve as the communication channel between the project team/ personnel and the community during the construction phase. Community concerns can be communicated to this forum and ultimately to the Shondoni Project | The requests were noted and send through to SASOL Mining.<br>The required consultation with the affected land owners was done by JMA as indicated below.<br>Sasol will appoint a Liaison Officer on Site as requested. |

| | | | |
|---|---|---|---|
| | | team.<br>• If the forum mentioned above is not possible, a community liaison officer whom will be onsite to address any queries/ concerns that the community might have during construction phase will need to be appointed.<br>• They would further like the commencement date for the construction phase of the project to be announced/made known to them (ward councillors) so that the communities can be informed on time.<br>• They raised the issue of dust pollution and wanted to know if they are going to be affected by it?<br>• The affected landowners (by the conveyor route) must be consulted directly.<br>• A 2 week (14 days) commenting period on the documents they received was requested as they will consult relevant and knowledgeable people on the subject matter.<br>• The next meeting will be held at the eMbalenhle Municipality on the **10th of September 2012 @ 13h00**. Feedback will be given by the different Ward Councillors regarding the project. | |
| Nzama Philisiwe Gracious | Ward Councillor 4 | No comments/concerns received | Noted |
| Tsotetsi Thabo Jimson | Ward Councillor 8 | No comments/concerns received | Noted |
| Mathabe Nick Mzwandile | Ward Councillor 12 | No comments/concerns received | Noted |
| Sibande Elias Stanley | Ward Councillor 13 | No comments/concerns received | Noted |
| Mtsweni Thembinkosi Abram | Ward Councillor 19 | No comments/concerns received | Noted |
| Nkosi Mfanufikile Johan | Ward Councillor 31 | Our interest as community is too seeing local community benefiting in this project through job creation and social development.<br>We have gone through your application for Environmental Authorization establishment for mining activities. As community of above ward 31, we accept and support the proposal as it is. Our concern about noise control is answered on the Report G 952 – R1 that noise study was conducted by ACUSOLV as part of the EIA for Shondoni project. | Noted |
| **Meetings with House 1** | | | |
| **4 September 2012 and 13 September 2012** | | | |
| Mr Sibusiso Jusai Dakile | Owner's son | Yes, I agree that the Shondoni project can continue.<br>As the Shondoni Project will protect everything taking care of the conveyor route not 2 harm anything. | Noted |
| Mr Elphas Mdau | | I am interested in this project. The fence will also protect our cattle. | Noted |
| **Meeting with House 2** | | | |
| **4 September 2012 and 13 September 2012** | | | |
| Ms Christina Thwala | Owner | Confirmed that project can continue | Noted |
| | | | |

| Meeting with House 3 and Siyalinga Committee<br>4 September 2012, 10 September 2012 and 13 September 2012 | | | |
|---|---|---|---|
| Civirehill Mahiaiocivi | Siyalinga Small Scale Farmers Trust | The Siyalinga small scale farmers the co-operation is very much interested to this project because the Siyalinga will develop safety for the cattle's and to these who are stealing from the farm. We want to thank Sasol mining to choice this place for the conveyor route.<br><br>The Siyalinga is commenting about noise, dust, heritage and our cattle and those who are staying in the farm because those are watching our cattle. The Sigalinga is commenting about moving the project to another area and wander where the water will come from.<br>1. The graveyard<br>2. Road<br>3. Fencing<br>4. Noise<br>5. Dust<br><br>We ask Sasol mining to maintain the road and those who are tress passing in the farm<br><br>What about the dolerite because the Siyalinga is getting money to sell the dolerite to the people, please make a plan about this. | Noted |
| Lukas Twala | Siyalinga Small Scale Farmers Trust | I, Mr. Luka Twala. I am interested in the project for making the place to be safe from the people who pass through there every day who stole our cattle and sheep. The project of the conveyor belt will change many things.<br><br>My comments are the noise and dusts, the noise that will cause people not to sleep day and night and the dust.<br><br>What are you going to do about the gravel road and fencing the conveyor belt? It will help us form people steeling and tress passing on our place. We communicate about graveyards and to move it to another place.<br><br>Sasol must try to solve all this problems that it is going to cost. And less noise, dust. Water make a plan about water even for the two houses. | Noted |
| Linah B. Masangu | Siyalinga Small Scale Farmers Trust | It will create jobs for the community of eMbalenhle and to improve economy of the country as well as the imports of goods and service for the benefits of all South Africans.<br><br>Better re-install the fence to avoid people who steal the belonging of the Siyalinga corporation. Try to minimize the dust and the noise so that the community will not be disturbed. Let the livestock on the farm not being affected and killed by some effects based on the project. | Noted |
| Vuyisile Elijan Mahlangu | Siyalinga Small Scale Farmers Trust | I Mr Vuyisile Elijan Mahlangu, I am very much interested in the project as true member of the Siyalinga Small Scale Farmers Trust Project will make changes to the Corporative and develop the Siyalinga Project of farming. The members of the Siyalinga will benefit to this project. | Noted |

