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TECHNICAL REPORT

UPGRADING OF STREETS IN VICTORIA WEST, LOXTON & RICHMOND: PHASE A

DATE: 04th NOVEMBER 2010

Prepared for:

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Prepared by:

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1.1 GENERAL

This Technical Report in respect of the proposed upgrading of streets in Victoria West, Richmond and Loxton is submitted by virtue of the authority conferred by the Ubuntu Municipality. This is done in accordance with the appointment letter Reference No. ..... dated 20 October 2010.

In accordance with the ToR, the main objective of the investigation is to determine the most appropriate strategy for the upgrading of the streets in the area under investigation. This report covers the general aspects of the investigation and provides inter alia detail on the existing pavement condition, construction works and cost. The main findings and recommendations are summarised in this report. A project locality plan is presented in Appendix A.

1.2 TERMS OF REFERENCE

The terms of reference the appointment of Ero Engineers (Pty) Ltd **[ERO]** include inter alia the following:

- Planning for upgrading of selected gravel roads in Victoria West, Richmond and Loxton.
- Liaison and consultation with communities and various stakeholders in the affected area.
- Preparation and submission of a report embodying preliminary proposals, estimates of cost and time.
- Compilation of specifications for the construction of the streets identified by the Ubuntu Municipality for implementation.
- Basic Planning and Detailed Design of the Project.
- Preparation of all Documents necessary to enable Tenders for the Works to be called for.
- Preparation of any further Plans, Designs and Drawings which may be necessary for the execution of the works.
- Advertising of tenders and evaluation thereof.
- Contract Administration and Construction Supervision.
- Compilation of As-built Drawings and Completion Reports.
- Conduct an Environmental Impact Assessment if necessary.

The Appointment Letter is presented in Appendix B.

2.1 PROJECT STEERING COMMITTEE (PSC)

The PSC will represent all the representatives in the community of Victoria West, Richmond and Loxton. Through the PSC, every community member may therefore make an input in the management of the project. Ubuntu Municipality, in its capacity as the implementing agent, is the principal stakeholder and is also represented on the PSC. The project managers, **ERO**, are also represented on the PSC. However, their role is to provide technical and managerial advice to the members of the PSG.

2.2 IMPLEMENTING AGENT AND PROJECT MANAGER

2.2.1 Implementing agent : Ubuntu Municipality

- Contact person : Mr M Fillis (Municipal Manager)
- Address : Ubuntu Municipality
  Private Bag X329
  VICTORIA WEST
  7070
- Telephone no. : (053) 621 0026
- Facsimile no. : (053) 621 0368
- Email : mfillis@mweb.co.za

2.2.2 Project Manager and Design Engineer : Ero Engineers

- Contact Person : Mr Kobus Visser
- Address : Ero Engineers (Pty) Ltd
  PO Box 4344
  DURBANVILLE
  7551
- Telephone no. : (021) 975 6200
- Facsimile no. : (021) 975 6400
- Email : info@ero-engineers.co.za

Other key personnel in the proposed project team are as follows:

- Mr O Jonker : Documentation, Pavement Design
- Mr L Kriegler : Geometric Design, Stormwater Design
- Mr F Henning : Construction Monitoring

3.1 BRIEF PROJECT DESCRIPTION

ERO's appointment called for the Upgrading of unpaved streets within Victoria West, Richmond and Loxton. The proposed construction work will inter alia include the following actions:

TABLE 2.1 : SCOPE OF WORKS

Construction Activity	Description
Local residential streets	- Importing material from new borrow pit. - Construction of stabilised C4 subbase and imported selected layer. - Surfacing – 80 mm interlocking pavers.
Drainage Improvements	- Concrete V-drains, kerbs, etc.
Road Furniture	- Road signage as required.
Road Markings	- Road markings on completion of road works.

3.2 PROJECT LOCATION

This project lies in Northern Cape Province and includes the towns of Victoria West, Richmond and Loxton.

3.3 DESCRIPTION OF STREETS UNDER INVESTIGATION

The streets under investigation are located within the developed areas. There are major stormwater drainage problems related to these streets as they are not paved and slopes are very steep. Another problem is the fact that these roads were never actually constructed as

roads, rather areas that were cleared and used as roads. Refer to layout plans in Appendix C indicating the streets of concern. No signalised intersection occurs.

