mineral resources

Department:
Mineral Resources
**REPUBLIC OF SOUTH AFRICA**

On Sahris
Case ID: 1056

Private Bag X6093, Kimberley, 8300, Tel: (053) 807 1700, Fax: (053) 832 5631
First Floor. Liberty Corner, 29-31 Curry Street, Kimberley 8301

**From:** Directorate: Mineral Regulation: Northern Cape **Date:** 09 January 2012
**Enquiries:** Ms. N.P Shandukani E-Mail:Patricia.shandukani@dmr.gov.za
**Temporal Ref:** NC 30/5/1/3/3/2/1/5008 EM

The Director
South African Heritage Resources Agency
PO Box 4637
CAPE TOWN
8000

AIA included - need to send comments to DMR

**Attention: Mrs Nonofho Ndobochani**

**CONSULTATION IN TERMS OF SECTION 40 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT 2002, (ACT 28 OF 2002) FOR THE APPROVAL OF AN ENVIRONMENTAL MANAGEMENT PLAN FOR MINING PERMIT IN RESPECT OF GRAVEL (BORROW PIT 9, 11 AND 12) ON ERF 1733, ERF 1271 AND ERF 1272 OF THE FARM COLESBERGKOP, SITUATED IN THE MAGISTERIAL DISTRICT OF COLESBERG, NORTHERN CAPE REGION.**

**APPLICANT: SOUTH AFRICA NATIONAL ROAD AGENCY LIMITED (SANRAL)**

Attached herewith, please find a copy of an EMP received from the above-mentioned applicant for your comments.

It would be appreciated if you could forward any comments or requirements your Department may have to this office and to the applicant before the **09 February 2012** as required by the Act.

Consultation in this regard has also been initiated with other relevant State Departments. In an attempt to expedite the consultation process please contact **Patricia Shandukani** of this office to make arrangements for a site inspection or for any other enquiries with regard to this application.

Your co-operation will be appreciated.

.....
**REGIONAL MANAGER: MINERAL REGULATION**
**NORTHERN CAPE REGION**

UWP01/Let-21Dec11

21 December 2011

5008 BP

Regional Manager: Northern Cape
Department of Mineral Resources
Private Bag X6093
KIMBERLEY
8300



Attention: Ms Linah Tshikororo

Dear Ms Tshikororo

**REHABILITATION AND UPGRADING OF SECTION 7 OF NATIONAL ROUTE 9 BETWEEN WOLWEFONTEIN AND COLESBERG: ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THREE ADDITIONAL BORROW PITS**

The approval by the Department of Mineral Resources (DMR)(09 February 2011; Ref: NC 30/5/1/3/3/2/1/1972 EM) of the Environmental Management Plan (EMP) for sourcing of material for the above project has reference.

The road rehabilitation and upgrade project commenced in March 2011 and the project team has since identified a shortage in suitable construction material. The South African National Roads Agency Limited (SANRAL) is now proposing to extend a further three existing borrow pits to source material. The borrow pits are required for fill and base material for the rehabilitation of the road section and for the construction of a grade-separated interchange at the town of Colesberg. It is expected that only two borrow pits would be required, however, SANRAL is seeking approval for all three in the event that insufficient material is available.

Please find enclosed six copies of the Environmental Management Programme (EMP) compiled for this project. The document is submitted in compliance with the Minerals and Petroleum Resources Development Act (No. 28 of 2002).

The EMP will be distributed to affected landowners and all Interested and Affected Parties on the project database for a 30-day review and comment period, which is to run concurrently with the period during which DMR would request comments from other authorities. Any comments received on the EMP will be forwarded directly to DMR for consideration.

As construction is currently underway, it is requested on behalf of SANRAL that the EMP be dealt with at your earliest convenience in order for SANRAL to keep to the anticipated project programme. Please do not hesitate to contact our Ms Eloise Costandius or the undersigned should you have any queries.

Yours sincerely

Jonathan Crowther Pr.Sci.Nat., CEAPSA
**CCA ENVIRONMENTAL (PTY) LTD**

Encl.

c.c. N Brink, SANRAL
A Skea, UWP Consulting

UWP01col(2)/corr/Let DMR – submission of EMP (Dec11)

CCA ENVIRONMENTAL (Pty) Ltd • Consulting Services
Unit 35 Roeland Square 30 Drury Lane Cape Town 8001 • PO Box 10145 Caledon Square 7905
Tel +27 (21) 461 1118/9 • Fax +27 (21) 461 1120 • email: info@ccaenvironmental.co.za • website: www.ccaenvironmental.co.za
Directors: J Crowther F Fredericks • Associate: J Blood • Reg No 2003/019026/07

**PLEASE FAX THIS PAGE BACK TO US AT +27 21 461 1120 OR EMAIL TO mandy@ccaenvironmental.co.za**

# ACKNOWLEDGEMENT OF RECEIPT

**REHABILITATION AND UPGRADING OF SECTION 7 OF NATIONAL ROUTE 9 BETWEEN WOLWEFONTEIN AND COLESBERG: ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THREE BORROW PITS**

**6 HARD COPIES**
**1 CD**

**Received by (print name):** Tony Olyn **for (DEPARTMENT OF MINERAL RESOURCES)**

**Signature:** _____

**Date:** 09/01/12

Documents received in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)
NORTHERN CAPE REGION
09 JAN 2012
MINISTRY
Signature:
DEPARTMENT OF MINERAL RESOURCES

**Company Stamp**

cca ENVIRONMENTAL

UWP CONSULTING

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD

REGISTRATION NO. 1998/009584/06

Bergstan South Africa
Consulting and Development Engineers (Pty) Ltd

# REHABILITATION AND UPGRADING OF SECTION 7 OF NATIONAL ROUTE 9 BETWEEN WOLWEFONTEIN AND COLESBERG

# ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE EXPANSION OF THREE ABANDONED BORROW PITS

Prepared for:
**Department of Mineral Resources**

On behalf of:
**South African National Roads Agency (State Owned Company) Limited**

Prepared by:
**CCA Environmental (Pty) Ltd**

cca ENVIRONMENTAL

UWP CONSULTING

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC

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Bergstan South Africa
Consulting and Development Engineers (Pty) Ltd

# REHABILITATION AND UPGRADING OF SECTION 7 OF NATIONAL ROUTE 9 BETWEEN WOLWEFONTEIN AND COLESBERG

# ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE EXPANSION OF THREE ABANDONED BORROW PITS

Prepared for:
**Department of Minerals and Energy**
**Private Bag X6093**
**KIMBERLEY**
**8300**

On behalf of:
**South African National Road Agency (State Owned Company) Limited**
**Private Bag X19**
**Bellville**
**7530**

Prepared by:
**CCA Environmental (Pty) Ltd**
**Unit 35 Roeland Square, Drury Lane**
**CAPE TOWN, 8001**
**Tel: (021) 461 1118 / 9 Fax (021) 461 1120**
**E-mail: eloise@ccaenvironmental.co.za**

cca ENVIRONMENTAL

# Undertaking

I, Mr N Brink, representing the applicant South African National Road Agency (State Owned Company) Limited (SANRAL), hereby declare that the information contained in this document is true, complete and correct. I undertake to implement the measures as described herein. I understand that this undertaking is legally binding and that failure to give hereto will render me liable for prosecution in terms of Section 98 (b) and 99 (1)(g) of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002). I am also aware that the Regional Manager may, at any time but after consultation with me, make such changes to this plan as he/she may deem necessary.

Signed on this ...**14th**.....day of .....**December**..... 2011 at Cape Town.

Signature of Applicant

# PROJECT INFORMATION

| | |
|---|---|
| TITLE | Rehabilitation and upgrading of Section 7 of National Route 9 between Wolwefontein and Colesberg: Environmental Management Programme for the proposed extension of three abandoned borrow pits in the Colesberg area |
| | |
| APPLICANT | South African National Roads Agency Limited (SANRAL) |
| | |
| ENVIRONMENTAL CONSULTANTS | CCA Environmental (Pty) Ltd |
| | |
| REPORT REFERENCE | UWP01COL/EMP/ADDITIONAL BORROW PITS |
| | |
| REPORT DATE | 14 DECEMBER 2011 |

**REPORT COMPILED BY:** Eloise Costandius

Eloise Costandius Pr.Sci.Nat.
Environmental Scientist

**REPORT REVIEW BY:** Jonathan Crowther

Jonathan Crowther Pr.Sci.Nat.; CEAPSA
Managing Director

# EXPERIENCE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

| | |
|---|---|
| **NAME** | Eloise Costandius |
| **RESPONSIBILITY ON PROJECT** | Project consultant and report compilation |
| **QUALIFICATIONS** | B.Sc. Hons (Zoo.), M.Sc. (Ecol. Ass.) |
| **PROFESSIONAL REGISTRATION** | Pr.Sci.Nat. |
| **EXPERIENCE IN YEARS** | 6 |
| **EXPERIENCE** | Eloise Costandius has worked as an environmental assessment practitioner since 2005 and has been involved in a number of projects covering a range of environmental disciplines, including Faunal Specialist Studies, Basic Assessments (BA), Environmental Impact Assessments (EIA) and Environmental Management Plans (EMP). She has gained experience in a wide range of projects relating to mining (e.g. oil exploration and borrow pits), infrastructure projects (e.g. roads), and housing and industrial developments. |

| | |
|---|---|
| **NAME** | Jonathan Crowther |
| **RESPONSIBILITY ON PROJECT** | Project management and report compilation |
| **QUALIFICATIONS** | B.Sc. Hons (Geol.), M.Sc. (Env. Sci.) |
| **PROFESSIONAL REGISTRATION** | Pr.Sci.Nat., CEAPSA |
| **EXPERIENCE IN YEARS** | 23 |
| **EXPERIENCE** | Jonathan Crowther has been involved in environmental consulting since 1988 and is currently the Managing Director of CCA Environmental (Pty) Ltd. He has expertise in a wide range of environmental disciplines, including Environmental Impact Assessments (EIA), Environmental Management Plans / Programmes, Environmental Planning & Review, Environmental Auditing & Monitoring, Environmental Control Officer, Public Consultation & Facilitation. He has project managed and has extensive experience in a range of projects with specific expertise in the oil and gas industry, infrastructure (roads, pipelines, waste land fill sites), industry and property developments. |

# TABLE OF CONTENTS

# PART A:

# GENERAL INTRODUCTION

# A1 BACKGROUND

The South African National Roads Agency (State Owned Company) Limited (SANRAL) received approval from the Department of Environmental Affairs (DEA) to upgrade and rehabilitate Section 7 of the N9 between Wolwefontein and Colesberg on 06 July 2010. The project involves the rehabilitation of the existing road surface, repairs to structures and minor ancillary works (km 63.63 to km 94.84), as well as the addition of 2.5 m surfaced shoulders from km 63.63 to km 81.20. The project also entails the construction of a new grade separated interchange to improve safety at the N1/N9 intersection.

Eight borrowpits were initially identified as sources of material for the road upgrade and rehabilitation project. These were approved by the Department of Mineral Resources (DMR) on 14 February 2011. However, as these borrow pits have not been able to provide sufficient fill material it has since become necessary to identify additional borrow pits. Three additional borrow pits in have thus been identified in the Colesberg area as potential sources for material to make up the shortfall (see Table A1 and Figure A1).

UWP Consulting (Pty) Ltd (UWP) and Bergstan South Africa Consulting and Development Engineers (Pty) Ltd (Bergstan), have been appointed by SANRAL to undertake the engineering design for the road upgrade and associated borrow pits.

UWP, in turn, has appointed CCA Environmental (Pty) Ltd (CCA) to act as an independent environmental consultant to compile the necessary Environmental Management Programme (EMP) and undertake the associated Public Participation Process for the three additional borrow pits in terms of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002) (MPRDA).

**Table A1: Additional three borrow pit sites.**

| Borrow pit No. | Location | Co-ordinates | | Size (ha) |
|---|---|---|---|---|
| | | Latitude (S) | Longitude (E) | |
| 9 | Km 5.0 (LHS) along Divisional Road (DR) 3080 | 30°41.515' | 25°03.060' | 2.8 |
| 11 | Km 0.9 (LHS) along the Oorlogspoort Road | 30°46.016' | 25°05.701' | 4.94 |
| 12 | Km 89.8 (RHS) along the N9 | 30°46.742' | 25°05.089' | 2.88 |

# A2. STRUCTURE OF REPORT

This report consists of four parts, the contents of which are outlined below.

| | |
|---|---|
| **Part A** | **General Introduction**<br>Provides the background to the project; the structure to the report; the study approach and methodology for the EMP; and a general description of the surrounding environment. |
| **Part B** | **Borrow Pits**<br>Provides a description of the surrounding environment and impact assessment for the three proposed borrow pits. |
| **Part C** | **Environmental Management Programme**<br>Presents the EMP for all three proposed borrow pits. |
| **Part D**<br>Appendix 1 | **Appendices to the Report**<br>Public Participation Information |

| | |
|---|---|
| Appendix 2 | Convention for Assigning Significance Ratings to Impacts |
| Appendix 3 | Specialist Report: Vegetation |
| Appendix 4 | Specialist Report: Archaeology |

# A3. APPROACH AND METHODOLOGY

This section provides a description of the legislative framework within which this EMP was compiled and outlines the methodology and public participation process followed in the study.

## A3.1 LEGISLATIVE FRAMEWORK

This section provides a description of the legislation of direct relevance to the project.

### A3.1.1 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002

The MPRDA provides for the control of mining activities, such as the development of borrow pits, and prevents any mining activity without the appropriate right and/or permit as issued by the Minister of Mineral Resources. Such right and/or permit may only be issued once there has been compliance with the regulations promulgated in terms of the MPRDA.

Government Notice R762 (GN R762), in terms of Section 106(1) of the MPRDA, exempts any organ of state (such as SANRAL) from applying for such rights and/or permits. However, in terms of Section 106(2), organs of state must submit an EMP for approval by the Minister in terms of Section 39(4). Section 39(3) sets out the minimum required information that must be contained in such an EMP, including baseline information regarding the affected environment, an assessment of the potential impacts of the proposed activity, as well as measures to mitigate and rehabilitate the potential impacts.

This study has been undertaken in accordance with the requirements of the Regulations promulgated in terms of the MPRDA.

### A3.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998

The Environmental Impact Assessment (EIA) Regulations, 2010 promulgated in terms of Chapter 5 of the National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA) provide for the control of certain activities that are listed in Government Notices (GN) No. R544, R545 and R546. Activities listed in these notices must comply with the regulatory requirements listed in GN No. R543, which prohibits such activities until written authorisation is obtained from the competent authority. Such environmental authorisation, which may be granted subject to conditions, will only be considered once there has been compliance with the EIA Regulations, 2010. GN No. R543 sets out the procedures and documentation that need to be complied with in undertaking an EIA.

None of the proposed three borrow pits are considered listed activities in terms of GN Nos. R544, R545 or R546. Therefore, no Basic Assessment or Scoping and EIA process is required.

### A3.1.3 NATIONAL HERITAGE RESOURCES ACT, 1999

Section 38(1) of the National Heritage Resources Act, 1999 (No. 25 of 1999) (NHRA) lists development activities that would require authorisation by the responsible heritage resources authority. The activity applicable to the proposed project is the following:

*"(c) Any development or other activity which will change the character of a site:*
*(i) exceeding 5 000 $m^2$ in extent."*

The NHRA requires that a person who intends to undertake a listed activity notify the relevant provincial heritage authority at the very earliest stages of initiating such a development. The relevant provincial heritage authority would then in turn, notify the person whether a Heritage Impact Assessment Report should be submitted. However, according to Section 38(8) of the NHRA, a separate report would not be necessary if an evaluation of the impact of such development on heritage resources is required in terms of any other applicable legislation. The decision-making authority should, however, ensure that the heritage evaluation fulfils the requirements of the NHRA and take into account in its decision-making any comments and recommendations made by the relevant heritage resources authority.