| | | | |
|---|---|---|---|
| | | Our comments are about noise, heritage and dust. It is not going to affect the community and the people who are (living) staying on the farm with our cattle and sheep.<br>• We comment on water<br>• Dust<br>• Noise<br>• Graveyards<br>• Roads<br>• Fencing of the Conveyor Route<br><br>We want SASOL Mining to make sure that no one is affected, the community and those who are staying on the farm and the land. We ask SASOL Mining to help us about the House that are near to the Conveyor Belt; maybe they will move the house. | |
| Daniel Vilikazi | Siyalinga Small Scale Farmers Trust | I am Mr. Daniel Vilakazi. I have an interest in this project. It is for the community and for the land owners those who are near to the area where the conveyor will move.<br><br>• We comment about dust.<br>• Noise because the are people who stayed on the farm with cattle, sheep, and our heritage<br>• The graveyard wetland<br>• Fencing of the conveyor belt and the road is not in the good standard<br>• Kraal for the cattle.<br>• Water that is the problem<br>• So move the yard to another area. | Noted |

# EIA AMENDMENT PROOF OF PUBLIC PARTICIPATION

# HOUSE 1

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: Local Resident** (House 1)

**SASOL MINING**
**MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

## Public Participation – Conveyor Route

**ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION**

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 04/09/2012

Time: 07h30

Received by:

NAME:

Date: 04/09/2012

Time: 07h30

Ref: 17/2/2/2/GS - 08

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail: kobus@jmaconsult.co.za**


| | | | |
|---|---|---|---|
| **TITLE** | MR | **FIRST NAME** | Elphas |
| **INITIALS** | E. | **SURNAME** | Mbau |
| **ORGANISATION** | | **E-MAIL ADDRESS** | n/a |
| **POSTAL ADDRESS** | P.O.Box 31 | | |
| **POSTAL CODE** | Lesig 2265 | **CELL PHONE NO** | 0722020252 |
| **TEL NO** | n/a | **FAX NO** | n/a |

***Describe your interest in the project:***

I am interested in this project. My fence will give protect our cattle

***Comments:***

No.

***Signature:*** _____ ***Date:*** 22-09-13

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail: kobus@jmaconsult.co.za**

**Confirmation of Consultation by JMA Consulting:**

I Elphas Mdai, hereby acknowledge that I

AGREE ✓ DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

N/A.

**JMA Consulting explained what the proses is about:**

I Elphas Mdai, hereby acknowledge that I

AGREE X DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

N/A.

