REHABILITATION OF THE N2 SECTION 18 FROM TETYANA (KM24.00) TO SITEBE KOMKULU (KM41.00)

ENVIRONMENTAL IMPACT ASSESSMENT: SPECIALIST VOLUME

Prepared for:

Prepared by:

Coastal & Environmental Services
EAST LONDON
16 Tyrell Road, Berea
East London, 5201
043 726 7809
Also in Grahamstown, Port Elizabeth and Maputo
www.cesnet.co.za

March 2015
# REVISIONS TRACKING TABLE

**EOH Coastal and Environmental Services**

**Report Title:** REHABILITATION OF THE N2 SECTION 18 FROM TETYANA TO SITEBE KOMKULU  
**Report Version:** Draft  
**Project Number:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Responsibility</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caitlin Smith</td>
<td>Report Writer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roy de Kock</td>
<td>Project Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alan Carter</td>
<td>Reviewer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Copyright**

This document contains intellectual property and propriety information that are protected by copyright in favour of EOH Coastal & Environmental Services (CES) and the specialist consultants. The document may therefore not be reproduced, used or distributed to any third party without the prior written consent of CES. The document is prepared exclusively for submission to Department of Water and Sanitation, and is subject to all confidentiality, copyright and trade secrets, rules intellectual property law and practices of South Africa.
THE PROJECT TEAM

Mr Roy De Kock, Project Leader, Ecological
Dr Alan Carter, Reviewer
Ms Caitlin Smith, Report Writer

Dr Gideon Groenewald, Palaeontology
Mr Gavin Anderson, Heritage
TABLE OF CONTENTS

1. INTRODUCTION ................................................................. 2
2. HERITAGE IMPACT ASSESSMENT ........................................... 3
   2.1 Approach ........................................................................... 3
   2.2 Recommendations ................................................................ 3
   2.3 Conclusions ....................................................................... 3
3. PALAEONTOLOGICAL IMPACT ASSESSMENT ............................... 4
   3.1 Approach ........................................................................... 4
   3.2 Recommendations ............................................................... 4
   3.3 Conclusions ....................................................................... 4
4. ECOLOGICAL IMPACT ASSESSMENT ......................................... 5
   4.1 Approach ........................................................................... 5
   4.2 Recommendations ............................................................... 5
   4.3 Conclusions ....................................................................... 6

LIST OF FIGURES

Figure 1.1: Location of the proposed upgrade showing the affected road section between Tetyana and Sitebe Komkulu in the Eastern Cape, the red line indicates the proposed upgrade................................. 2
1. INTRODUCTION

The South African National Roads Agency Ltd. (SANRAL) is proposing the construction of various safety improvements on Section 18 of the N2 National Route from Tetyana (km 24.00) to Sitebe Komkulu (km 41.00) in the Eastern Cape Province (Figure 1.1). GIBB Engineering (GIBB), the project managers, contracted EOH Coastal & Environmental Services (CES) as the Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA).

Figure 1.1: Location of the proposed upgrade showing the affected road section between Tetyana and Sitebe Komkulu in the Eastern Cape, the red line indicates the proposed upgrade.

The proposed development will consist of the construction of various safety improvements on the N2. These improvements include:

- Reconstruction of the existing road, including widening and re-alignment both within and outside the current road reserve where necessary.
- Installation of new road drainage.
- New major drainage structures (bridges/major culverts)
- Safety improvements to intersections where necessary.
- Construction of temporary deviations
- Resurfacing of Mbashe bridge
- Widening of Candu River bridge
2. HERITAGE IMPACT ASSESSMENT

Umlando was contracted by EOH Coastal and Environmental Services to undertake the Heritage Impact Assessment (excluding palaeontology) for the road upgrade.

2.1 Approach

The first step in the HIA consisted of the desktop assessment. A database was consulted that has been collated by Umlando. The database is in Google Earth format, therefore acts as a quick reference system when undertaking desktop studies. Local data recording centres, a historical architect, palaeontologist and a historian was consulted where necessary. The surveyed results then defined the significance of each recorded site, as well as a management plan.