An archaeological study has been undertaken in compliance with the NHRA and submitted to the South African Heritage Resources Agency (SAHRA) for comment. Comment will be forwarded to DMR upon receipt.

## A3.2 EMP METHODOLOGY

### A3.2.1 SPECIALIST STUDIES

Dr Paul Malan of the University of the Free State and Mr Jonathan Kaplan of the Agency for Cultural Resource Management were commissioned to assess the potential impact on the vegetation and archaeology, respectively. Dr Malan and Mr Kaplan undertook separate site visits on 24 February 2011 and 29 March 2011, respectively.

The specialists gathered data relevant to assessing the potential environmental impacts that may occur as a result of the proposed borrow pit expansions. Impacts were assessed according to pre-defined rating scales (see Appendix 2). The specialists were also required to recommended appropriate mitigation or control measures to minimise potential impacts. The vegetation and archaeological / cultural heritage specialist studies are presented in Appendices 3 and 4, respectively.

### A3.2.2 PUBLIC PARTICIPATION PROCESS

A list of steps undertaken as part of the Public Participation Process is presented below. All supporting documentation is included in Appendix 1.

- Landowner notification letters were distributed to all three affected landowners. Landowners were asked to complete an acknowledgment form to indicate that they had been made aware of the location and extent of the borrow pits and that access would be required across their respective properties, as well as to raise any issues of concern. Completed acknowledgment forms are presented together with the individual borrow pit chapters under Section B;
- An advertisement notifying the public of the proposed borrow pit development was placed in the Graaff-Reinet & Colesberg Advertiser on 01 April 2011. The advertisement also invited I&APs to comment on the proposed borrow pit development;

- General notification letters, including registration and comment forms, were distributed to 79 registered interested and affected parties (I&APs) for a 30-day comment period;
- Site notices were erected at each of the initially proposed four borrow pit sites. The notices also invited I&APs to comment on the proposed borrow pit development; and
- The archaeology report was submitted to SAHRA for comment.

All written comments received from I&APs are presented in Appendix 1. These comments have been collated into an Issues and Responses Table (see Table A2). Comments received from the relevant landowners are included and responded to in Section B of this report.

**Table A2: Issues and responses table.**

| I&AP | Comment | Response |
|---|---|---|
| Lizelle Gregory on behalf of Engen Petroleum (Pty) Ltd | • Ms Gregory asked that Engen be registered as an I&AP on the project database.<br>• She also asked to be supplied with the relevant applications and reports to be compiled for the proposed project so as to be able to make informed comments.<br>• Ms Gregory stated that she was of the opinion that the proposed borrow pit expansion project was listed in terms of NEMA and required a Basic Assessment/Environmental Impact Assessment to be undertaken. | • Ms Gregory and Mr André du Toit of Engen have been registered on the project database.<br>• All I&APs will be given an opportunity to comment on the full EMP document.<br>• The proposed project entails the expansion of three existing borrow pits of which the expansion sizes fall below the thresholds stipulated in the NEMA EIA Regulations, 2010. Environmental Authorisation is thus not required. |
| Johan Matthee – Colesberg Action Group | Mr Matthee asked to be registered as an I&AP. | Mr Matthee has been registered on the project database. |
| Anele Kheneth Solomon – ANCYL | Mr Solomon asked to be registered as an I&AP. | Mr Solomon has been registered on the project database. |

### A3.2.3 WAY FORWARD

This EMP has been submitted to the Department of Mineral Resources (DMR) for consideration. The Minister must make a decision as to whether the EMP is approved or not within 120 days. When considering the EMP, the Minister must consult with any state department which administers any law relating to matters affecting the environment. These departments are given 60 days from date of request to submit comments. The Minister may request additional information and that the EMP be adjusted accordingly before approval.

# A4. PROJECT DESCRIPTION

## A4.1 MOTIVATION FOR AND BENEFIT OF THE PROPOSED PROJECT

The main motivation for the use of the proposed borrow pits is the supply of material for the rehabilitation of Section 7 of the N9 between Wolwefontein and Colesberg.

As the project would entail the construction of a new grade-separated N1/N9 Interchange, large volumes of fill material would specifically be required for bridge construction. The extension of existing borrow pits for the sourcing of material has been proposed as it would not make financial sense to source material from commercial sources that are located some distance from the construction site.

The rehabilitation of this section of the N9 and construction of a grade-separated interchange at Colesberg would improve road user safety on this currently dangerous section of road and would separate traffic on the N1 and N9 by providing continuity of traffic flow.

## A4.2 BORROW PIT ALTERNATIVES

### A4.2.1 BORROW PITS

A borrow pit investigation was undertaken by UWP and Bergstan in order to identify and investigate additional borrow pit sites in close proximity to Colesberg in order to make up for the anticipated shortfall of material for the road upgrade and rehabilitation project.

The proposal was to, where possible, identify existing borrow pits that could be expanded. Four abandoned borrow pits (Borrow Pits 9 to 12) were initially identified for possible expansion. After further investigation, one of the borrow pits (Borrow Pit 10) was discarded. Although SANRAL is seeking approval for all three remaining borrow pits, only two would in all likelihood be utilised for the project, with the remaining one being considered as an alternative providing a contingency in the event that insufficient material is acquired from the other two borrow pits.

### A4.2.2 MINING METHODS

The borrow pit sites and associated activities and infrastructure shall be carefully planned, to ensure that the footprint is kept to a minimum.

Excavation methods would be used to obtain the required material. Material would be excavated by bulldozer up to ripping strength of the machine. It is not currently envisaged that blasting would be required. If it does become necessary, the landowner and surrounding landowners would be notified well in advance and the appropriate precautionary measures would be taken.

# A5. GENERAL DESCRIPTION OF THE SURROUNDING ENVIRONMENT

This section provides a general description of the key biophysical, cultural/heritage and socio-economic characteristics of the general area. The three proposed borrow pits fall within the Umsobomvu Local Municipality (previously the Colesberg Local Municipality), which forms part of the Pixley Kaseme District Municipality (PKDM).

## A5.1 BIOPHYSICAL ENVIRONMENT

### A5.1.1 CLIMATE

Colesberg is located in the upper Karoo region which is classified as an arid, semi-desert zone with hot summers and cool dry winters. The region has a relatively low rainfall of about 262 mm of rain per year, which falls mainly during the summer months. On average, Colesberg receives the lowest rainfall (2 mm) in August and the highest (52 mm) in March.

The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Colesberg range from 15.2°C in June to 30.5°C in January. Coldest temperatures are experienced during July with an average night-time temperature of 0.9°C.

### A5.1.2 TOPOGRAPHY

The topography of the upper Karoo region is characterised by vast open plains interspersed with numerous hillocks, hills and plateaus with striking rock outcrops known as 'koppies'. Colesberg is surrounded by 'koppies' of which the most well-known is 'Coleskop' which can be seen from a distance of about 40 km when travelling on the N1.

### A5.1.3 GEOLOGY AND GEOMORPHOLOGY

The characteristic Karoo koppie landscape of the Colesberg area is underlain by Late Permian sediments of the Lower Beaufort Group (Adelaide Subgroup) which have been extensively intruded by dolerite sills and dykes of the Early Jurassic (182 Ma) Karoo Dolerite Suite (Almond, 2008).

Current biozonation maps for the Main Karoo Basin show Colesberg as situated within the latest Permian Dicynodon Assemblage Zone (AZ), close to its northern boundary with the slightly older Cistecephalus AZ. Early Triassic sediments of the Lystrosaurus AZ outcrop much further to the south, en route to Middelburg.

The Lower Beaufort sediments were deposited by large-scale meandering river systems flowing northwards from the youthful Cape Fold belt across the extensive floodplains of the ancient Karoo Basin. They mainly comprise bluish-grey, grey-green and rarer purplish overbank mudrocks with subordinate lenticular channel sandstones.

Various types of superficial deposits ("drift") of Late Caenozoic (Miocene / Pliocene to Recent) age occur in the Colesberg area of the Central Karoo. They include pedocretes (e.g. calcretes), colluvial slope deposits (dolerite scree etc), river alluvium, as well as spring and pan sediments. These Central Karoo drift deposits may occasionally contain important fossil biotas, notably the bones, teeth and horn cores of mammals. Other late Caenozoic fossil biotas from these superficial deposits include non-marine molluscs (bivalves, gastropods), ostrich egg shells, trace fossils (eg calcretised termitaria, coprolites), and plant remains such as palynomorphs in organic-rich alluvial horizons and diatoms in pan sediments (Almond, 2008)[1].

### A5.1.4 HYDROLOGY

As the Central and Upper Karoo are characterised by low rainfall the majority of rivers are non-perennial. Rivers and streams flood very quickly after rains as very little water is absorbed into the soil. The rivers are dry for the majority of the year. The largest river in the Colesberg area is the Elands River, which is non-perennial and located approximately 32 km south of Colesberg.

No natural surface water is found on or near any of the proposed borrow pit sites. Few dams are to be found in the area as evaporation quickly dries them out. Many farmers have watering troughs for their livestock, with wind pumps pumping water from aquifers. Due to heavy summer rains experienced during early 2011, rainwater were found to have accumulated in the existing excavations at Borrow Pits 11 and 12.

[1] ALMOND, J.E. 2008. Colesberg Road Upgrade Project Palaeontological Impact Assessment (*Natura Viva* cc). Compiled for CCA Environmental (Pty) Ltd.

### A5.1.5 VEGETATION

The vegetation type found around the town of Colesberg is classified as Eastern Upper Karoo. According to Mucina and Rutherford (2006) the Eastern Upper Karoo has the largest mapped area of all vegetation units in South Africa. The vegetation is, therefore, known for its diverse number of different species. The vegetation type is characterised by a mixture of grass and shrub species. A few common shrubs include *Pentzia incana*, *Eriocephalus ericoides*, *E. spinescens* and *Hermannia* spp. and grasses, such as various *Aristida* and *Eragrostis* species.

Vegetation on the distinctive rocky outcrops around Colesberg is classified as Besemkaree Koppies Shrubland (Mucina & Rutherford, 2006)[2] and can include species such as *Lightfootia nodosa* (muistepel), *Felicia muricata* (bloublommetjie), *Aristida diffusa* (iron grass) and *Eragrostis lehmanniana* (Lehmann's love grass).

### A5.1.6 FAUNA

The majority of borrow pits are located within fenced farm grazing land. This means that much of the larger fauna that was once found in the region is not present at the borrow pit sites. Furthermore, although the region was once rich in herds of medium to large buck such as springbok and kudu these have been shot out on most farms and for the most part only small buck remain. Many of the animals are nocturnal to avoid the harsh sun.
The majority of livestock farmed in the area include ostriches, angora goats and sheep.

## A5.2 CULTURAL / HERITAGE ENVIRONMENT

Colesberg was named after Sir Lowry Cole, governor of the Cape of Good Hope between 1828 and 1833. The first people to inhabit the Colesberg district were stone-age hunter-gatherers. They were followed in the early 19th century by 'trekboere', migrant farmers and missionaries.

By 1814, a mission station had been established in the hopes of bringing peace to what was an extremely unruly frontier area of the Cape Colony. By 1820 several huge farms had been established in the district and in 1822 the farmers petitioned for the establishment of a town. The Government granted 18 138 morgen (i.e. approximately 15 536 ha) of land to the Dutch Reformed Church on January 27, 1830, and so Colesberg, named after Sir Lowry Cole, (Governor from 1828 to 1833), was established.

The district of Colesberg was proclaimed on 8 February 1837. It became a municipality in 1840. Over the next 52 years various portions of its territory were separated to form new divisions at Albert and Richmond in 1848, Middelburg in 1858, Hanover in 1876, and Philipstown and Steynsburg in 1889. The division lies on an elevated plateau studded with flat-topped koppies which, in pre-colonial times, was the habitat of vast herds of buck.

Colesberg played a part in the Anglo-Boer War between 1899 and 1900. Various battles took place between the Boer forces and British troops over this period.

Colesberg furthermore has a rich history closely linked to the legendary characters of South Africa's diamond industry. John O'Reiley, who purchased the first diamond found in South Africa from its owner, Schalk van Niekerk, took it to Colesberg for testing. It was used to scratch "DP", the initials of Draper and Plewman, a

[2] MUCINA, L. & RUTHERFORD, M.C. (eds), 2006. The vegetation of South Africa, Lesotho and Swaziland. *Sterlitzia* 19. South African National Biodiversity Institute, Pretoria.

store which still exists, on the shop's window. Once the stone passed this test, it was sent to Dr Guybourne Atherstone, a well-known geologist. He confirmed it was a diamond and so started "The Diamond Rush".

An archaeological investigation of the proposed borrow pits in the Colesberg area did not produce any artefacts of any significant heritage value. Pre-colonial Stone Age artefacts were found at some of the borrow pits investigated, but the remains are rated as having low local archaeological significance. Findings included several Early and Middle Stone Age (MSA) quartzite and dolerite flakes, chunks and cores. All of these were documented in a disturbed context.

## A5.3 REGIONAL SOCIO-ECONOMIC ENVIRONMENT

The Umsobomvu Municipal area has a population of 23 636. The race group composition of the Umsobomvu Municipal area is 58.7% Black African, 34.2% Coloured, 7% White and 0.1% Indian/Asian. The age distribution is 40.5 % under the age of 18, 28.6 % between the ages of 18 and 35, 26.1% between the ages of 36 and 65 and 4.8% over the age of 65.

The education levels obtained by adults over the age of 20 years are 26.6% with no schooling, 23.5% with some primary schooling, 7.3% with complete primary schooling, 24.9% with some secondary schooling, 12.5% with Grade 12 and only 5.2% with higher schooling.

Of the population 29% are employed, 31% unemployed and the rest are not economically active.