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail: kobus@jmaconsult.co.za**

**JMA provided suffiecent time for questions/answers:**

I Ephes Mdu, hereby acknowledge that I

AGREE ☑ DISAGREE ☐

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

I Ephes Mdu, hereby acknowledge that I

AGREE ☑ DISAGREE ☐

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route and that the **proses can continue without any further delay.**

***Comments:***

About the conveyor route

13 Sept 12h00.

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**
Cell 0833729979.
**E-mail:** kobus@jmaconsult.co.za


| | | | |
|---|---|---|---|
| **TITLE** | MR | **FIRST NAME** | Sibusiso Jacqi |
| **INITIALS** | S.J. | **SURNAME** | Dakile |
| **ORGANISATION** | – | **E-MAIL ADDRESS** | – |
| **POSTAL ADDRESS** | eMbalenhle Stand 1580 Ulnite City | | |
| **POSTAL CODE** | 2285 | **CELL PHONE NO** | 0780425290 |
| **TEL NO** | – | **FAX NO** | – |

## *House 1*

***Describe your interest in the project:***

Yes, I agree that the Shondoni project can continue with it's project.

***Comments:***

As the Shondoni project will protect every thing taking care of Conveyor route not 2 harm any thing - it that plat.

***Signature:*** Sibusiso Dakile ***Date:*** 08 September 2012

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail: kobus@jmaconsult.co.za**

**Confirmation of Consultation by JMA Consulting:**

I Sibusiso Tucqi Dakile, hereby acknowledge that I

~~AGREE~~ | DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

**JMA Consulting explained what the proses is about:**

I Sibusiso Tucqi Dakile, hereby acknowledge that I

~~AGREE~~ | DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za

**JMA provided suffiecent time for questions/answers:**

I Sibusiso Jucqi Dakile, hereby acknowledge that I

~~AGREE~~ | DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

I Sibusiso Jucqi Dakile, hereby acknowledge that I

~~AGREE~~ | DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route and that the **proses can continue without any further delay.**

***Comments:***

Shondoni Conveyor Route project

# HOUSE 2

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: Local Resident** (House 2)

**SASOL MINING**
**MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

## Public Participation – Conveyor Route

**ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION**

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 04/09/2012

Time: 08h30

Received by:

C. Shwala
NAME:

Date: 04/9/2012

Time: 08h30

Ref: 17/2/2/2/GS - 08

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za


| | | | |
|---|---|---|---|
| **TITLE** | Ms | **FIRST NAME** | Christina Thwala |
| **INITIALS** | C. | **SURNAME** | |
| **ORGANISATION** | | **E-MAIL ADDRESS** | |
| **POSTAL ADDRESS** | | | |
| **POSTAL CODE** | | **CELL PHONE NO** | 072 90 90059. |
| **TEL NO** | | **FAX NO** | |

## *House 2*

***Describe your interest in the project:***

***Comments:***

***Signature:*** C. Thwala ***Date:*** 04/09/2012

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za

**Confirmation of Consultation by JMA Consulting:**

I Christina Thwala, hereby acknowledge that I

AGREE X DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

**JMA Consulting explained what the proses is about:**

I Christina Thwala., hereby acknowledge that I

AGREE X DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za

**JMA provided suffiecent time for questions/answers:**

I Christina Thwala, hereby acknowledge that I

AGREE (X) DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

I Christina Thwala, hereby acknowledge that I

AGREE (X) DISAGREE

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route and that the **proses can continue without any further delay.**

***Comments:***

# HOUSE 3

# SIYALINGA COMMITTEE

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 10/09/2012

**ATTENTION: Siyalinga Small Scale Farming, Community Project**

**SASOL MINING**
**MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

## Public Participation – Conveyor Route

**ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION**

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 10/09/2012

Time: 12h15

Received by:

LETTIE Mahlaka.
NAME:

Date: 10/09/2012

Time: 12h16.