Sites were grouped according to low, medium and high significance.

2.2 Recommendations

The public participation process must involve all communities and individuals in cases where the road occurs near graves or places of worship. Affected parties must give written consent for the road to pass near the graves and/or for their ancestral graves to be fenced off and demarcated. A fence needs to be placed 5 m from the grave and no development should occur within 20 m of the grave. All graves within 50 m of the footprint should be clear and visibly demarcated before the construction phase to avoid possible damage to graves. Graves older than 60 years require a qualified archaeologist to undertake the entire process.

The Bashee River Bridge needs to be assessed for its architectural significance as well as the Living Heritage status if it will be affected.

2.3 Conclusions

The rehabilitation of this section of the N2 will entail road widening, straightening of some curves in the road, a road deviation and two quarries. Much of the rehabilitation will occur within the existing road reserve, hence the lack of archaeological sites recorded during the survey.

The survey noted several graves that will be affected by the project. Some of these will need to be fenced off before road construction, while others may need to be relocated. The graves near the quarries need immediate attention. These graves appear to be younger than 60 years in age. The original Bashee River Bridge should not be damaged as it potentially has Living Heritage status. The bridge also needs to be assessed by an architect historian.
3. PALAEONTOLOGICAL IMPACT ASSESSMENT

Gideon Groenewald was appointed to undertake a Phase 1 Palaeontological Impact Assessment, assessing the potential palaeontological impact of the proposed road upgrade.

3.1 Approach

Prior to the field investigation a preliminary assessment (desktop study) of the topography and geology of the study area was made using appropriate 1:250 000 geological maps (3128 Umtata) in conjunction with Google Earth. Potential fossiliferous rock units (groups, formations etc) were identified within the study area and the known fossil heritage within each rock unit was inventoried from the published scientific literature, previous palaeontological impact studies in the same region and the author’s field experience.

Priority palaeontological areas were identified within the development footprint. The aim of the fieldwork was to document any exposed fossil material and to assess the palaeontological potential of the region in terms of the type and extent of rock outcrop in the area.

3.2 Recommendations

It is recommended that:

• A permit must be obtained from SAHRA for the excavation, rescue and removal of fossils for the development.
• A qualified Palaeontologist must be on site during excavations of the identified high sensitivity areas.

3.3 Conclusions

The development site for the proposed rehabilitation of the N2 section 18 from Tetyana (km24.00) to Sitebe Komkulu (km41.00) is underlain by the Permian to Triassic Adelaide Subgroup and the Triassic Tarkastad Subgroup.

Outcrops of the Tarkastad Subgroup are extensive and were seen in the numerous erosion gullies and road cuttings. Outcrops of Adelaide Subgroup rocks were observed in areas on either side of the Mbashe River. There is a high potential for fossil material in the underlying mudstones that could be uncovered during excavations at the areas indicated as having a high sensitivity.

The underlying mud rocks of the Adelaide and Tarkastad Subgroups in the development footprint have a high palaeontological sensitivity rating due to the abundance of fossil remains recorded within these units as well as the number of fossils observed during the field investigation. Through adequate monitoring and mitigation measures during excavations the high impact severity can be lowered to beneficial. The exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) to a qualified palaeontologist for excavation will have a beneficial palaeontological impact.
4. ECOLOGICAL IMPACT ASSESSMENT

Roy de Kock (of EOH CES) was appointed to undertake an Ecological Impact Assessment for the proposed road upgrade.

4.1 Approach

The study site and surrounding areas were assessed using a two-phased approach. Firstly, a desktop assessment of the site was conducted in terms of current vegetation classifications and biodiversity programmes and plans. This included the consideration of:

- Vegetation Map of South Africa, Lesotho and Swaziland
- Eastern Cape Biodiversity Conservation Plan (ECBCP)
- South African National Biodiversity Institute (SANBI) wetlands database

Further to the above, a site visit was conducted on 8 April 2014 in order to assess the actual ecological state, current land-use, identify potential sensitive ecosystems and identify plant species. The site visits also served to inform potential impacts of the proposed project and how it would significantly impact on the surrounding ecological environment.