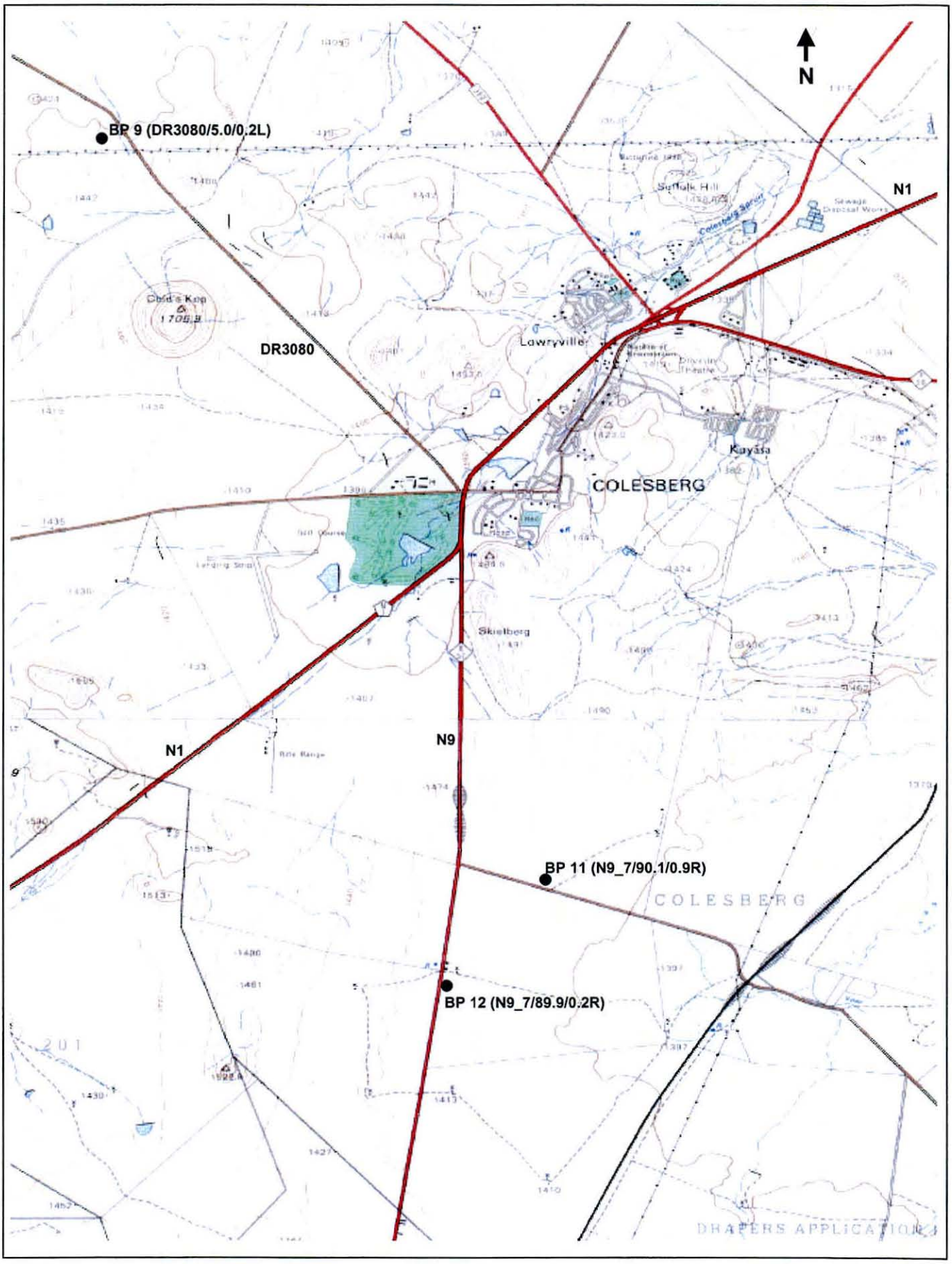



**Figure A1: Locality of the three proposed borrow pit sites.**

# PART B:

# INDIVIDUAL BORROW PITS

# BORROW PIT 9 (DR3080/5.0/0.2L)

# B9 BORROW PIT 9 (DR3080/5.0/0.2L)

## B9.1 PART 1: BRIEF PROJECT DESCRIPTION

### B9.1.1 MINE OWNER AND MINE MANAGER/RESPONSIBLE PERSON

SANRAL has appointed Basil Read as the contractor to undertake the excavation of the proposed borrow pit as part of their current contract to rehabilitate Section 7 of the N9 between Wolwefontein and Colesberg.

### B9.1.2 NAME AND ADDRESS OF THE APPLICANT FOR PROSPECTING PERMIT OR MINING AUTHORISATION

*Applicant:* South African National Roads Agency Limited
*Contact person:* Mr Nelis Brink
*Address:* Private Bag X19, Bellville, 7530
*Tel:* (021) 957 4600
*Fax:* (021) 946 1630

### B9.1.3 NAME AND ADDRESS OF THE OWNER OF THE LAND AND THE TITLE DEED DESCRIPTION

*Farm name:* Farm Colesbergkop - Erf 1733, Colesberg
*Owner:* Hauman Trust (Contact person: Mr Taillifer Hauman)
*Address:* PO Box 2076, Mossel Bay, 6500
*Tel:* (044) 690 3391
*Title deed information:* T119947/1997
*Size of the property*: 3077.4767 ha

No mineral rights are indicated on the Deed of Transfer.

### B9.1.4 REGIONAL SETTING

Borrow Pit 9 is an extension of an existing borrow area that is located northwest of Colesberg and Coleskop on Farm Colesbergkop. It is accessed from DR3080 wich joins the N1 at the southern entrance to Colesberg (refer to Figures B9.1 and B9.2 and the borrow pit layout plan in Appendix B9.1). Co-ordinates of the proposed borrow pit extension are presented in Table B9.1 below.

**Table B9.1 Co-ordinates of proposed Borrow Pit 9 (DR3080/5.0/0.2L).**

| Borrow pit co-ordinates (WGS84) | | |
|---|---|---|
| | Y | X |
| A | -4715.331 | 3396956.480 |
| B | -4712.008 | 3396743.195 |
| C | -4802.739 | 3396784.246 |
| D | -4842.739 | 3396789.095 |
| E | -4862.739 | 3396789.095 |
| F | -4867.743 | 3396925.095 |
| G | -4870.989 | 3396956.826 |

# B9.2 PART 2: DESCRIPTION OF THE PRE-MINING ENVIRONMENT SPECIFIC TO BORROW PIT 9 (DR3080/5.0/0.2L)

## B9.2.1 CLIMATE

A general description of the climate is presented in Section A5.1.1.

## B9.2.2 GEOLOGY

A general description of the geology is presented in Section A5.1.3. Material to be mined at the borrow pit is sand and schist for fill material.

## B9.2.3 TOPOGRAPHY

The borrow pit site is situated in an area dominated by dolerite rocky outcrops high in the landscape with a gentle to steep north facing slope to the west of the existing excavation. The contours of the area are presented in the borrow pit layout plan in Appendix B9.1.

## B9.2.4 SOIL

The test pit profile shows a topsoil layer of 200 mm. The rest of the soil profile consists of gravelly sand and schist.

## B9.2.5 PRE-MINING LAND CAPABILITY AND LAND USE

The proposed site is an extension of an existing borrow area. The surrounding land is used for grazing of livestock. An Eskom power line and servitude crosses to the southwest of the proposed borrow pit extension site.

## B9.2.6 VEGETATION

The vegetation type at the site is classified as Besemkaree Koppies Shrubland. The vegetation cover is typically apron veld, which is generally in a good condition. The dominant species include *Aristida diffusa* (iron grass) and *Eragrostis lehmanniana* (Lehmann's love grass). The most dominating Karoo bush species is *Selago saxatilis*. *Eriocephalus ericoides* (kapokbos) and *Tragus koelerioides* (carrot seed grass). No rare or endangered plant species were found.

## B9.2.7 FAUNA

The site is currently unfenced and the habitat is largely disturbed. The rocky outcrops to the west of the site provide some shelter for animals from the surrounding flat and open landscape.

## B9.2.8 HYDROLOGY

There is a drainage line approximately 90 m east of the edge of the existing borrow pit excavation It is proposed to extend the borrow pit to the west of the existing excavation. There are no other farm dams or drainage lines in close proximity to the borrow pit site.

## B9.2.9 GEOHYDROLOGY

No ground water was found in the trial pit holes with a general depth of 1.3 m.

### B9.2.10 AIR QUALITY

The air quality in the study area is good. There are no residential dwellings within 1 km of the borrow pit site and it is thus not expected that dust generated by borrow activities would affect the closest residents.

### B9.2.11 NOISE

There are no residential dwellings within 1 km of the borrow pit site and it is thus not expected that noise generated by borrow activities would affect the closest residents.

### B9.2.12 ARCHAEOLOGY AND PALAEONTOLOGY

A low density scatter of stone artefacts was documented on the proposed site. No tools were found over 95% of the proposed footprint area. A few MSA stone flakes and chunks were found on the edge of the excavation, as well as on the excavated floor, of the abandoned borrow area, while a few flake tools and blades were found on a slab of exposed mudstone in the north western portion of the site, alongside an excavation trench. A few flakes and chunks were also found on the rocky slopes below the kopje in the northern portion of the proposed expansion area. The majority of the tools (all MSA) are in highly weathered indurated shale, but a few blades and flakes in `fresh' indurated shale was also found. No paintings or engravings were found on the dolerite kopje overlooking the proposed expansion area. All the remains have been rated as having low local significance (see Appendix 4).

It is possible that palaeontologically significant specimens of fossil tetrapods, vascular plants and trace fossils may occur within the excavated mudstone at the borrow pit site. Where practicable, any finds should be accurately recorded and carefully removed together with the surrounding matrix, labled and handed over to a professional palaeontologist for examination. In this regard the Colesberg Museum could be of assistance. Should substantial skeletal material be discovered (*eg* the articulated skeleton of a Karoo "reptile") SAHRA should be notified. Fossil specimens that are not of research interest could be usefully donated to the Colesberg Museum for educational purposes.

### B9.2.13 SENSITIVE LANDSCAPE

No sensitive landscapes were identified.

### B9.2.14 VISUAL ASPECTS

The borrow pit site is not visible from any residential dwellings. The proposed borrow pit extension area is proposed approximately 200 m from DR3080 and would thus have only a low visibility to motorists travelling along DR3080.

### B9.2.15 REGIONAL SOCIO-ECONOMIC STRUCTURE

See information provided in Section A5.3.

### B9.2.16 INTERESTED AND AFFECTED PARTIES

The public participation process undertaken is presented in detail in Section A3.2.2. It should be noted that a notification letter was sent to Mr T Hauman, informing him of the proposed project and that as borrow pits had been identified on his property. Mr Hauman was asked to complete an acknowledgement form (which is included in Appendix B9.2) to indicate that he was made aware of

the location and extent of the borrow pit and that access to the area may be required across his property, as well as to raise any issues of concern. Mr Hauman had the following comments.

| I&AP | Comment | Response |
|---|---|---|
| Mr T Hauman, Hauman Trust | • Mr Hauman acknowledged being notified of the proposed expansion of the existing borrow pit on his property. He stated that his acknowledgement did not equal permission to use the borrow pit and that he had certain conditions that he first wanted to discuss with the proponent. | • Mr Hauman's comment is noted. The consulting engineer will contact Mr Hauman to discuss the matter further. |

## B9.3 PART 3: BRIEF PROJECT DESCRIPTION

### B9.3.1 BENEFITS OF THE PROJECT

The motivation for and potential benefits arising as a result of the project are presented in Section A4.

### B9.3.2 CONSIDERATION OF ALTERNATIVES

A consideration of alternatives is presented in Section A4.2. Borrow Pit 9 (DR3080/5.0/0.2L) has been included as a preferred borrow pit.

## B9.4 PART 4: DETAILED DESCRIPTION OF THE PROPOSED PROJECT

### B9.4.1 SURFACE INFRASTRUCTURE

There would be no permanent surface infrastructure associated with the proposed borrow pit. Access would be from the northeast along an existing access road off DR3080. New temporary fencing would be installed with a single gate to control access.

### B9.4.2 WASTE MANAGEMENT

Material that is not suitable for the road rehabilitation project would be stockpiled and used to reshape the area during rehabilitation. Any domestic waste would be collected in a waste bin and disposed of at a municipal waste site.

### B9.4.3 WATER MANAGEMENT

The water requirements for the proposed borrow pit operations are expected to be minimal (e.g. dust suppression on access roads and borrow pit area). The water sources would be identified by the contractor.

Drainage should not be a problem at this proposed borrow pit as there would not be a large excavated area where water could collect. The site would be free draining to the northeast.

### B9.4.4 TRANSPORT

This would consist of trucks transporting the subgrade and sub base material from the borrow pit to the area of the road under construction. This would take place along existing access roads.

### B9.4.5 BORROW PIT LAYOUT AND DEVELOPMENT

Google Earth images of the proposed borrow pit site are included in Figure B9.1 and B9.2 and the proposed site layout plan is included in Appendix B9.1.

The borrow pit would be approximately 2.8 ha in extent. The borrow pit would be further mined by cutting into the apron of the koppie to the west of the existing excavation, rather than excavating deeper into the existing borrow pit. Vegetation would be cleared from the site. Any seed-bearing material would be kept separate for use during rehabilitation or preferably mulched into the topsoil. Topsoil together with existing plant material would, where possible, be stripped to a depth of 200 mm (400-500 mm where available) and stockpiled separately from other soil layers in piles not exceeding 2 m in height (as indicated in the borrow pit layout plan). Material that cannot be used for the road rehabilitation project would be used in the reshaping of the site during rehabilitation and would be stockpiled separately.

To minimise any impacts on the value of the surrounding land, care would be taken to limit the extent of the area disturbed during construction activities. In this regard, the borrow pit site and associated activities and infrastructure would be carefully planned, to ensure that the footprint is kept to a minimum. The proposed borrow pit would consist of one compartment (see borrow pit layout plan). The borrow pit would be excavated by means of ripping and loading with an excavator directly onto haul vehicles. Material would then be transported to the area of the road under construction.

The borrow pit would be mined to a maximum depth of 5 m, measured from natural ground level to base of the excavation. The end slopes of the excavation would be approximately 1:5.

The borrow pit details are summarised in Table B9.2 below.

**Table B9.2 Summary of Borrow Pit 9 (DR3080/5.0/0.2L)**

| | |
|---|---|
| Borrow pit area | 2.8 ha |
| Maximum depth | 5 m |
| Material Description | Gravelly sand and schist |
| Proposed Usage | Fill |
| Volume of material | 70 000 $m^3$ |

## B9.5 PART 5: ENVIRONMENTAL IMPACT ASSESSMENT

This section describes the impact that would result from the proposed borrow pit. Mitigation measures are proposed that would mitigate negative impacts or enhance potential benefits. Impacts were assessed according to pre-defined rating scales (see Appendix 2), which are based on criteria set out in the EIA Regulations, 2010. The impacts arising from the borrow pit development are presented in Table B9.3.

## B9.6 PART 6: SITE REHABILITATION

The topsoil at Borrow Pit 9 is fairly shallow. It is proposed to translocate the mountain aloes (*Aloe broomii*) growing in the proposed extension area to outside of the proposed excavation area. If transplanting is done during the warmer months, they would be planted on the eastern to southern side of bigger shrubs and trees to project them from severe radiation.

During rehabilitation, the topography would be finished off so that the sides of the borrow area are no steeper than 1:5. The slope changes should be finished off so that flowing curves that blend with the surrounding landscape and hill are formed in preference to sharp angles. Unused material would be

placed back in the deepest areas of the excavation and the topsoil and vegetation stripped during site clearance would be spread evenly across the borrow pit area. As this site has a gentle to steep slope the possibility of erosion should be taken into consideration during rehabilitation of the site.

Introduction of seed of species such as *Sporobolus fimbriatus* (dropseed grass) and *Eriocephalus ericoides* (kapokbos) should also be considered. Seed could be harvested in the surrounding area and introduced in combination with seed from suppliers.

## B9.7 PART 7: ENVIRONMENTAL MANAGEMENT PROGRAMME

A generic EMP is presented in Section C, as it is the same for all three borrow pits.