Cell: 0799369195

Ref: 17/2/2/2/GS - 08

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

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**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: Local Resident** (House 3)

**SASOL MINING**
**MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

## Public Participation – Conveyor Route

### ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 04/09/2012
Time: 08h00

Received by:

NAME: [illegible]

Date: 04/09/2012
Time: 08h00

Ref: 17/2/2/2/GS - 08

MEETING WITH SIYALENGA Committee.
Members. HOUSE NO 3.
13/09/2012.

| Name & Surname. | Contact No. | Signature. |
| --- | --- | --- |
| CHURCHILL MAHUNGU | 0762318402 - | |
| LUKAS TWALA | 0764699206 - | |
| JOHANNES TWANE | 0796070232 - | |
| EPHRIAM KHANYE | — | - KHANYE |
| DANIEL VILIKAZI | 0760956973 - Daniel | |
| MERIAM BOOW | 0796070232 | |
| LEITY MADLALA | 0799369195 | |
| CATHERINE MASANGO | 0799369195 | |
| Lobus du Plessis | 083 3729979 | |
| Rio Kgatle | 0795057942 | |

10th Sept 11hoo. Meeting

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**
Cell: 083 372 9979
**E-mail:** kobus@jmaconsult.co.za


| | | | |
|---|---|---|---|
| **TITLE** | MR | **FIRST NAME** | CHIPOH |
| **INITIALS** | C. E | **SURNAME** | MAHLANGU |
| **ORGANISATION** | Siyalinga C.C | **E-MAIL ADDRESS** | |
| **POSTAL ADDRESS** | P. O. Box 890 | | |
| **POSTAL CODE** | 2285 | **CELL PHONE NO** | 0760231840 2 |
| **TEL NO** | 017 685 1270 | **FAX NO** | |

## House 3

***Describe your interest in the project:***

THE SIYALINGA SMALL SCALE Farmers. the Co-operative IS very much Intrested to this project because the Siyalinga will develop Safety for the Cattles and to those who are Staying from the farm We Want to thank Sasol mining to put Choice this Place for the Conveyor Route.

***Comments:***

THE SIYALINGA IS COMMENting about, Noise Dust, Heritage. and Our Cattles and those WHO are Staying in the farm because those are watching our Cattles. The Siyalinga IS Commenting about moving the yard to another area and Water WHE the water will come from.

1. the Graveyard
2. Road
3. Fencing
4. Noise
5. Dust

We ask Sasol mining maintain the Road and those who are trespassing in the farm

6. WHAT ABOUT the dolivate because the Siyaling IS Geting money to sell the dolivates to the people Please make a plan about this

***Signature:*** _____ ***Date:*** 14-09-2012

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za


| | | | |
|---|---|---|---|
| **TITLE** | Mr | **FIRST NAME** | LUKA |
| **INITIALS** | L | **SURNAME** | TWALA |
| **ORGANISATION** | Siyalingga Small Scale | **E-MAIL ADDRESS** | |
| **POSTAL ADDRESS** | P.O. Box | | |
| **POSTAL CODE** | 2285 | **CELL PHONE NO** | |
| **TEL NO** | | **FAX NO** | |

***Describe your interest in the project:***

I Mr LUKA TWALA I am Intrested to the project for the making first place to be Safe and for the people who pass ther everyday the Stock Cattles, Sheeps. the project of the Conveyor belt will change many thing

***Comments:***

My comments is the Noise and Dust. the noise that will Disturb people not to Sleep days and night and Dust from the machines.

What you gonna do about the Gravel road and Recycle the Conveyor belt it will help us for Sleeping and Trespassing to our place

We Demanda about Graveyards and to move the first to another place

## Sasol must try make Solve all this problems first is gonna cost our lives more Dust. Water maybe a plan about water cron the two horses.

***Signature:*** _____ ***Date:*** 15-09-2012

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**

**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za

| | | | |
|---|---|---|---|
| **TITLE** | MS | **FIRST NAME** | LINAH B. |
| **INITIALS** | L.B | **SURNAME** | MASANGU |
| **ORGANISATION** | SIYALINGA | **E-MAIL ADDRESS** | bangiswenimasangu@yahoo.com. |
| **POSTAL ADDRESS** | P.O. BOX 2446 EMBALENHLE | | |
| **POSTAL CODE** | 2285 | **CELL PHONE NO** | 072 897 4601 |
| **TEL NO** | | **FAX NO** | |

***Describe your interest in the project:***

IT WILL CREATE JOBS FOR THE COMMUNITY OF EMBALENHLE AND TO IMPROVE ECONOMY OF THE COUNTRY AS WELL IN THE IMPORTS OF GOODS AND SERVICE FOR THE BENEFITS OF ALL SOUTH AFRICANS.