3.4 CLIMATIC CONDITIONS

Rainfall Station	:	Beaufort West (00920815)
Longitude	:	32°21'23" ; Latitude : 22°34'53"
Height	:	840 mm above sea level
Average Rainfall	:	262 mm per year
Average No of Days with rainfall exceeding 10 mm	:	6 days / years

3.5 TOPOGRAPHY

The towns lie in the typical Karoo region with a flat to undulating topography.

4.1 TRAFFIC SURVEYS

No detailed traffic counts are currently available. The cumulative equivalent design traffic loading will therefore be done by means of estimation from tabulated traffic classes *(Draft UTG3 Structural Design of Urban Roads – 1988)*.

5.1 GEOMETRIC DESIGN

The geometric design of the streets will be done in accordance with the recommended design standards. It is therefore envisaged to apply geometric improvements with the intention being to improve the safety of all road users.

5.1.1 Typical Road Cross-section

The proposed new streets consist of single carriageway surfaced streets. The typical cross section varies according to the classification. Detailed cross sections are presented in Appendix C.

Surface drainage will be accommodated on the streets at selected positions. Kerbing will consist of a combination of barrier kerbs and edge beams along the road. Stormwater runoff will be discharged on the surface and no kerb inlets or stormwater pipes will be provided. A lined trapezoidal drain is proposed on one side of the road.

5.1.2 Horizontal Alignment

The local residential streets will be designed for a speed of 50 km/h. The super-elevations on all the horizontal curves will be kept to a two percent reverse camber as far as possible, as a direct result of the urban setting of the road and the low speeds. It is not foreseen that any future improvement to the horizontal alignment would be required.

5.1.3 Vertical Alignment

The streets are situated in a residential area, and the existing vertical alignment will be maintained as far as possible.

The minimum K-values and other vertical design criteria will be according to the normal standards. The presence of existing services in the road reserve will have to be addressed by the vertical alignment.

5.1.4 Intersections

There are no major intersections within the study area.

5.1.5 Road safety and Road Signs

Road signage and road markings will be provided where applicable to improve safety.

5.1.6 Services

All visible services along the entire area must be noted during the visual site investigation. Should major relocation of existing services occur, the horizontal alignment of the road will not deviate from the existing position.

A detailed survey of the existing services will be done in the detail design stage of this project.

6.1 BACKGROUND

A preliminary visual inspection was done during September 2010. A detailed visual inspection will be done during the final design stage.

6.2 ASSESSMENTS AND SURVEYS

6.2.1 Visual Assessment

Pavement

The objective of the detailed visual inspection on the proposed streets is to determine the condition of the existing roads and associated problem areas.

Drainage

Stormwater accommodation, drainage of water on the road surface as well as drainage next to the streets will be inspected.

No ponding of water should be allowed next to the road and should be diverted away from the pavement layers.

6.3 MATERIALS INVESTIGATION

A reputable materials laboratory will be contracted to do a detailed materials investigation on the area under investigation as well as the borrow areas.

6.4 STRUCTURES

6.4.1 Drainage Structures

Drainage along the streets will be managed by means of kerbing and concrete trapezoidal drains.

7.1 SCOPE

The design approach for this project will be based on the following principles:-

- To optimise the use of in-situ materials.
- To provide an appropriate pavement structure for the selected design life.
- The design must be economical and cost effective also in terms of maintenance operations.

7.2 NEW PAVEMENTS

7.2.1 The following pavement structure is considered:

- Utilise of the in-situ pavement material for selected layers and roadbed.
- Import subbase material from borrow pit and surface with 80 mm interlocking pavers.

In keeping with the above, the following preliminary designs are proposed:

Surfacing	80 mm Interlocking Pavers (25 MPa)
Subbase	150 mm Stabilised material (C4) compacted to 97% of mod. AASHTO density.
Selected layer	125 mm Natural gravel (G5) compacted to 95% of mod. AASHTO density.
Roadbed	125 mm Natural gravel (G8) compacted to 93% of mod. AASHTO density.

7.3 ROAD FURNITURE, ROAD SIGNS AND ROAD MARKINGS

The newly constructed streets need to be furnished with road signs. Road markings along the entire alignment will be constructed. No allowance will be made for the provision of electrical lights adjacent to the streets.

8.1 ACCOMMODATION OF TRAFFIC

The construction of the pavement layers and shoulders will be done in half widths where possible to accommodate traffic (local residents with properties adjacent to the road).