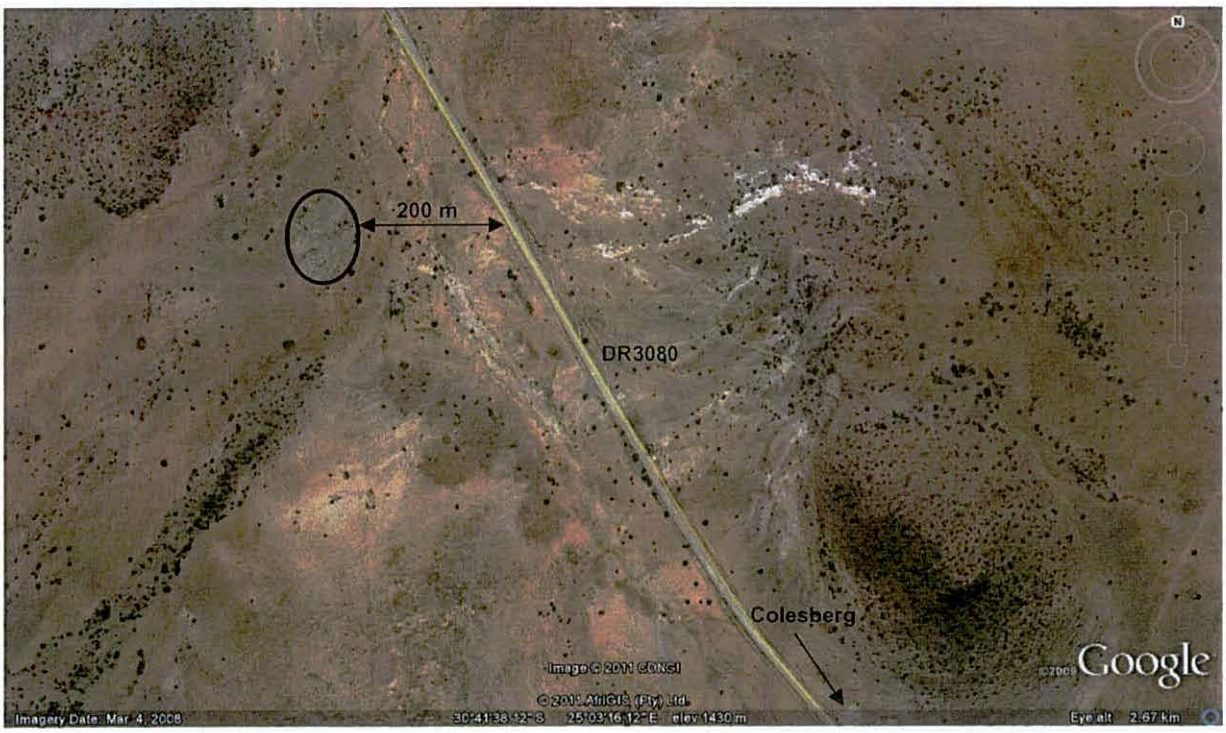



**Figure B9.1 Google Earth Image showing the location of BP 9 (DR3080/5.0/0.2L) northwest of Coleskop.**

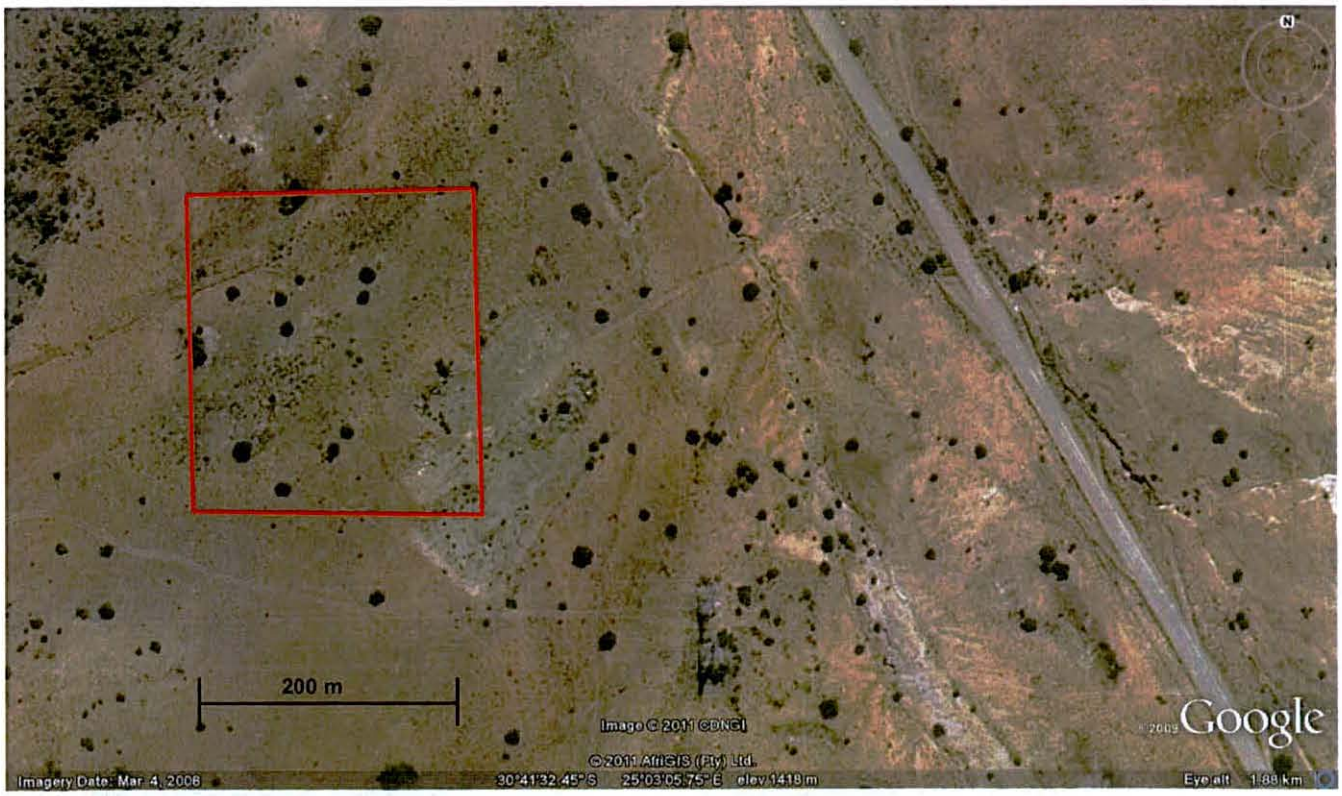



**Figure B9.2 The proposed mining area at BP 9 (DR3080/5.0/0.2L).**

**Plate B9.1** Borrow Pit 9 (DR3080/5.0/0.2L). Photograph taken along the eastern edge of the existing excavation looking south.

**Plate B9.2** Picture taken across the proposed extension area looking south towards the existing excavation.

**Plate B9.3** Picture taken from the edge of the existing excavation looking east towards DR3080.

**Plate B9.4** Borrow pit 9 (DR3080/5.0/0.2L) taken looking west from DR3080.

**Table B9.3: Impacts arising from the proposed development of Borrow Pit 9 (DR3080/5.0/0.2L).**

| Environmental Aspect | Extent | Duration | Intensity | Probability | Confidence | Significance (before mitigation) | Proposed mitigation | Significance (after mitigation) |
|---|---|---|---|---|---|---|---|---|
| Geology | Local | Permanent | Low | Definite | Medium | Low | - | Low |
| Topography | Local | Permanent | Low | Definite | Medium | Low | The topography would be finished off so that the sides of the borrow area are no steeper than 1:5. The slope changes must be finished off so that flowing curves that blend with the surrounding landscapes are formed in preference to sharp angles. | Low |
| Soil | Local | Short-term | Medium | Highly probable | High | Very Low | Stockpile topsoil and utilise during rehabilitation. | Very Low |
| Land use | Local | Short-term | Low | Probable | High | Very Low | Land disturbed shall be rehabilitated. | Very Low |
| Land capability | Local | Short-term | Low | Probable | High | Very Low | • Demarcation and fencing of borrow area site;<br>• Identification of no-go areas; and<br>• Land disturbed shall be rehabilitated. | Very Low |
| Vegetation | Local | Medium-term | Low | Probable | Medium | Low | Aloes (*Aloe broomii*) in the proposed extension area should be translocated. Topsoil together with existing plant material should be removed and stored in wind rows, no higher than two meters. During rehabilitation topsoil should be spread evenly across the cleared borrow pit area. Consider introduction of seed of species such as *Sporobolus fimbriatus* (dropseed grass) and *Eriocephalus ericoides* (kapokbos). | Very Low |
| Fauna | Local | Short-term | Low | Probable | High | Very Low | Land disturbed would be rehabilitated. | Very Low |
| Surface water | Local | Short-term | Low | Improbable | High | Very Low | All machinery and equipment would be properly maintained, so that leaks do not appear and so that during servicing all oil, grease etc. is disposed of correctly. | Very Low |
| Groundwater | Local | Short-term | Low | Improbable | High | Very Low | All machinery and equipment would be properly maintained, so that leaks do not appear and so that during servicing all oil, grease etc. is disposed of correctly. | Very Low |
| Air quality | Local | Short-term | Low | Highly probable | High | Very Low | Retain vegetation cover as long as possible to reduce the size of areas where wind could generate dust and spray water and/or other dust suppression agents to reduce dust. | Very Low |
| Noise | Local | Short-term | Low | Highly probable | High | Very Low | The contractor would be required to be familiar with and adhere to any local by-laws and regulations regarding the generation of noise and house of operation. | Very Low |

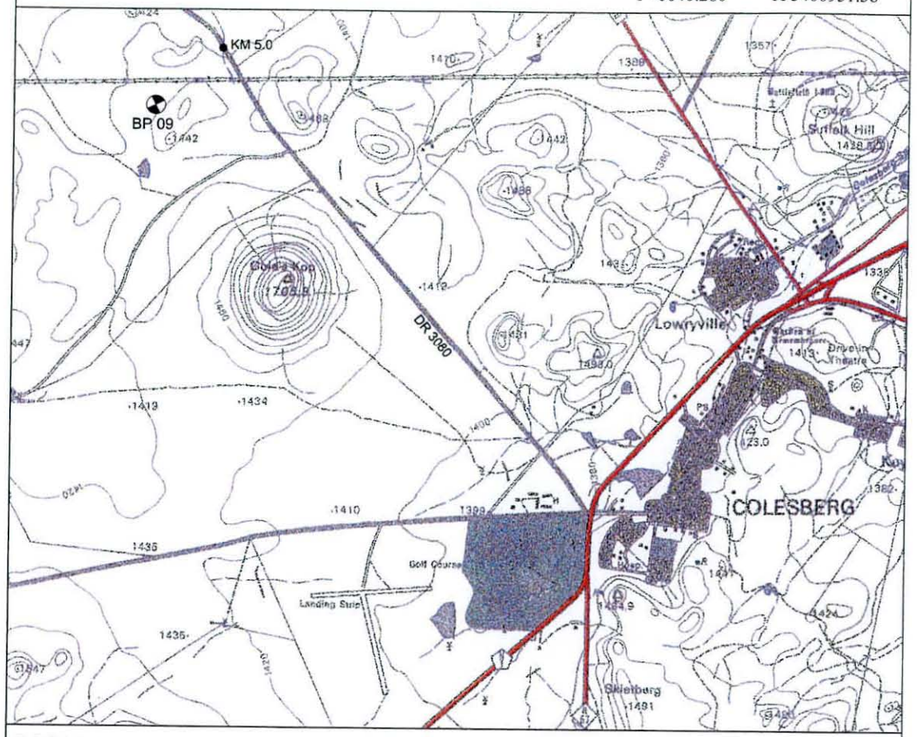
| Environmental Aspect | Extent | Duration | Intensity | Probability | Confidence | Significance (before mitigation) | Proposed mitigation | Significance (after mitigation) |
|---|---|---|---|---|---|---|---|---|
| Archaeology | Local | Short-term | Low | Improbable | High | Very Low | - | Very Low |
| Palaeontology | No impact – Where practicable, any finds of fossil tetrapods, vascular plants and trace fossils should be recorded and carefully removed. In the event that any palaeontological material is found, SAHRA should be notified (Mariagrazia Galimberti, 021 462 4502). | | | | | | | |
| Sensitive landscapes | No impact. | | | | | | | |
| Visual aspects | Local | Long-term | Medium | Probable | High | Medium | Land disturbed would be rehabilitated (refer to vegetation mitigation measures above). | Low |
| Regional socio-economic: employment | Local | Short-term | *Low* | Highly probable | High | *Very Low (Positive)* | Local labour would be sourced. | *Very Low (Positive)* |
| Regional socio-economic: safety | Local | Short-term | Low | Probable | High | Low | • The movement of construction vehicles would be limited to daylight hours; and<br>• The dangers associated with the movement of large haulage vehicles would be clearly sign-posted in both directions leading up to the proposed borrow pit. | Very Low |

# APPENDIX B9.1

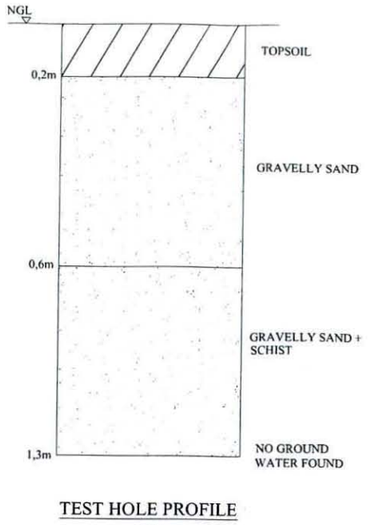
# PROPOSED BORROW PIT LAYOUT PLAN

ORIGINAL 1 : 50 000
3025 CA

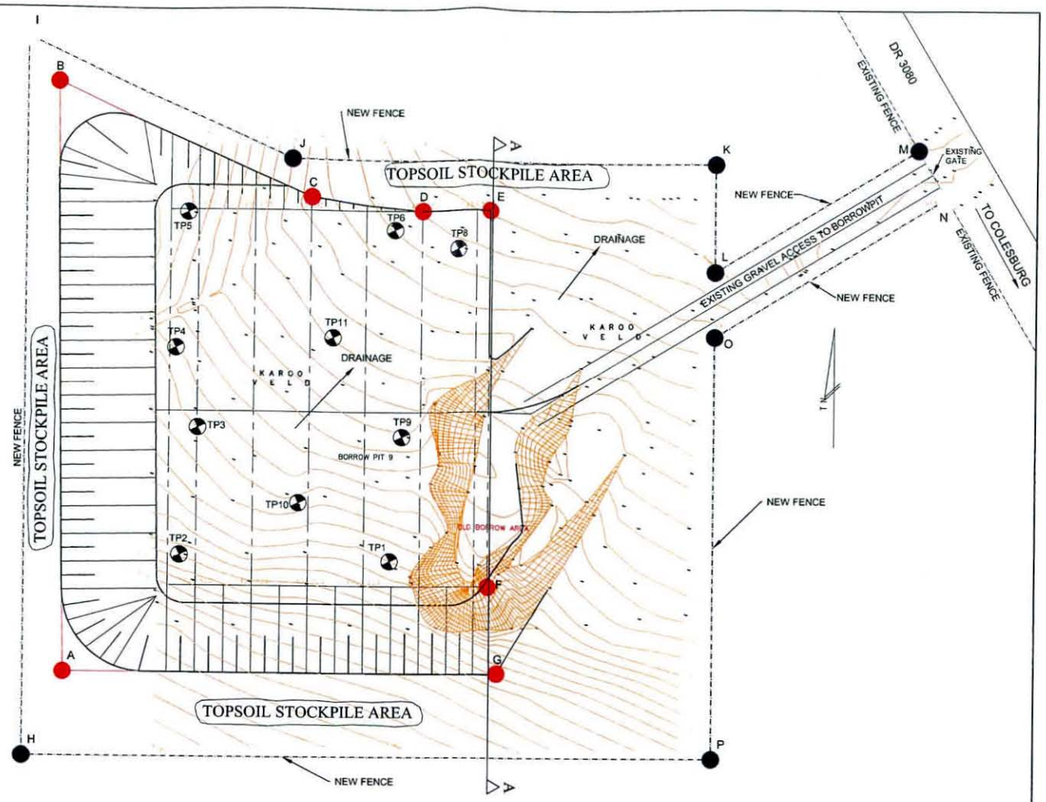
BORROWPIT 09 COORDINATES
Y -6640.280 X 3400931.38