***Comments:***

BETTER RE-INSTALL THE FENCE TO AVOID PEOPLE WHO STEAL THE BELONGS OF SIYALINGA CORPORATIVE. TRY TO MINIMISE THE DUST AND THE NOISE SO THAT THE COMMUNITY WILL NOT BE DISTURBED IN THE FARM
LET THE LIVESTOCK NOT BEING AFFECTED AND KILLED BY SOME EFFECTS BASED ON THE PROJECT.

***Signature:*** _____ ***Date:*** 14-09-12

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za


| | | | |
|---|---|---|---|
| **TITLE** | MR | **FIRST NAME** | VUYISILE ELIJAH |
| **INITIALS** | V. E. | **SURNAME** | MAHLANGU |
| **ORGANISATION** | CLOSE CORPORATIVE | **E-MAIL ADDRESS** | |
| **POSTAL ADDRESS** | P. O. Box 2446 | | |
| **POSTAL CODE** | 2285 | **CELL PHONE NO** | 0762318402 |
| **TEL NO** | | **FAX NO** | |

***Describe your interest in the project:***

I MR VUYISILE ELIJAH MAHLANGU I am VERY MUCH INTRESTED TO THIS PROJECT AS THE MEMBER OF THE SIYALINGA SMALL SCALE FARMERS THIS PROJECT WILL MAKE CHANGES TO THE CORPORATIVE AND DEVELOP THE SIYALINGA PROJECT OF FARMING. THE MEMBERS OF THE SIYALINGA WILL BENEFIT TO THIS PROJECT.

***Comments:***

We Comments about Noise and Heritage Dust. IS not Gonna affect the Community, People who are (living) Staying in that farm Our Cattles, Sheep

1. We Comment with Water
2. Dust
3. Noise
4. Driveyard
5. Road
6. FENCING OF the Conveyor Belt

And We Want the Sasol mining make Sure that no one IS affected the Community and Those who Stayed in the Farm and the Not lands

and those House. We ask Sasol mining to Help us about the Houses that are near to the Conveyor Belt., mybe they will move the Houses

***Signature:*** _____ ***Date:*** 14-09-2012

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail:** kobus@jmaconsult.co.za


| | | | |
|---|---|---|---|
| **TITLE** | MR | **FIRST NAME** | DANIEL |
| **INITIALS** | D. | **SURNAME** | VILAKAZI |
| **ORGANISATION** | SIYALINGA SMALL SCALE | **E-MAIL ADDRESS** | |
| **POSTAL ADDRESS** | P.O BOX 20446 | | |
| **POSTAL CODE** | 2285 | **CELL PHONE NO** | |
| **TEL NO** | | **FAX NO** | |

***Describe your interest in the project:***

I MR DANIEL VILAKAZI I HAVE INTEREST IN THIS PROJECT IS FOR THE COMMUNITY AND ZERO FIVE LAND OWNERS THOSE WHO ARE NEAR TO THE ROUTE WHERE THE CONVEYOR WILL HAVE

***Comments:***

1. We comment about Dust
2. Noise because the are people who stayed in the Farm and our Cattle, Sheep, and our Heritage
3. The Graveyard wetland
4. Fencing of the Conveyor belt and the road is not in the good Standard
5. Kraal For the Cattle;
6. Water that is the yard
7. To move the yard to another area

***Signature:*** Daniel Vilakazi ***Date:*** 15-09-2012

# eMBALENHLE

# WARD COUNCILLORS

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: WARD 8**

# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

## Public Participation – Conveyor Route

## ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 27/08/2012
Time: 13h00

Received by:

THABO ISAIETSI
NAME:
Councillor of Ward 8

Date: 27/08/2012
Time: 13h05

Ref: 17/2/2/2/GS - 08

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: WARD 12**

# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

## Public Participation – Conveyor Route

## ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 27/08/2012

Time: 13h00

Received by:

Nick M Mathabe
NAME:
Councillor of Ward 12

Date: 27 August

Time: 13h05

Ref: 17/2/2/2/GS - 08

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: WARD 13**

# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

## Public Participation – Conveyor Route

### ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 27/08/2012

Time: 13h00

Received by:

NAME:
Councillor of Ward 13

Date: 27-08-2012

Time: 13:06

Ref: 17/2/2/2/GS - 08

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: WARD 19**

# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

## Public Participation – Conveyor Route

## ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 27/08/2012

Time: 13h00

Received by:

THEMBA MTSWENI
NAME:
Councillor of Ward 19

Date: 27/08/2012

Time: 13:15

Ref: 17/2/2/2/GS - 08

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 13/09/2012

**ATTENTION: WARD 31**

# SASOL MINING
# MIDDELBULT (BLOCK 8)
# SHONDONI PROJECT

## Public Participation – Conveyor Route

### ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

Kobus du Plessis
JMA Consulting (Pty) Ltd

Date: 27/08/2012

Time: 13h00

Received by:

JOHAN NKOSI
NAME:
Councillor of Ward 31

Date: 27/08/2012

Time: 13:05

Ref: 17/2/2/2/GS - 08

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail: kobus@jmaconsult.co.za**


| | | | |
|---|---|---|---|
| TITLE | Mr | FIRST NAME | Johan |
| INITIALS | M.J. | SURNAME | Nkosi |
| ORGANISATION | GMM | E-MAIL ADDRESS | |
| POSTAL ADDRESS | | | |
| POSTAL CODE | | CELL PHONE NO | 0739382492 |
| TEL NO | | FAX NO | |

## *Ward 31*

***Describe your interest in the project:***

Our interest as community is to see local Community benefiting in this project through job creation and social development

***Comments:***

We have gone through your application For environmental Authorisation establishment For Minning activities. AS community OF above ward accept and support the proposal as it is.
Our concern about Noise control is answered on the Report G 952-R1 that noise Study was conducted by Acusolv as part of the EIA for SHONDONI Project.

***Signature:*** _____ ***Date:*** _____

# JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364


*Sustainable Environmental Solutions through integrated Science and Engineering*

## ATTENDANCE REGISTER

| PROJECT : Shondoni EIA Amendment Conveyor Route | VENUE : eMbalenhle Municipality<br>DATE & TIME : 27 August 2012 @ 13:00 |
|---|---|

| Nr | Name | Representing | Postal Address | Fax number | Contact Details | E-mail address | Sign |
|---|---|---|---|---|---|---|---|
| 1 | K du Plessis | JMA | PO Box 883, Delmas, 2210 | 013 665 2364 | Tel: 013 665 1788 | kobus@jmaconsult.co.za | |
| 2 | M. J. Nkosi | GMM | 17482 Embalenhle | | 0739382492 | | |
| 3 | M. M. Mathabe | GM. M | 21233 EMBALENHLE | | 0793470251 | nicksmathabe@gmail.com | |
| 4 | T.J. Tsietsi | GMM C&R | 23141 6931 EMBA | | 0712626775 | t.tsietsi1@live.co.za | |
| 5 | E.S. Sibande | GMM | 10291 EXT 14 | | 0722020447 | | |
| 6 | A. Peens | JMA | P.O. Box 883, Delmas 2210 | | 0795037378 | antonie@jmaconsult.co.za | |
| 7 | T. Mafanya | SASOL | P.O. Box 1015, Secunda | | 0845151824 | thoteka.mafanya@sasol.com | |
| 8 | T. Mkwebu | GMM | P.O. Box 6952, Secunda | 0862128290 | 0826720936 | tantswem@yahoo.com | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |

# GOVAN MBEKI

# MUNICIPALITY

JMA Consulting (Pty) Ltd

15 Vickers Street
Delmas
P O Box 883
Delmas, 2210
Tel (013) 665 1788
Fax (013) 665 2364

*Sustainable Environmental Solutions through integrated Science and Engineering*

JMA/10391

**DELIVERED BY HAND**

Date: 10/09/2012

**ATTENTION:** ~~**Local Resident**~~ Govan Mbeki Municipality.

**SASOL MINING**
**MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

## Public Participation – Conveyor Route

**ACKNOWLEDGEMENT OF RECEIPT/CONSULTATION**

Receipt of the Application for Amendment of Environmental Authorisation is hereby acknowledged (**1 HARD COPY**).