4.2 Recommendations

All the mitigation measures provided below are to be implemented in the Planning and Design, Construction and Operation Phases of the proposed upgrade of the N2 road section between Tetyana and Sitebe Komkulu.

- **Planning and design phase**
  - An Environmental Control Officer (ECO) must be appointed to oversee construction activities.
  - Construction activities must be limited in areas where pristine and semi-pristine Bhisho Thornveld and Eastern Cape Bushveld are found.
  - Ensure that appropriate storm water structures are designed and implemented.
  - Ensure that all road sections situated on slopes incorporate storm water diversion.
  - Ensure that all storm water structures are designed in line with both SANRAL and DWS requirements.
  - If any construction takes place inside or within 50 meters of any river, stream or drainage system, authorisation from DWS must be obtained.
  - If any construction takes place inside or within 500 meters of any wetland, authorisation from DWS must be obtained.
  - Develop and implement an Erosion Action Plan.
  - Ensure that a buffer zone of 32 metres from all perennial and non-perennial rivers and streams are maintained. No development activities may occur within this area.
  - If any construction takes place inside or within 32 meters of any water body, authorisation from DWS must be obtained.
  - The road upgrade route must be surveyed prior to topsoil removal in order to locate SSC and transplant them into the neighbouring undeveloped environment.
  - A Plant Rescue & Protection Plan must be implemented and managed by a vegetation specialist familiar with the site in consultation with the appointed ECO.

- **Construction phase**
  - Ensure that a buffer zone of 32 metres from both the Candu & Mbashe Rivers is maintained. No development activities may occur within this area.
- If any construction footprint takes place inside or within 32 meters of both the Candu & Mbashe Rivers, authorisation from DWS must be obtained.
- The development area must be surveyed prior to topsoil removal in order to locate and capture any SSC and relocate them.
- A Rehabilitation Management Plan must be implemented.
- An Alien Removal Plan must be implemented and run during the construction phase.
- Construction activities must be limited to the designated footprint of the road upgrade route i.e. construction materials, vehicular storage, construction camps etc., should occur in a footprint which will ultimately be developed as part of the facility.
- There should be minimal disturbance to Mthatha Moist Grassland areas as successful vegetation recovery will depend on the remaining vegetation.
- Where vegetation has been cleared, site rehabilitation in terms of soil stabilisation and re-vegetation must be undertaken.
- All aloes impacted by construction and mining activities must be conserved and rescued.
- All rescued aloes can be kept in a temporary onsite nursery for the duration of construction.
- All rescued aloes must be replanted within the site where it was originally found or in close proximity during rehabilitation.

- **Operational phase**
  - An alien removal plan must be implemented and run during operational phase.
  - Service roads should not exceed 4 metres in width and should incorporate storm water levees to reduce the likelihood of erosion.
  - Develop and implement an Erosion Action Plan.
  - Construction sites must be more than 100m from any water body.

4.3 Conclusions

In summary, the following plans need to be developed as part of the final EMP and Project monitoring, incorporating all the issues, conclusions and recommendations of this report:

- Stormwater Management Plan
- Erosion Action Plan
- Plant Rescue & Protection Plan
- Rehabilitation Management Plan
- Alien Vegetation Removal Plan (for both construction and operational phase)

The ecological impacts of all aspects of the proposed upgrade of the N2 road section between Tetyana and Sitebe Komkulu were assessed and considered to be ecologically acceptable, provided that the mitigation measures provided in this report are implemented. The majority of the impacts are rated as MODERATE to HIGH pre-mitigation, therefore implementation of recommended mitigation measures coupled with comprehensive rehabilitation and monitoring in terms of re-vegetation and restoration is an important element of the mitigation strategy. Implementing the recommended mitigations measures will reduce impacts to LOW to MODERATE.

Both proposed N2 road alternatives are deemed as acceptable provided that the recommended mitigation measures are implemented.