LOCALITY PLAN N.T.S




TEST HOLE PROFILE
N.T.S




LEGEND

POSITION OF BORROWPIT

ERF BOUNDARY

NOTES:

1. ANY INVADER SPECIES WILL BE REMOVED FROM THE SITE BEFORE ANY TOPSOIL IS CLEARED. THE TOPSOIL WILL BE STRIPPED TO A MINIMUM
2. DEPTH OF 20cm IF AVAILABLE AND STORED AWAY FROM DRAINAGE LINES ALONG THE EDGES OF THE EXCAVATED AREA. STOCKPILES WILL NOT EXCEED 1m IN HEIGHT AND WILL NOT BE COMPACTED FOR MORE THAN SIX MONTHS BEFORE BEING USED FOR REHABILITATION. TOPSOIL WILL BE SPREAD ON THE SURFACE AS SOON AS THE BORROW PIT EXCAVATION HAS BEEN COMPLETED AND ITS SLOPES HAVE BEEN FINISHED OFF AS REQUIRED.
3. THE BORROW PIT SITE AND EXISTING ACCESS ROAD WILL BE PROPERLY DEMARCATED AND FENCED OFF BEFORE COMMENCEMENT OF MINING OPERATION.
4. DUST EMISSIONS WILL BE EFFECTIVELY CONTROLLED BY APPROPRIATE MEASURES SUCH AS SPRAYING WATER AND/OR OTHER DUST CONTROL
5. MEASURES. EXCAVATED MATERIAL STOCKPILES WILL BE ADEQUATELY PROTECTED AGAINST THE WIND, WHERE NECESSARY, THROUGH
6. MEASURES SUCH AS SHADECLOTH SCREENS OR HESSIAN COVERING. IN THE SHORT TERM, STOCKPILES MAY ALSO BE DAMPENED TO MINIMIZE
7. DUST GENERATION.
8. VEHICLE SPEEDS WILL BE RESTRICTED TO PREVENT ACCIDENTS, TO REDUCE DUST AND NOISE POLLUTION AND TO PREVENT ANY POSSIBLE
9. INJURY TO LIVESTOCK.
10. ACCESS TO ALL GATES WILL BE CONTROLLED AS AGREED WITH THE LANDOWNER / LESSEE AND IN ACCORDANCE WITH THEIR REQUIREMENTS.
11. A TEMPORARY EATING AREA WILL BE PROVIDED WITHIN THE BORROW PIT AREA TO ENSURE THAT SITE PERSONNEL DO NOT MOVE OFF SITE TO
12. EAT. ABLUTION FACILITIES WILL BE PROVIDED AND WILL BE LOCATED TO PREVENT THE POLLUTION OF GROUNDWATER. TOILET PAPER WILL BE
13. PROVIDED.
14. TEMPORARY WASTE DISPOSAL AREAS WILL BE DEMARCATED AND FENCED (IF NECESSARY) AND WASTE WILL BE COLLECTED AND STORED IN
15. WEATHERPROOF CONTAINERS (WITH LIDS) WITHIN THIS AREA FOR DISPOSAL AT A LICENSED WASTE DISPOSAL FACILITY. ALL WASTE WILL BE
16. REMOVED FROM SITE BY THE CONTRACTOR. NO BURNING, ON-SITE DUMPING OR BURYING OF WASTE WILL OCCUR.
17. MAXIMUM DEPTH OF MINING : 5m. ( MEASURED FROM NATURAL GROUND LEVELS TO BASE OF EXCAVATION )
18. MINING OF BORROW PIT MAY REQUIRE RIPPING.
19. ALL WORKED AREAS WILL BE RIPPED AND SCARIFIED AND TOPSOIL WILL BE REPLACED. ANY ROCKS OR BRANCHES WILL BE HAPHAZARDLY
20. SCATTERED OVER THE SITE TO PROVIDE GOOD GERMINATION MICROSITES FOR PLANTS. THE TOPOGRAPHY TO BE FINISHED OFF SO THAT THE SIDES OF THE BORROW AREA ARE NO STEEPER THAN 1:5. THE SLOPE CHANGES WILL BE FINISHED OFF SO THAT FLOWING CURVES THAT BLEND WITH THE SURROUNDING LANDSCAPES ARE FORMED IN PREVERENCE TO SHARP ANGLES.

FENCELINE

| POINT ID | CO-ORDINATES : WGS84 Y | X |
|---|---|---|
| H | -4701,000 | 3396986,996 |
| I | -4701,000 | 3396727,134 |
| J | -4795,723 | 3396770,645 |
| K | -4947.935 | 3396772.058 |
| L | -4947.935 | 3396810.412 |
| M | -5020.352 | 3396766.633 |
| N | -5030.434 | 3396783.910 |
| O | -4947.935 | 3396834.269 |
| P | -4947.935 | 3396986.996 |

FENCED AREA = 5,7 Ha

TEST HOLES

| POINT ID | CO-ORDINATES : WGS84 Y | X |
|---|---|---|
| TH1 | -4832 | 3396916 |
| TH2 | -4757 | 3396914 |
| TH3 | -4763 | 3396868 |
| TH4 | -4755 | 3396839 |
| TH5 | -4759 | 3396790 |
| TH6 | -4833 | 3396796 |
| TH7 | -4901 | 3396603 |
| TH8 | -4856 | 3396803 |
| TH9 | -4836 | 3396871 |
| TH10 | -4799 | 3396895 |
| TH11 | -4811 | 3396835 |

EXTENT OF BORROW PIT

| POINT ID | CO-ORDINATES : WGS84 Y | X |
|---|---|---|
| A | -4715.331 | 3396956.480 |
| B | -4712.008 | 3396743.195 |
| C | -4802.739 | 3396784.246 |
| D | -4842.739 | 3396789.095 |
| E | -4862.739 | 3396789.095 |
| F | -4867,743 | 3396925.095 |
| G | -4870.989 | 3396956.826 |

AREA OF PIT = 2,8 Ha

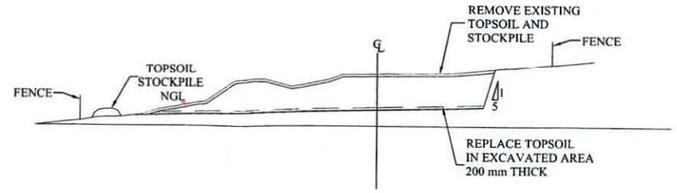
LEGEND

TEST HOLES
BORROW PIT BOUNDARY
EXTENT OF BORROW PIT
FENCE BOUNDARY
FENCE LINE
BATTER SLOPES

MATERIAL DESCRIPTION : GRAVELLY SAND + SCHIST
PROPOSED USAGE : FILL
TOTAL CAPACITY : 70000 m³

ERF No. : 1733

BORROW PIT No. 09:
OWNER : MR HAUMAN
ADDRESS : P. O. BOX 2076, MOSSELBAAI, 6500
TEL : 044 690 3391 / 082 570 0023




SECTION A - A
ESTIMATED CAPACITY = 70 000 m³

| No. | DATE | REVISION | CONSULT. ENG. | for NRA |
|---|---|---|---|---|
| A | 14/11/2011 | ISSUED FOR COMMENTS | AS | |


UWP CONSULTING
CONSULTING ENGINEERS
MVELASERVE HOUSE, GROUND FLOOR
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7745
P O BOX 46920
GLOSSERRY
7702 KENILWORTH
TEL. (021) 761 - 6999
FAX. (021) 761 - 6989




APPROVED CONSULTING ENGINEER

| | |
|---|---|
| DESIGNED BY | A.S |
| CHECKED BY | A.S |
| DRAWN BY | B.A |
| CHECKED BY | A.S |


HEAD OFFICE
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C/o Mishel Str & Willie
van Schoor Ave
Bellville
7530
Private Bag X19
Bellville
South Africa
Tel. (++27 21) 957 4600
Fax: (++27 21) 946 1630


THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD

APPROVED
THIS APPROVAL IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OF ANY KIND FROM WHATSOEVER CAUSE OR HOWSOEVER ARISING

for CEO: SA NATIONAL ROADS AGENCY Ltd

| | | | |
|---|---|---|---|
| NATIONAL ROUTE | N9 | SECTION | 7 |
| PROJECT No. | | NRA N.009-070-2007 / 1 | |

REHABILIATION OF N9 SECTION 7
BORROW PIT DETAILS

BORROW PIT 09 - ( DR 3080 \ 5.0 \ 0.2 L )
MINING AND REHABILITATION PLAN

SHEET 1 OF 1
SCALE AS SHOWN (AO)
DRAWING NUMBER: 14784/309

# APPENDIX B9.2

# LANDOWNER ACKNOWLEDGEMENT OF NOTIFICATION FORM

13 DEC 2011

THE SOUTH AFRICAN NATIONAL ROADS AGENCY

**VOORGESTELDE LEENGROEWE VIR DIE REHABILITASIE VAN DIE N9/7 TUSSEN WOLWEFONTEIN EN COLESBERG BENUTTING VAN LEENGROEWE**

**PROPOSED BORROW PITS FOR THE REHABILITATION OF THE N9/7 BETWEEN WOLWEFONTEIN AND COLESBERG UTILISATION OF BORROW PITS**

| | |
|---|---|
| LEENGROEF NO. / BORROW PIT NO. | BP 9 - Km 5 (LHS) along the DR3080 |
| GEREGISTREERDE PLAAS NAAM / REGISTERED FARM NAME | Erf 1733 (Farm Colesbergkop) |
| GEREGISTREERDE EIENAAR / REGISTERED OWNER | Mr T. Hauman |

Ek bevestig dat ek verwittig is van SANRAL se voorneme om 'n voorgestelde leengroef op my eiendom te benut, soos aangedui op die aangehegte plan, vir die rehabilitasie van Gedeelte 7 van die N9 tussen Wolwefontein en Colesberg; en dat ek bewus is van die ligging en omvang van die gebied en dat toegang oor my eiendom benodig mag word.

I acknowledge that I have been informed of SANRAL's intention to utilise a proposed borrow pit on my property indicated on the attached plan for the rehabilitation of Section 7 of the N9 between Wolwefontein and Colesberg; and that I am aware of the location and extent of the area and that access to the area may be required across my property.

HANDTEKENING VAN EIENAAR OF GEDELEGEERDE VERTEENWOORDIGER / SIGNATURE OF OWNER OR DELEGATED REPRESENTATIVE

.....Kyk kommentaar.....

STATUS INDIEN NIE GEREGISTREEDE EIENAAR NIE/ STATUS IF NOT REGISTERED OWNER....T.Hauman Trust.....

DATUM/ DATE ....6/12/11.....

NAAM/ NAME..D.F.T. Hauman.....

POS ADRES/ POSTAL ADDRESS...Posbus 2076 Moesellaan...

.....

TELEFOONNOMMER/ TELEPHONE NUMBER..044 690 3391.....

FAKSNOMMER/ FAX NUMBER.....

| NEE / NO | JA / YES ✓ |
|---|---|

KOMMENTAAR/ COMMENT

Dit is n erkening van ontvangs nie
in toestemming wat ek teken nie
Ek het sekere voorwaardes wat bespreek
moet word:


Please forward to / **Stuur asseblief aan:**

**CCA ENVIRONMENTAL (PTY) LTD**
**Unit 35, Roeland Square, Cape Town, 8001**
**PO Box 10145, Caledon Square, 7905**
**T: (021) 461 1118 F: (021) 461 1120**
**Email: eloise@ccaenvironmental.co.za**


CCA ENVIRONMENTAL

UWP CONSULTING

# BORROW PIT 11 (N9_7/90.1/0.9R)

# B11 BORROW PIT 11 (N9_7/90.1/0.90R)

## B11.1 PART 1: BRIEF PROJECT DESCRIPTION

### B11.1.1 MINE OWNER AND MINE MANAGER/RESPONSIBLE PERSON

SANRAL has appointed Basil Read as the contractor to undertake the excavation of the proposed borrow pit as part of their current contract to rehabilitate Section 7 of the N9 between Wolwefontein and Colesberg.

### B11.1.2 NAME AND ADDRESS OF THE APPLICANT FOR PROSPECTING PERMIT OR MINING AUTHORISATION

*Applicant:* South African National Roads Agency Limited
*Contact person:* Mr Nelis Brink
*Address:* Private Bag X19, Bellville, 7530
*Tel:* (021) 957 4600

### B11.1.3 NAME AND ADDRESS OF THE OWNER OF THE LAND AND THE TITLE DEED DESCRIPTION

*Farm name:* Erf 1271, Colesberg
*Owner:* Umsobomvu Municipality (Contact person: Mr Ben Malherbe)
*Address:* Private Bag X6, Colesberg, 9795
*Tel:* (051) 753 0777
*Title deed information:* T37557/1980
*Size of the property*: 1539.7079 ha

No mineral rights are indicated on the Deed of Transfer.

### B11.1.4 REGIONAL SETTING

Borrow Pit 11 is an extension of an existing borrow pit located along the Oorlogspoort Road, approximately 4.3 km south of Colesberg. Co-ordinates of the proposed borrow pit extension are presented in Table B11.1 below.

**Table B11.1 Co-ordinates of proposed Borrow Pit 11 (N9_7/90.1/0.90R)**

| Borrow pit co-ordinates (WGS84) | | |
|---|---|---|
| | Y | X |
| A | -9024.728 | 3405200.449 |
| B | -8956.593 | 3405142.335 |
| C | -9123.039 | 3404936.153 |
| D | -9272.424 | 3405063.154 |
| E | -9112.015 | 3405241.791 |
| F | -9051.455 | 3405223.119 |
| G | -9032.408 | 3405206.926 |

# B11.2 PART 2: DESCRIPTION OF THE PRE-MINING ENVIRONMENT SPECIFIC TO BORROW PIT 11 (N9_7/90.1/0.90R)

## B11.2.1 CLIMATE

A general description of the climate is presented in Section A5.1.1.

## B11.2.2 GEOLOGY

A general description of the geology is presented in Section A5.1.3. Material to be mined at the borrow pit is mudstone.

## B11.2.3 TOPOGRAPHY

The contours of the area are presented in the borrow pit layout plan in Appendix B11.1. The borrow pit site is effectively located on a plain with no obvious slope.

## B11.2.4 SOIL

Based on the trial pit profiles there is a thin layer of topsoil up to a depth of 200 mm. The rest of the soil profile consists of mudstone.

## B11.2.5 PRE-MINING LAND CAPABILITY AND LAND USE

The proposed site is an existing borrow pit (see Plates B11.1-11.4) and is located to the east of the N1 on municipal land (Remainder of Erf 675) alongside the Oorlogspoort Road. The site is currently unfenced and shows signs of frequent grazing.

## B11.2.6 VEGETATION

The vegetation type at the site is classified as Eastern Upper Karoo and is in an intermediate condition, showing signs of frequent and/or overgrazing. The dominant Karoo bush species include *Trichodiadema pomeridianum* (stervygie) and *Eriocephalus spinescens* (doringkapok), while *Tragus koeleroides* (carrot seed grass) and *Melica decumbens* (staggers grass) are dominating grass species (refer to Appendix 3).