The speed of vehicles alongside actual construction areas must be limited to a maximum of 20 km/h. STOP/GO signs and flagmen shall be employed at the points where construction traffic enters the working area thus creating a potential danger situation for public traffic.

8.2 PROVISION OF EDGE BEAMS

Numerous accesses to properties adjacent to the streets have been observed. Provision has been made in the cost estimate to provide for edge beams and kerbing.

8.3 CONSTRUCTION MATERIALS

The use of in-situ materials will be maximised for the construction of the pavement layers.

8.4 CONSTRUCTION MONITORING

The extent of the work will not warrant full time site staff for construction monitoring. Although it will be finally agreed between the officials of the Ubuntu Municipality and the consulting engineer before commencement of construction, it is recommended that construction monitoring be done at Level 2. This level is in accordance with the duties of the consulting engineer pertaining to construction monitoring as defined in Government Gazette No 31749, 02 January 2009.

8.5 EXISTING SERVICES

Relocation/protection of existing services is anticipated on the project. Provision for this has been made in the cost estimate.

Application for exemption from a full EIA will be made due to the fact that the streets run along the existing disturbed area.

9.1 CONSTRUCTION COST ESTIMATES

The total estimated cost to upgrade the local residential streets is detailed below:

Description	Total km	Amount
Major Collector Street	8.27	R 36 801 500.00
Access Loop	2.25	R 8 691 750.00
Access Street	0.83	R 3 087 600.00
Sidewalk brick paved	8.27	R 4 217 700.00
Sidewalk sealed	2.25	R 607 500.00
Sidewalk gravel	0.83	R 186 750.00
Total cost roadworks		**R53 592 800.00**
Training		R200 000.00
Fees (approx 12,5%)		R6 750 000.00
Total cost		**R60 542 800.00**
VAT		R8 475 992.00
Total estimated cost		**R69 018 792.00**

9.2 FUNDING SOURCES

Municipal Infrastructure Grant (MIG)

9.3 OPERATION AND MAINTENANCE COSTS

No major operational and maintenance costs will be applicable on this road network within the first four years after construction; however should minor defects occur within this time, the Ubuntu Municipality will be responsible to take corrective action.

9.4 PROVISIONS FOR OPERATING AND MAINTENANCE COSTS

9.4.1 The Engineering Department of Ubuntu Municipality will be responsible for all operating and maintenance aspects.

9.4.2 The estimated annual operating and maintenance costs will be included in the tariff structure implemented by the Local Authority.

9.5 PROPOSED JOB CREATION AND TARGETED PROCUREMENT

9.5.1 Local Labour

A condition of tender will be that the Contractor must make use of labour intensive construction methods as far as possible.

It will also be stated in the contract that Contractors shall utilise local labour as much as practically possible and the percentage thereof will be determined by the Ubuntu Municipality in conjunction with the consulting engineers.