Delivered by:

~~Kobus~~ du Plessis
JMA Consulting (Pty) Ltd

Date: 13/09/2012
Time: 13h50.

Received by: (Manager: Physical Development).

K Roithmann
NAME:

Date: 13/09/2012
Time: 13:55

Ref: 17/2/2/2/GS - 08

**PUBLIC PARTICIPATION PROCESS**
**SHONDONI EIA AMENDMENT**

**SASOL MINING MIDDELBULT (BLOCK 8)**
**SHONDONI PROJECT**

**INTERESTED AND AFFECTED PARTY COMMENT SHEET**
**SEPTEMBER 2012**


**Contact: Kobus du Plessis**
**JMA Consulting (Pty) Ltd**
**P.O. Box 883**
**Delmas, 2210**

**Phone: (013) 665 1788**
**Fax: (013) 665 2364**

**E-mail: kobus@jmaconsult.co.za**


| | | | |
|---|---|---|---|
| **TITLE** | MR. | **FIRST NAME** | KAMESH |
| **INITIALS** | K. | **SURNAME** | ROHAN |
| **ORGANISATION** | GOVAN MBEKI MUNICIPALITY | **E-MAIL ADDRESS** | kamesh.r@govanmbeki.gov.za |
| **POSTAL ADDRESS** | BOX 6826 SECUNDA; PRIVATE BAG X1017, SECUNDA; | 2302 | 2302 |
| **POSTAL CODE** | 2302 | **CELL PHONE NO** | 0844012137 |
| **TEL NO** | 017-620 6075 | **FAX NO** | 017 6313599 |

~~***Local Resident***~~ GOVAN MBEKI MUNICIPALITY

***Describe your interest in the project:***

LOCAL AUTHORITY

***Comments:***

(1) PREVIOUS COMMENTS ARE STILL APPLICABLE
(2) THE FOLLOWING MUST BE TAKEN NOTE OF AND ADHERED TO:
(A) DUST OF THE MATERIAL TO BE TRANSPORTED ON THE CONVEYOR BELT MUST BE CONTROLLED AND MONITORED AT ALL TIMES
(B) APPROVED SERVITUDE DIAGRAMS MUST BE SUBMITTED TO THE MUNICIPALITY.
(C) GRAVE SITES AND EXIST, FUTURE GRAVE SITES MUST NOT BE DISTURBED OR DIVIDED.
(D) APPLICANT MUST COMPLY WITH ROD CONDITIONS.
(E) APPLICANT NEEDS TO COMPLY WITH THE GOVAN MBEKI LAND USE SCHEME 2010. THE CONVEYOR BELT FALLS WITHIN THE LAND USE FOR A UTILITY AS PER THE SCHEME AND THUS THE NECESSARY APPLICATIONS MUST BE SUBMITTED TO COMM FOR THE AFFECTED FARM PORTIONS.

***Signature:*** _____ ***Date:*** 21/9/2012

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**E-mail: kobus@jmaconsult.co.za**

**Confirmation of Consultation by JMA Consulting:**

I KAMESH Roitman, hereby acknowledge that I

AGREE [X] DISAGREE [ ]

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

* SUBJECT To Comments and Conditions THAT MUST BE ADHERED TOO.

**JMA Consulting explained what the proses is about:**

I KAMESH Roitman, hereby acknowledge that I

AGREE [X] DISAGREE [ ]

with the description of the Status of the Sasol Shondoni EIA Amendment for the proposed Conveyor Route.

***Comments:***

* SUBJECT To Comments and Conditions THAT MUST BE ADHERED TOO