## B11.2.7 FAUNA

The area is unfenced, open and overgrazed with very little undisturbed faunal habitats present.

## B11.2.8 HYDROLOGY

There are no rivers or farm dams in close proximity to the borrow pit site. At the time of the site visit the excavation was inundated due to recent heavy rains.

## B11.2.9 GEOHYDROLOGY

No ground water was found in the trial pit holes up to a depth of 1 m.

### B11.2.10 AIR QUALITY

The air quality in the study area is good. The borrow pit is in an open flat area and dust from borrow pit operations would thus be visible from quite a distance. There are, however, no residential areas in close proximity to the site and dust should thus not become a nuisance at residential dwellings.

### B11.2.11 NOISE

The site is exposed to traffic noise from the N1. There are no residential dwellings in close proximity to the borrow pit site that could be affected by noise from borrowing operations.

### B11.2.12 ARCHAEOLOGY AND PALAEONTOLOGY

One round weathered indurated shale MSA core and one quartzite chunk were found on the edge of the current excavation, while one snapped indurated shale blade was found on a footpath leading to the excavation. The archaeological remains have been rated as having low local significance.

### B11.2.13 SENSITIVE LANDSCAPE

No sensitive landscapes were identified.

### B11.2.14 VISUAL ASPECTS

The site would be highly visible to local traffic on the Oorlogspoort road, although the area to be developed would be on the opposite side to the existing borrow pit excavation. It is, however, located approximately 900 m from the N9 and should have a low visibility to fast-moving traffic on the N9. The site would also not be visible from any residential dwellings.

### B11.2.15 REGIONAL SOCIO-ECONOMIC STRUCTURE

See information provided in Section A5.3.

### B11.2.16 INTERESTED AND AFFECTED PARTIES

The public participation process undertaken is presented in detail in Section A3.2.2. It should be noted that a notification letter was sent to Mr Ben Malherbe, representative for the Umsobomvu Municipality (the owner), informing him of the proposed project and that a borrow pit had been identified on the municipality's property. Mr Malherbe was asked to complete an acknowledgement form (which is included in Appendix B11.2) to indicate that the municipality was made aware of the location and extent of the area and that access to the area may be required across municipal property, as well as to raise any issues of concern. Mr Malherbe had the following comments.

| I&AP | Comment | Response |
|---|---|---|
| Mr Ben Malherbe – Umsobomvu Municipality | The Umsobomvu Municipality made the following recommendations:<br>• The proposed borrow pit must be rehabilitated as prescribed by law.<br><br>The proposed borrow area and access road must be fenced off completely and a gate must be installed to prevent unlawful access to the site. | • Rehabilitation of the borrow areas would be undertaken as specified in this EMP.<br>The proposed borrow pit would be fenced off with new temporary fencing and access would be controlled through one access gate. |

# B11.3 PART 3: BRIEF PROJECT DESCRIPTION

## B11.3.1 BENEFITS OF THE PROJECT

The motivation for and potential benefits arising as a result of the project are presented in Section A4.

## B11.3.2 CONSIDERATION OF ALTERNATIVES

A consideration of alternatives is presented in Section A4.2. Borrow Pit 11 (N9_7/90.1/0.90R) has been identified as a preferred borrow pit.

# B11.4 PART 4: DETAILED DESCRIPTION OF THE PROPOSED PROJECT

## B11.4.1 SURFACE INFRASTRUCTURE

There would be no permanent surface infrastructure associated with the proposed borrow pit. Access would be from the south along an existing access road that joins the Oorlogspoort Road. New temporary fencing would be installed with a single gate to control access.

## B11.4.2 WASTE MANAGEMENT

Material that is not suitable for the road rehabilitation project would be stockpiled and used to reshape the area. Any domestic waste would be collected in a waste bin and disposed of at a municipal waste site.

## B11.4.3 WATER MANAGEMENT

The water requirements for the proposed borrow pit operations are expected to be minimal (e.g. dust suppression on access roads and borrow pit area). The water sources would be identified by the contractor.

The borrow pit would be free draining to the west.

## B11.4.4 TRANSPORT

This would consist of trucks transporting material from the borrow pit to the area of the road under construction. Haul vehicles would access the N9 via the Oorlogspoort Road.

## B11.4.5 BORROW PIT LAYOUT AND DEVELOPMENT

Google Earth images of the proposed borrow pit site are included in Figure B11.1 and B11.2 and the proposed site layout plan is included in Appendix B11.1. Access to the site would be via existing access from the Oorlogspoort Road.

The total proposed borrow area would be approximately 4.94 ha in extent. Vegetation would be cleared from the site. Any seed-bearing material would be kept separate for use during rehabilitation or preferably mulched into the topsoil. Topsoil would, where possible, be stripped to a depth of 200 mm and stockpiled separately from other soil layers in piles not exceeding 2 m in height (as indicated in the borrow pit layout plan in Appendix B11.1. Material that cannot be used for the road rehabilitation project would be used in the reshaping of the site during rehabilitation and would be stockpiled separately.

To minimise any impacts on the value of the surrounding land, care would be taken to limit the extent of the area disturbed during construction activities. In this regard, the borrow pit site and associated activities and infrastructure would be carefully planned, to ensure that the footprint is kept to a minimum. The proposed borrow pit would consist of one compartment (see layout plan).

The borrow pit would be excavated by means of heavy ripping and loading with an excavator directly onto haul vehicles. Material would then be transported to the area of the road under construction.

The borrow pit would be mined to a maximum depth of 5 m (measured from natural ground level to terrace level). The end slopes of the excavation would be approximately 1:5.

The borrow pit details are summarised in Table B11.2.

**Table B11.2 Summary of Borrow Pit 11 (N9_7/90.1/0.90R)**

| | |
|---|---|
| Borrow pit area | 4.94 ha |
| Maximum depth | 5 m |
| Material description | Gravelly sand and dolerite |
| Proposed usage | Fill |
| Volume of material | 150 000 $m^3$ |

## B11.5 PART 5: ENVIRONMENTAL IMPACT ASSESSMENT

This section describes the impact that would result from the proposed borrow pit. Mitigation measures are proposed that would mitigate negative impacts or enhance potential benefits. Impacts were assessed according to pre-defined rating scales (see Appendix 2), which are based on criteria set out in the EIA Regulations, 2010.

The impacts arising from the borrow pit development are presented in Table B11.3.

## B11.6 PART 6: SITE REHABILITATION

With the high rainfall of Summer 2011 a lot of seed was produced, but due to frequent grazing at the site the seed bank may be limited and require the introduction of additional seed during rehabilitation.

Unused material would be placed back in the deepest areas of the excavated area and the topsoil and vegetation stripped during site clearance would be spread evenly across the borrow pit area. The possibility of erosion would be taken into consideration during rehabilitation of the site.

Introduction of seed of species such as *Sporobolus fimbriatus* (dropseed grass) and, if possible, *Pentzia incana* (ankerkaroo – seeds difficult to source) should be considered. Dropseed grass should be sown in the lower areas of the reshaped landscape. Seed could be harvested from the surrounding area and introduced in combination with seed from suppliers.

## B11.7 PART 7: ENVIRONMENTAL MANAGEMENT PROGRAMME

A generic EMP is presented in Section C, as it is the same for all three borrow pits.

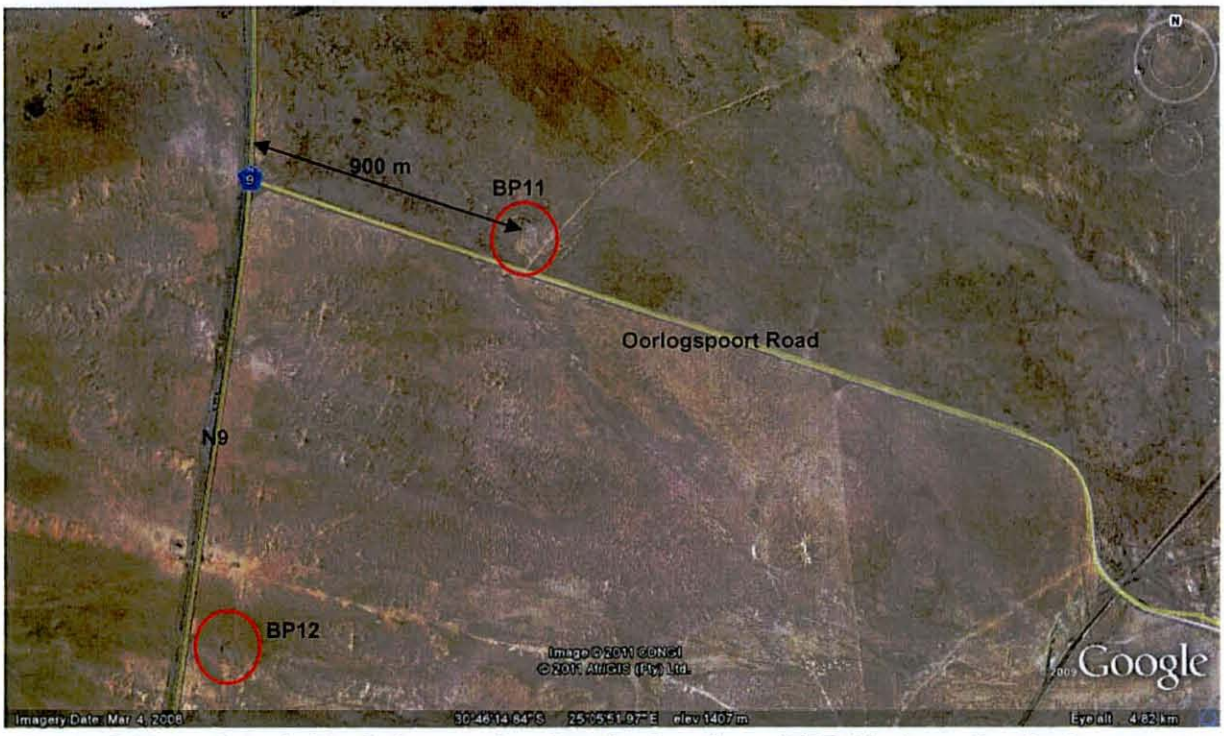



**Figure B11.1 Google Earth Image showing the location of BP 11 along the Oorlogspoort Road, approximately 4.3 km south of Colesberg.**


**Figure B11.2 Google Earth Image showing the proposed extended mining area at BP 11.**

**Plate B11.1** Picture taken from the southeastern corner of the proposed Borrow Pit 11 extension looking north-northwest along the N9.

**Plate B11.2** Picture taken across the existing excavation looking north towards the proposed northern extension area.

**Plate B11.3** Picture taken from the existing dirt track along the eastern edge of Borrow Pit 11 looking northeast.

**Plate B11.4** Picture of the existing access gate taken from the Oorlogspoort Road looking northwest across the existing borrow pit excavation.

**Table B11.3: Impacts arising from the proposed development of Borrow Pit 11 (N9_7/90.1/0.90R)**

| Environmental Aspect | Extent | Duration | Intensity | Probability | Confidence | Significance (before mitigation) | Proposed mitigation | Significance (after mitigation) |
|---|---|---|---|---|---|---|---|---|
| Geology | Local | Permanent | Low | Definite | Medium | Low | - | Low |
| Topography | Local | Permanent | Low | Definite | Medium | Low | The topography would be finished off so that the sides of the borrow area are no steeper than 1:5. The slope changes must be finished off so that flowing curves that blend with the surrounding landscapes are formed in preference to sharp angles. | Very Low |
| Soil | Local | Short-term | Medium | Highly probable | High | Very Low | Stockpile topsoil and utilise during rehabilitation. | Very Low |
| Land use | Local | Short-term | Low | Probable | High | Very Low | Land disturbed would be rehabilitated. | Very Low |
| Land capability | Local | Short-term | Low | Probable | High | Very Low | • Demarcation and fencing of borrow pit site;<br>• Identification of no-go areas; and<br>• Land disturbed shall be rehabilitated. | Very Low |
| Vegetation | Local | Medium-term | Low | Highly probable | Medium | Low | Topsoil together with existing plant material would be removed and stored in wind rows, no higher than two meters. During rehabilitation topsoil should be spread evenly across the cleared borrow pit area. Introduction of seed of species such as *Sporobolus fimbriatus* (dropseed grass) and, if possible, *Pentzia incana* (ankerkaroo – seeds difficult to source) should be considered. Dropseed grass would be sown in the lower areas of the reshaped landscape. Seed could be harvested from the surrounding area and introduced in combination with seed from suppliers. | Very Low |
| Fauna | Local | Short-term | Low | Probable | High | Very Low | Land disturbed would be rehabilitated. | Very Low |
| Surface water | Local | Short-term | Low | Improbable | High | Very Low | All machinery and equipment shall be properly maintained, so that leaks do not appear and so that during servicing all oil, grease etc. is disposed of correctly. | Very Low |
| Groundwater | Local | Short-term | Low | Improbable | High | Very Low | All machinery and equipment would be properly maintained, so that leaks do not appear and so that during servicing all oil, grease etc. is disposed of correctly. | Very Low |
| Air quality | Local | Short-term | Low | Highly probable | High | Very Low | Retain vegetation cover as long as possible to reduce the size of areas where wind could generate dust and spray water and/or other dust suppression agents to reduce dust. | Very Low |
| Noise | Local | Short-term | Low | Highly probable | High | Very Low | The contractor would be required to be familiar with and adhere to any local by-laws and regulations regarding the generation of noise and house of operation. | Very Low |

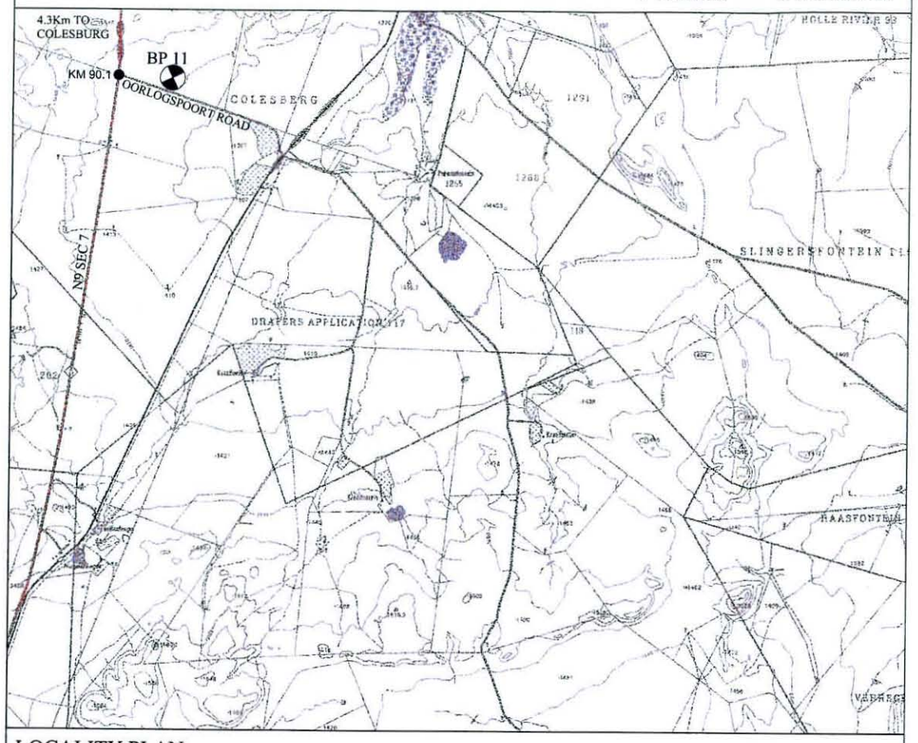
| Environmental Aspect | Extent | Duration | Intensity | Probability | Confidence | Significance (before mitigation) | Proposed mitigation | Significance (after mitigation) |
|---|---|---|---|---|---|---|---|---|
| Archaeology | Local | Short-term | Low | Probable | High | Very Low | - | Very Low |
| Palaeontology | No impact - Intrusive dolerite dykes do not host any palaeontological material. | | | | | | | |
| Sensitive landscapes | No impact. | | | | | | | |
| Visual aspects | Local | Long-term | Low | Probable | High | Low | Land disturbed would be rehabilitated. | Very Low |
| Regional socio-economic: employment | Local | Short-term | *Low* | Highly probable | High | *Very Low (Positive)* | Local labour would be sourced. | *Very Low (Positive)* |
| Regional socio-economic: safety | Local | Short-term | Low | Probable | High | Low | • The movement of construction vehicles would be limited to daylight hours; and<br>• The dangers associated with the movement of large haulage vehicles would be clearly sign-posted in both directions leading up to the proposed borrow pit. | Very Low |