9.5.2 Targeted Procurement

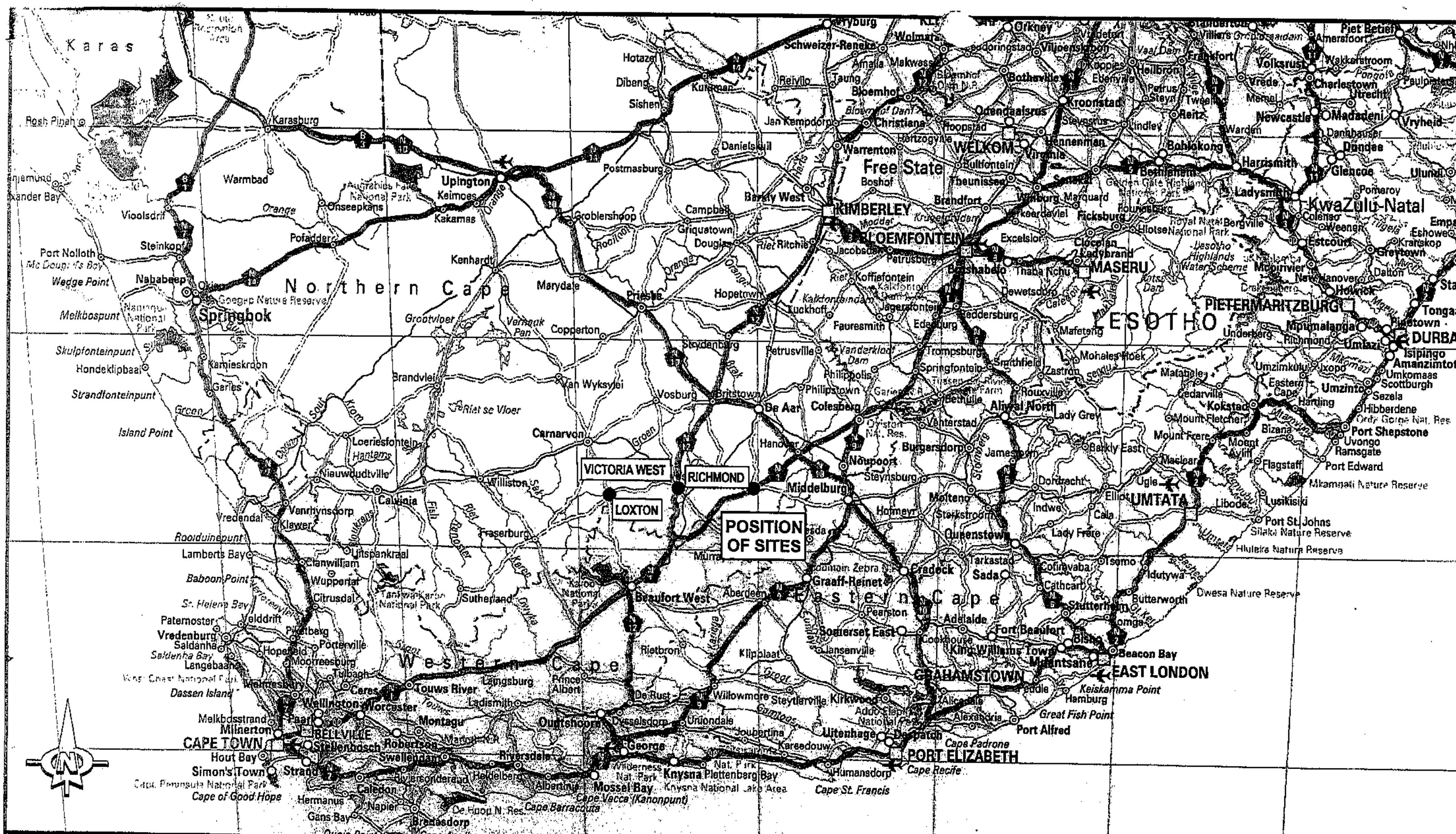
The procurement of contracting entities will be done using the targeted procurement procedures. The tender document will be compiled in accordance with Target Procurement Specifications. The tenders will be drawn up in such a way as to ensure access for sub-contactors and local labour.

.....
FJJ VISSER

01-11-2010
.....
DATE

APPENDIX A:

Locality Plan



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UPGRADING OF STREETS: UBUNTU MUNICIPALITY

LOCALITY PLAN

Scale	N.T.S.
File name	
Drw No. ER 1006/01	Rev.

APPENDIX B:

Appointment Letter

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Privaatsak X 329, VICTORIA WES, 7070, **Tel:** 053 6210026, **Faks:** 053 6210368

U VERWYSING: YOUR REFERENCE: ER1006	ONS VERWYSING: OUR REFERENCE: MF FILLIS

E-MAIL ADRES: ubuntuvic@wsinet.co.za

20 October 2010

ERO Engineers (Pty) Ltd
P.O. Box 4344
Durbanville
7551

ATTENTION Mr FJJ Visser

LETTER OF APPOINTMENT: CONSULTING ENGINEER: UPGRADING OF STREETS IN VICTORIA WEST, RICHMOND AND LOXTON

We hereby confirm that ERO Engineers (Pty) Ltd has been appointed to perform the civil engineering services of the abovementioned project.

The appointment is based on the following attached agreement:

- CESA Standard Form of Agreement for Consulting Services.
- ECSA Guideline Scope of Services and Tariff of Fees.

The scope of works includes provision professional civil engineering services in connection with the upgrading of unsurfaced streets in the towns of Victoria West, Richmond and Loxton under the authority of Ubuntu Municipality..

The council resolution number is ..... and the IDP number is .....

We trust you will find the above in order.

Yours faithfully.

MF FILLIS
Municipal Manager

APPENDIX C:

Cross Sections and Layout Drawings