# APPENDIX B11.1

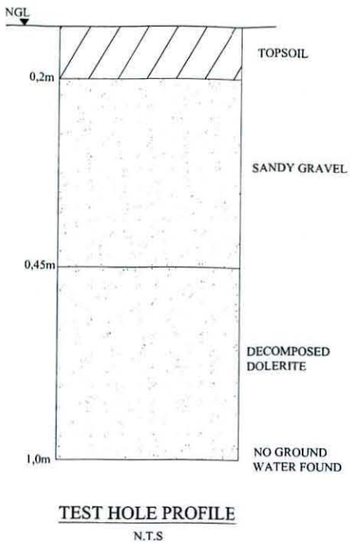
# PROPOSED BORROW PIT LAYOUT PLAN

ORIGINAL 1 : 50 000
3025 CC

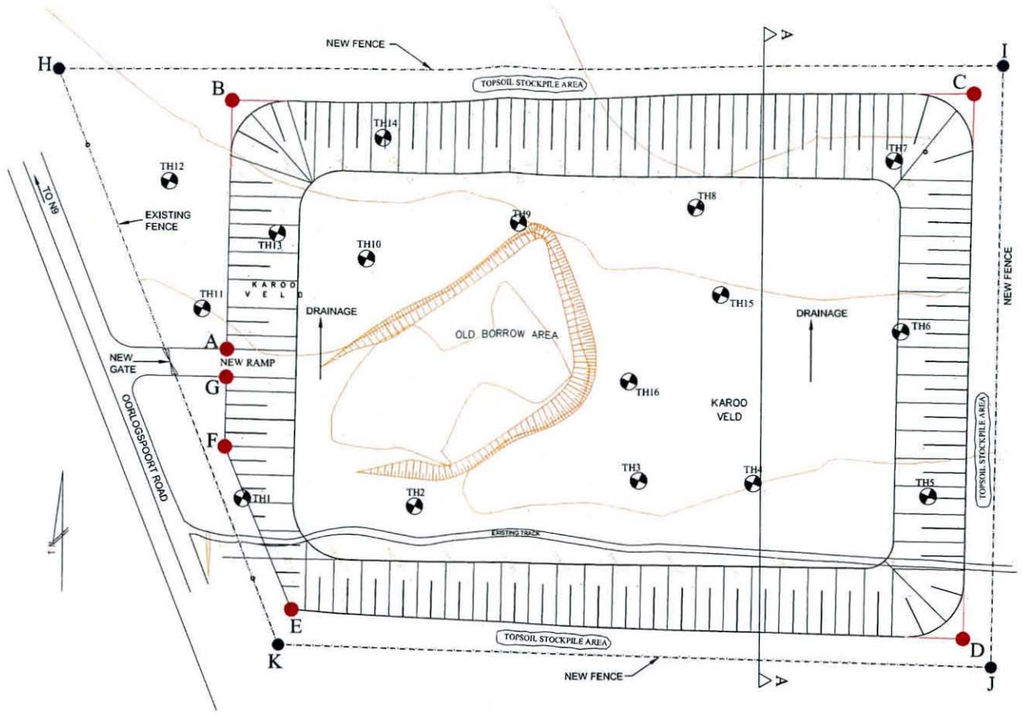
BORROWPIT 12 COORDINATES
Y -9125.000 X 3405051.000




LOCALITY PLAN N.T.S




TEST HOLE PROFILE
N.T.S




## LEGEND

- POSITION OF BORROWPIT
- ERF BOUNDARY

## NOTES:

1. ANY INVADER SPECIES WILL BE REMOVED FROM THE SITE BEFORE ANY TOPSOIL IS CLEARED. THE TOPSOIL WILL BE STRIPPED TO A MINIMUM DEPTH OF 20cm IF AVAILABLE AND STORED AWAY FROM DRAINAGE LINES ALONG THE EDGES OF THE EXCAVATED AREA. STOCKPILES WILL NOT EXCEED 1m IN HEIGHT AND WILL NOT BE COMPACTED FOR MORE THAN SIX MONTHS BEFORE BEING USED FOR REHABILITATION. TOPSOIL WILL BE SPREAD ON THE SURFACE AS SOON AS THE BORROW PIT EXCAVATION HAS BEEN COMPLETED AND ITS SLOPES HAVE BEEN FINISHED OFF AS REQUIRED.
2. THE BORROW PIT SITE AND EXISTING ACCESS ROAD WILL BE PROPERLY DEMARCATED AND FENCED OFF BEFORE COMMENCEMENT OF MINING OPERATION.
3. DUST EMISSIONS WILL BE EFFECTIVELY CONTROLLED BY APPROPRIATE MEASURES SUCH AS SPRAYING WATER AND/OR OTHER DUST CONTROL MEASURES. EXCAVATED MATERIAL STOCKPILES WILL BE ADEQUATELY PROTECTED AGAINST THE WIND, WHERE NECESSARY, THROUGH MEASURES SUCH AS SHADECLOTH SCREENS OR HESSIAN COVERING. IN THE SHORT TERM, STOCKPILES MAY ALSO BE DAMPENED TO MINIMIZE DUST GENERATION.
4. VEHICLE SPEEDS WILL BE RESTRICTED TO PREVENT ACCIDENTS, TO REDUCE DUST AND NOISE POLLUTION AND TO PREVENT ANY POSSIBLE INJURY TO LIVESTOCK.
5. ACCESS TO ALL GATES WILL BE CONTROLLED AS AGREED WITH THE LANDOWNER / LESSEE AND IN ACCORDANCE WITH THEIR REQUIREMENTS.
6. A TEMPORARY EATING AREA WILL BE PROVIDED WITHIN THE BORROW PIT AREA TO ENSURE THAT SITE PERSONNEL DO NOT MOVE OFF SITE TO EAT. ABLUTION FACILITIES WILL BE PROVIDED AND WILL BE LOCATED TO PREVENT THE POLLUTION OF GROUNDWATER. TOILET PAPER WILL BE PROVIDED.
7. TEMPORARY WASTE DISPOSAL AREAS WILL BE DEMARCATED AND FENCED (IF NECESSARY) AND WASTE WILL BE COLLECTED AND STORED IN WEATHERPROOF CONTAINERS (WITH LIDS) WITHIN THIS AREA FOR DISPOSAL AT A LICENSED WASTE DISPOSAL FACILITY. ALL WASTE WILL BE REMOVED FROM SITE BY THE CONTRACTOR. NO BURNING, ON-SITE DUMPING OR BURYING OF WASTE WILL OCCUR.
8. MAXIMUM DEPTH OF MINING : 5m. ( MEASURED FROM NATURAL GROUND LEVELS TO TERRACE LEVEL )
9. MINING OF BORROW PIT WILL REQUIRE HEAVY RIPPING.
10. ALL WORKED AREAS WILL BE RIPPED AND SCARIFIED AND TOPSOIL WILL BE REPLACED. ANY ROCKS OR BRANCHES WILL BE HAPHAZARDLY SCATTERED OVER THE SITE TO PROVIDE GOOD GERMINATION MICROSITES FOR PLANTS. THE TOPOGRAPHY TO BE FINISHED OFF SO THAT THE SIDES OF THE BORROW AREA ARE NO STEEPER THAN 1:5. THE SLOPE CHANGES WILL BE FINISHED OFF SO THAT FLOWING CURVES THAT BLEND WITH THE SURROUNDING LANDSCAPES ARE FORMED IN PREVERENCE TO SHARP ANGLES.

## FENCELINE

| POINT ID | CO-ORDINATES : WGS84 Y | X |
|---|---|---|
| H | -8908.745 | 3405183.215 |
| I | -9121.738 | 3404921.922 |
| J | -9286.636 | 3405062.111 |
| K | -9118.935 | 3405253.430 |

FENCED AREA = 6.3 Ha

## TEST HOLES

| POINT ID | CO-ORDINATES : WGS84 Y | X |
|---|---|---|
| TH1 | -9070 | 3405230 |
| TH2 | -9111 | 3405184 |
| TH3 | -9155 | 3405116 |
| TH4 | -9182 | 3405085 |
| TH5 | -9225 | 3405040 |
| TH6 | -9173 | 3405010 |
| TH7 | -9124 | 3404973 |
| TH8 | -9092 | 3405038 |
| TH9 | -9056 | 3405091 |
| TH10 | -9031 | 3405141 |
| TH11 | -9008 | 3405198 |
| TH12 | -8965 | 3405178 |
| TH13 | -9004 | 3405160 |
| TH14 | -9001 | 3405109 |
| TH15 | -9122 | 3405051 |
| TH16 | -9125 | 3405096 |

## EXTENT OF BORROW PIT

| POINT ID | CO-ORDINATES : WGS84 Y | X |
|---|---|---|
| A | -9024.728 | 3405200.449 |
| B | -8956.593 | 3405142.335 |
| C | -9123.039 | 3404936.153 |
| D | -9272.424 | 3405063.154 |
| E | -9112.015 | 3405241.791 |
| F | -9051.455 | 3405223.119 |
| G | -9032.408 | 3405206.926 |

AREA OF PIT = 4,94 Ha

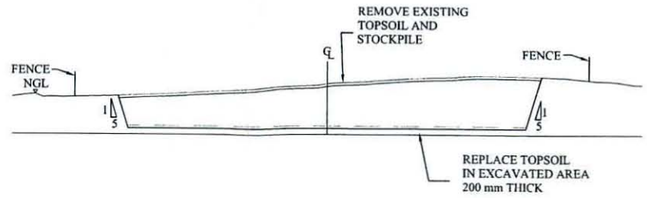
## LEGEND

- TEST HOLES
- BORROW PIT BOUNDARY
- EXTENT OF BORROW PIT
- FENCE BOUNDARY
- FENCE LINE
- BATTER SLOPES

MATERIAL DESCRIPTION : GRAVELLY SAND + DOLERITE
PROPOSED USAGE : FILL
TOTAL CAPACITY : 150 000 m³

ERF : 1271

BORROW PIT No. 11:
OWNER : MR BEN MALHERBE
ADDRESS : UMSOBOMVU DISTRICT MUNICIPALITY, P. O. BOX X6, COLESBURG, 9795
TEL : 051 753 0777




SECTION A - A
ESTIMATED CAPACITY = 150 000 m³

| No. | DATE | REVISION | CONSULT. ENG. | for NRA |
|---|---|---|---|---|
| A | 10/11/2011 | ISSUED FOR COMMENTS | AS | |


UWP CONSULTING
CONSULTING ENGINEERS
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7745
P O BOX 46920
GLOSDERRY
7702 KENILWORTH
TEL. (021) 761 - 6999
FAX. (021) 761 - 6989




APPROVED: CONSULTING ENGINEER

| | |
|---|---|
| DESIGNED BY | A.S |
| CHECKED BY | A.S |
| DRAWN BY | B.A |
| CHECKED BY | A.S |


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THE SOUTH AFRICAN NATIONAL ROADS AGENCY LTD

APPROVED
THIS APPROVAL IS FOR PROCEDURAL AND ADMINISTRATIVE REVIEW PURPOSES ONLY AND DOES NOT ATTRACT LEGAL LIABILITY OF ANY KIND FROM WHATSOEVER CAUSE OR HOWEVER ARISING

for CEO SA NATIONAL ROADS AGENCY Ltd

| | | | |
|---|---|---|---|
| NATIONAL ROUTE | N9 | SECTION | 7 |
| PROJECT No. | | NRA N.009-070-2007 / 1 | |

REHABILIATION OF N9 SECTION 7
BORROW PIT DETAILS

BORROW PIT 11 - ( N9_7 \ 90.1 \ 0.90 R
MINING AND REHABILITATION PLAN

SHEET 1 OF 1
SCALE AS SHOWN (AO)
DRAWING NUMBER: 14784/310

# APPENDIX B11.2

# LANDOWNER ACKNOWLEDGEMENT OF NOTIFICATION FORM

**VOORGESTELDE LEENGROEWE VIR DIE REHABILITASIE VAN DIE N9/7 TUSSEN WOLWEFONTEIN EN COLESBERG**
**BENUTTING VAN LEENGROEWE**

**PROPOSED BORROW PITS FOR THE REHABILITATION OF THE N9/7 BETWEEN WOLWEFONTEIN AND COLESBERG**
**UTILISATION OF BORROW PITS**

| | |
|---|---|
| **LEENGROEF NO. / BORROW PIT NO.** | **BP 12 - Km 0.9 (LHS) along the Oorlogspoort Road** |
| **GEREGISTREERDE PLAAS NAAM / REGISTERED FARM NAME** | **Erf 1271** |
| **GEREGISTREERDE EIENAAR / REGISTERED OWNER** | **Umsobomvu Munisipaliteit** |

**Ek bevestig dat ek verwittig is van SANRAL se voorneme om 'n voorgestelde leengroef op my eiendom te benut, soos aangedui op die aangehegte plan, vir die rehabilitasie van Gedeelte 7 van die N9 tussen Wolwefontein en Colesberg; en dat ek bewus is van die ligging en omvang van die gebied en dat toegang oor my eiendom benodig mag word.**

**I acknowledge that I have been informed of SANRAL's intention to utilise a proposed borrow pit on my property indicated on the attached plan for the rehabilitation of Section 7 of the N9 between Wolwefontein and Colesberg; and that I am aware of the location and extent of the area and that access to the area may be required across my property.**

**HANDTEKENING VAN EIENAAR ~~OF GEDELEGEERDE VERTEENWOORDIGER~~ / SIGNATURE OF OWNER OR DELEGATED REPRESENTATIVE**

X.....X.....

**STATUS INDIEN NIE GEREGISTREEDE EIENAAR NIE/ STATUS IF NOT REGISTERED OWNER**.....

**DATUM/ DATE**...05/04/2011.....

**NAAM/ NAME**...MNR. A.C. MPELA.....

**POS ADRES/ POSTAL ADDRESS**...PRIVAATSAK X 6.....

COLESBERG 9795.....

**TELEFOONNOMMER/ TELEPHONE NUMBER**...051-7530777.....

**FAKSNOMMER/ FAX NUMBER**...051-7530574.....

| NEE / NO | ✓ JA / YES |
|---|---|

KOMMENTAAR/ COMMENT

Gelieve op die volgende te let asb.

i) Gebruikte leergroef op erf 1271 (langs Oorlogspoort pad) moet op 'n geskikte en op 'n koste gerehabiliteer word soos deur die toepaslike wet vereis en voorgeskryf;

ii) Sodanige leergroef moet op 'n koste tien volle omhein word met 'n toegang tot sodanige leergroef, asook die toegangspad van die toegangspad na die leergroef.

iii) Sodanige toegangspad na die leergroef moet van 'n toesluitbare hek voorsien word om onregmatige toegang te verbied.

Please forward to / Stuur asseblief aan:

CCA ENVIRONMENTAL (PTY) LTD
Unit 35, Roeland Square, Cape Town, 8001
PO Box 10145, Caledon Square, 7905
T: (021) 461 1118 F: (021) 461 1120
Email: eloise@ccaenvironmental.co.za

ENVIR NMENTAL

DMR CONSULTING

# BORROW PIT 12 (N9_7/89.9/0.2R)

# B12 BORROW PIT 12 N9_7/89.9/0.2R

## B12.1 PART 1: BRIEF PROJECT DESCRIPTION

### B12.1.1 MINE OWNER AND MINE MANAGER/RESPONSIBLE PERSON

SANRAL has appointed Basil Read as the contractor to undertake the excavation of the proposed borrow pit as part of their current contract to rehabilitate Section 7 of the N9 between Wolwefontein and Colesberg.

### B12.1.2 NAME AND ADDRESS OF THE APPLICANT FOR PROSPECTING PERMIT OR MINING AUTHORISATION

*Applicant:* South African National Roads Agency Limited
*Contact person:* Mr Nelis Brink
*Address:* Private Bag X19, Bellville, 7530
*Tel:* (021) 957 4600

### B12.1.3 NAME AND ADDRESS OF THE OWNER OF THE LAND AND THE TITLE DEED DESCRIPTION

*Farm name:* Remainder of Erf 1272, Colesberg
*Owner:* Mr HE Hugo
*Address:* PO Box 221, Colesberg, 9795
*Tel:* (051) 753 1358
*Title deed information:* T20020/1999
*Size of the property*: 1802.9059 ha

No mineral rights are indicated on the Deed of Transfer.

### B12.1.4 REGIONAL SETTING

Borrow Pit 12 is an extension of an existing borrow pit that is located along the N9, approximately 4.5 km south of Colesberg. The area proposed for extension is located approximately 100 m east of the N9. Co-ordinates of the proposed borrow pit extension are presented in Table B12.1 below (refer to Figures B12.1 and B12.2 and the proposed borrow pit layout plan in Appendix B12.1).

**Table B12.1 Co-ordinates of Proposed Borrow Pit 12 (N9_7/89.9/0.2R).**

| Borrow pit co-ordinates (WGS84) | | |
|---|---|---|
| | Y | X |
| A | -8101.257 | 3406519.862 |
| B | -8024.008 | 3406511.793 |
| C | -8031.627 | 3406346.691 |
| D | -8212.906 | 3406365.625 |
| E | -8186.830 | 3406258.799 |
| F | -8111.203 | 3406520.900 |

# B12.2 PART 2: DESCRIPTION OF THE PRE-MINING ENVIRONMENT SPECIFIC TO BORROW PIT 12 N9_7/89.9/0.2R

## B12.2.1 CLIMATE

A general description of the climate is presented in Section A5.1.1.

## B12.2.2 GEOLOGY

A general description of the geology is presented in Section A5.1.3. Material to be mined at the borrow pit is decomposed dolerite.

## B12.2.3 TOPOGRAPHY

The contours of the area are presented in the borrow pit layout plan in Appendix B12.1. The site is moderately flat, sloping gently from north to south.

## B12.2.4 SOIL

Based on the trial pit profiles there is a topsoil layer of up to 200 mm. The rest of the soil profile consists of decomposed dolerite.

## B12.2.5 PRE-MINING LAND CAPABILITY AND LAND USE

The proposed site is an extension of an existing borrow pit which was mined in the past (see Plates B12.1 – B12.4). The site is currently unfenced and used for grazing of livestock. There are some farm sheds located approximately 200 m north of the proposed borrow pit extension.

## B12.2.6 VEGETATION

The vegetation type present at the site is classified as Eastern Upper Karoo. The veld is in good condition with grass species dominating. The condition of the veld indicates that it has been well managed and there should be a sufficient seed bank in the topsoil. The area is unfenced and grazed from time to time. The dominating grass species are *Digitaria eriantha* (finger grass) and *Eragrostis lehmanniana* (Lehmann's love grass) with very little Karoo bush species. No rare or endangered plant species were found.

## B12.2.7 FAUNA

The site is currently unfenced and used for grazing. The site is flat with very little shelter for larger animal species. Some burrowing activities were, however, observed immediately to the west of the current excavation.

## B12.2.8 HYDROLOGY

Water accumulates in the lower lying area of the borrow pit during the rainy season. No other farm dams or rivers are located in close proximity to the borrow pit site.

## B12.2.9 GEOHYDROLOGY

No ground water was found in the trial pit holes up to a depth of 1.2 m.

### B12.2.10 AIR QUALITY

The air quality in the study area is good. Due to its close proximity to the N9 dust may become a nuisance to motorists during windy periods. Fast-moving traffic on the N9 would, however, only be impacted for a very short time while passing the site.

### B12.2.11 NOISE

The site is exposed to noise from traffic on the N9. There are no residential dwellings in close proximity to the borrow pit site and it is thus not expected that noise from borrow activities would affect neighbouring residents.

### B12.2.12 ARCHAEOLOGY AND PALAEONTOLOGY

Some MSA flakes and blade tools were recorded, mostly on the farm road close to the existing borrow pit excavation, and one quartzite chunk was found near the fence line alongside the N9. All the tools found in the proposed extension area were in very weathered indurated shale and rated as having low heritage significance.

### B12.2.13 SENSITIVE LANDSCAPE

No sensitive landscapes were identified.

### B12.2.14 VISUAL ASPECTS

The site is located adjacent to the N9 and borrow activities would be visible to fast-moving traffic on the N9. As motorists would see the activities for only a very short period while passing the, it is not expected to cause a significant visual intrusion. The site is also not visible from any residential dwellings.

### B12.2.15 REGIONAL SOCIO-ECONOMIC STRUCTURE

See information provided in Section B3.3.

### B12.2.16 INTERESTED AND AFFECTED PARTIES

The public participation process undertaken is presented in detail in Section A3.2.2. It should be noted that a notification letter was sent to Mr HE Hugo (the owner), informing him of the proposed project and that a borrow pit had been identified on his property. Mr Hugo was asked to complete an acknowledgement form (which is included in Appendix B12.2) to indicate that he was made aware of the location and extent of the area and that access to the area may be required across his property, as well as to raise any issues of concern. Mr Hugo had the following comments.

| I&AP | Comment | Response |
|---|---|---|
| Mr HE Hugo | • Fair compensation for use of the material would need to be negotiated.<br>• Mr Hugo raised concerns regarding the placement of the borrow pit in one of his larger camps where people would be able to see where his sheep graze and be able to gather information to aid in livestock theft. | • The proponent would be negotiating fair compensation with Mr Hugo.<br>• The proposed borrow pit excavation would be fenced and a gate would be installed to prevent any unlawful entry into the property. |

| | | |
|---|---|---|
| | • Mr Hugo also raised concerns regarding the level of rehabilitation undertaken after sourcing of material from borrow pits in the area. | • Rehabilitation would be undertaken as required by law and specified in this EMP. |

## B12.3 PART 3: BRIEF PROJECT DESCRIPTION

### B12.3.1 BENEFITS OF THE PROJECT

The motivation for and potential benefits arising as a result of the project are presented in Section A4.

### B12.3.2 CONSIDERATION OF ALTERNATIVES

A consideration of alternatives is presented in Section A4.2.

## B12.4 PART 4: DETAILED DESCRIPTION OF THE PROPOSED PROJECT

### B12.4.1 SURFACE INFRASTRUCTURE

There would be no permanent surface infrastructure associated with the proposed borrow pit. Access would be directly from the N9. New temporary fencing would be installed with a single gate to control access.

### B12.4.2 WASTE MANAGEMENT

Material that is not suitable for the road rehabilitation project would be stockpiled and used as backfill. Any domestic waste would be collected in a waste bin and disposed of at a municipal waste site.

### B12.4.3 WATER MANAGEMENT

The water requirements for the proposed borrow pit operations are expected to be minimal (e.g. dust suppression on access roads and borrow pit area). The water sources would be identified by the contractor.

The site would be free draining towards the north.

### B12.4.4 TRANSPORT

This would consist of trucks transporting the fill material from the borrow pit to the area of the road under construction. Trucks would use existing access roads.

### B12.4.5 BORROW PIT LAYOUT AND DEVELOPMENT

Google Earth images of the proposed borrow pit site are included in Figures B12.1 and B12.2 and the proposed site layout plan is included in Appendix B12.1.

The total proposed borrow area would be approximately 2.88 ha in extent. Vegetation would be cleared from the site. Any seed-bearing material would be kept separate for use during rehabilitation or preferably mulched into the topsoil. Topsoil would, where possible, be stripped to a depth of 200 mm and stockpiled separately from other soil layers in piles not exceeding 2 m in height (as indicated in the borrow pit layout plan in Appendix B12.1). Material that cannot be used for the road

rehabilitation project would be used in the reshaping of the site during rehabilitation and would be stockpiled separately.

To minimise any impacts on the value of the surrounding land, care shall be taken to limit the extent of the area disturbed during construction activities. In this regard, the borrow pit site and associated activities and infrastructure shall be carefully planned, to ensure that the footprint is kept to a minimum. The proposed borrow pit would consist of one compartment (see borrow pit layout plan).

The borrow pit would be expanded to the west, north and east of the existing mined area. The borrow pit would be excavated by means of ripping and loading with an excavator directly onto haul vehicles. Material would then be transported to the area of the road under construction.

The borrow pit would be mined to a maximum depth of 5 m. The end slopes of the excavation would be approximately 1:5.

The borrow pit details are summarised in Table B12.2 below.

**Table B12.2 Summary of Borrow Pit 12 N9_7/89.9/0.2R**

| | |
|---|---|
| Borrow pit area | 2.88 ha |
| Maximum depth | 5 m |
| Material description | Decomposed dolerite |
| Proposed usage | Fill |
| Volume of material | 70 000 $m^3$ |

## B12.5 PART 5: ENVIRONMENTAL IMPACT ASSESSMENT

This section describes the impact that would result from the proposed borrow pit. Mitigation measures are proposed that would ameliorate negative impacts or enhance potential benefits. Impacts were assessed according to pre-defined rating scales (see Appendix 2), which are based on criteria set out in the EIA Regulations, 2010.

The impacts arising from the borrow pit development are presented in Table B12.3.

## B12.6 PART 6: SITE REHABILITATION

It is expected that there should be an acceptable seed bank in the topsoil at Borrow Pit 12 and this would be kept aside for rehabilitation.

During rehabilitation, the topography would be finished off so that the sides of the borrow area are no steeper than 1:5. The slope changes would be finished off so that flowing curves that blend with the surrounding landscape are formed in preference to sharp angles. Topsoil and vegetation stripped during site clearance would be spread evenly across the borrow pit area. The area excavated as part of previous borrow activities would be ripped and also covered with a layer of topsoil.

## B12.7 PART 7: ENVIRONMENTAL MANAGEMENT PROGRAMME

A generic EMP is presented in Section C, as it is the same for all three borrow pits.


**Figure B12.1 Google Earth image showing the location of Borrow Pit 12 N9_7/89.9/0.2R approximately 4.5 km south of Colesberg along the N9.**


**Figure B12.2 Google Earth image showing the proposed mining area at Borrow Pit 12 N9_7/89.9/0.2R.**

**Plate B12.1 The existing excavation at Borrow Pit 12. Photo taken looking north along the N9.**

**Plate B12.2 The existing excavation at Borrow Pit 12. Photo taken looking northeast.**

**Plate B12.3 Photo of the proposed extension area looking south from the northern edge of the extension area.**

**Plate B12.4 Photo taken from the N9 towards Borrow Pit 12 looking east.**

**Table B12.3: Impacts arising from the proposed development of Borrow Pit 12 N9_7/89.9/0/2R.**

| Environmental Aspect | Extent | Duration | Intensity | Probability | Confidence | Significance (before mitigation) | Proposed mitigation | Significance (after mitigation) |
|---|---|---|---|---|---|---|---|---|
| Geology | Local | Permanent | Low | Definite | Medium | Low | - | Low |
| Topography | Local | Permanent | Low | Definite | Medium | Low | The topography would be finished off so that the sides of the borrow area are no steeper than 1:5. The slope changes would be finished off so that flowing curves that blend with the surrounding landscapes are formed in preference to sharp angles. | Very Low |
| Soil | Local | Short-term | Medium | Highly probable | High | Very Low | Stockpile topsoil and utilise during rehabilitation. | Very Low |
| Land use | Local | Short-term | Low | Probable | High | Very Low | Land disturbed would be rehabilitated. | Very Low |
| Land capability | Local | Short-term | Low | Probable | High | Very Low | • Demarcation and fencing of borrow area site;<br>• Identification of no-go areas; and<br>• Land disturbed would be rehabilitated. | Very Low |
| Vegetation | Local | Short-term | Low | Highly probable | Medium | Low | Topsoil together with existing plant material should be removed and stored in wind rows, no higher than two meters. During rehabilitation topsoil would be spread evenly across the cleared borrow pit area. Consider introduction of seed of species such as *Sporobolus fimbriatus* (dropseed grass) and *Pentzia incana* (ankerkaroo). | Very Low |
| Fauna | Local | Short-term | Low | Probable | High | Very Low | Land disturbed would be rehabilitated. | Very Low |
| Surface water | Local | Short-term | Low | Improbable | High | Very Low | All machinery and equipment shall be properly maintained, so that leaks do not appear and so that during servicing all oil, grease etc. is disposed of correctly. | Very Low |
| Groundwater | Local | Short-term | Low | Improbable | High | Very Low | All machinery and equipment would be properly maintained, so that leaks do not appear and so that during servicing all oil, grease etc. is disposed of correctly. | Very Low |
| Air quality | Local | Short-term | Low | Highly probable | High | Very Low | Retain vegetation cover as long as possible to reduce the size of areas where wind could generate dust and spray water and/or other dust suppression agents to reduce dust. | Very Low |
| Noise | Local | Short-term | Low | Highly probable | High | Very Low | The contractor would be required to be familiar with and adhere to any local by-laws and regulations regarding the generation of noise and hours of operation. | Very Low |
| Archaeology | Local | Short-term | Low | Probable | High | Very Low | - | Very Low |

| Environmental Aspect | Extent | Duration | Intensity | Probability | Confidence | Significance (before mitigation) | Proposed mitigation | Significance (after mitigation) |
|---|---|---|---|---|---|---|---|---|
| Palaeontology | No impact – Intrusive dolerite dykes do not host any palaeontological material. | | | | | | | |
| Sensitive landscapes | No impact. | | | | | | | |
| Visual aspects | Local | Long-term | Low | Probable | High | Low | Land disturbed would be rehabilitated. | Very Low |
| Regional socio-economic: employment | Local | Short-term | *Low* | Highly probable | High | *Very Low (Positive)* | Local labour would be sourced. | *Very Low (Positive)* |
| Regional socio-economic: safety | Local | Short-term | Low | Probable | High | Low | • The movement of construction vehicles would be limited to daylight hours; and<br>• The dangers associated with the movement of large haulage vehicles would be clearly sign-posted in both directions leading up to the proposed borrow pit. | Very Low |