MATJHABENG LOCAL MUNICIPALITY

NYAKALLONG: STORMWATER SYSTEM CONSTRUCTION – PHASE 1

CONTRACT NUMBER: 6/2016

APPLICATION FOR BUDGET MAINTENANCE FOR MIG/FS1058/SW/14/16 (MIS: 219132) ON THE CONTRACT AWARDED ON THE 12TH MAY 2017

REVISED TECHNICAL REPORT
Variation Order No. 2

31 May 2018

Prepared for:

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06 April 2018

Our Ref.: UPC/P8/MLM/NYA/RPRT/008
Your Ref.: MIG/FS1058/SW/14/16

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Attention: Mr. Thabiso Tsoaeli

Sir,

CONTRACT NO. 6/2016 NYAKALLONG: STORMWATER SYSTEM CONSTRUCTION – PHASE 1

VARIATION ORDER NO. 2: APPLICATION FOR BUDGET ADJUSTMENT

Herewith is our application for Variation Order No. 2 on the ongoing works for the above-referenced project which commenced on the 12th May 2017. This application is subject to consideration by the Municipality in order to effect budget adjustment. The requested variation order bears financial implications that will affect the contract amount ceiling.

With reference to Section A, Section B and Sections C of the contract document; Sub-Sections A3 (A3.2 & A3.3), A4 (A4.3 & A4.4), A5 (A5.2), A6 (A6.5); B1 (B1.3, B1.6, B1.7, B1.15, B1.16, B1.17& B1.18); and C1.9, respectively, it is requested that Variation Order No.2 for the amount of **R 1 829 672,99** (**One Million, Eight Hundred and Twenty Nine Thousand, Six Hundred and Seventy Two Rand and Ninety Nine Cents**) including 15% VAT, be considered for approval (Attached hereto under Annexure D is the detailed Variation Order No. 2 application form; under Annexure E is the revised Bill of Quantities; and under Annexure F is the revised Design Drawings for Construction).

The variation order requires an additional 8.61% funding allocation to the approved budget. This adjustment is derived from the alteration to both the direct and indirect costs, the changes in design and specifications due to unforeseen site conditions, the savings and additions to scheduled items and the utilization of the available contingencies sum balance, as determined and considered during the Site Progress Meeting No. 7 that was held on the 20th February 2017 and guided by the applicable contract conditions and/or terms, as well as the increase in the VAT rate.

The Minister of Finance announced a VAT rate increase from 14% to 15% effective 1st April 2018 in the 2018 Budget Speech. The increase in the VAT rate has bearing on the adjustment

to the remaining budget amount required to complete the project and was applied in computations for this application.

We are trust that this application will meet your favourable consideration.

Yours faithfully,

TUBATSI MASIA
Managing Director

DOCUMENT CONTROL SHEET

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CONSULTANT	:	U-Kunda Professional Consultants
PROJECT	:	Nyakallong: Construction of Stormwater System – Phase 1
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DATE	:	31 May 2018

Document Draft by : U-Kunda Professional Consultants

Project Engineer : _____ _____

20150489

Date

Project Manager : _____ _____

Project Management Unit (PMU) Date

Infrastructure Division : _____ _____

Executive Director Date

Approved for Client : _____ _____

Municipal Manager Date

REVISED TECHNICAL REPORT FOR FUNDING APPLICATION BASED ON A FULL HYDROLOGICAL STUDY, DESIGN AND DOCUMENTATION FOR PLANNING AND IMPLEMENTATION OF STORMWATER MANAGEMENT FOR NYAKALLONG: STORMWATER SYSTEM CONSTRUCTION – PHASE 1

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1 PROJECT SUMMARY

1.1 Project Details

The table below provides details on the project:

Table 1-1: Project Details

Description	Yes/ No	Remarks
Consultant Appointed	Yes	U-Kunda Professional Consultants, 01 February 2013
Scope of Works	Yes	Master Plan, Inception, Concept and Viability, Design Development, Documentation and Procurement, Contract Administration and Monitoring, and Close Out
Project Registration	Yes	Registered, 28 November 2014 (MIG/FS1058/SW/14/16)
Total Project	Yes	Master Plan. Recommended, 04 November 2013
Total Funding Available	Yes	R 11 402 923.00 (Phase1). Approved, 28 November 2014
Total Revised Budget Available	Yes	R 19 420 692.83 (Phase1), Approved, 29 September 2017
Scope of Work Finalized	Yes	For Phase 1
Conclusion of SLA	Yes	Concluded, 02 April 2013
Stage 1: Inception	Yes	Concluded, 16 August 2013
Stage 2: Concept and Viability	Yes	Concluded, 04 November 2013
Stage 3: Design Development	Yes	Concluded, 27 November 2015
Stage 4: Documentation and Procurement	Yes	Concluded. Contract awarded, 12 April 2017
Contractor Appointed	Yes	Kgotha Contractors (PTY) Ltd
Scope of Works	Yes	Construction of Nyakallong Stormwater System – Phase 1
Awarded Contract Sum	Yes	R 13 774 408.30 including Cont., CPA and VAT
Stage 5: Construction	Yes	Ongoing. Completion Target, 31 May 2018
Stage 6: Close Out	No	After Stage 5 is Concluded. Target, 30 June 2018

1.2 Construction Works

The construction works commenced on the 12th May 2017. The scope of works entails:

a) 448.00m portal/box culverts;
b) 627.00m pipe culverts of varying diameter;
c) 648.00m lined channels;
d) new kerb (5No.) and grid inlets (11No.);
e) sand traps (3No.);
f) road works including side walks (interlocking paving and road crossings (3No.)); and
g) attenuation dam (83 700m^2).

The construction works are scheduled to cover the following:

Table 1-2: Scheduled Works

Section	Description
A	Preliminary and General
B	Stormwater Drainage System
C	Attenuation Dam
D	Road Works

The contractor has established the site and is currently constructing the attenuation dam. In accordance with the preliminary programme submitted by the contractor it is anticipated the construction works will be concluded in eight (8) months.

2 INTRODUCTION

2.1 Background

In 2013 the above subject project for Nyakallong: Construction of Stormwater System – Phase 1 in the Matjhabeng Local Municipality jurisdiction was registered and approved for an amount of R11 402 923.00 all inclusive (Ref.: MIG/FS1058/SW/14/16, dated 28th November 2014). The Executive Council of Matjhabeng Local Municipality prioritized this project for implementation and a service provider was appointed to design and prepare documentation for tender (see Table 1-1 for details on project).

The Matjhabeng Local Municipality appointed the contractor for the implementation of the project on the 12th April 2017 and the works commenced on the 12th May 2017. The Provincial Department of Cooperative Governance and Traditional Affairs (CoGTA) registered and approved the revised project budget for the amount of R19 420 692.83 all inclusive (Ref: MIG/FS1058/SW/14/16 (MIS: 272693), dated 29th September 2017). The revised budget was the result of the budget shortfall due to the Revised Scope of Works and Variation Order No. 1.

2.2 Purpose of this Report

The Matjhabeng Local Municipality requests additional funding from the Department of Cooperative Governance and Traditional Affairs (CoGTA), on the Municipal Infrastructure Grant (MIG) budget required for the implementation and completion of the project.

3 PROJECT INFORMATION

3.1 Project Location

Nyakallong Township is located to the East of R30 Provincial Road from Welkom to Allanridge, in the Free State Province. Its approximate GPS coordinates are:

Longitude (E): 26º 39’ 29”

Latitude (S): 27º 46’ 50”

Across the R30 Provincial Road to the West is a mining area and the Allanridge township is to the North. East of the township lies open agricultural farmlands.

The site is located within primary catchment C in the Middle Vaal River Catchment system and falls under quaternary sub-catchment C25B. The overall feature of the mean annual precipitation over the Water Management Area (WMA) is that it decreases fairly uniformly westwards, from the eastern escarpment regions to the central plateau area. Mean annual

precipitation per year ranges between 500mm in the west and 700mm in the east of the WMA. Quaternary sub-catchment C25B has a mean annual precipitation (MAP) of 497mm.

The average temperature for the WMA is 16˚C, with the mean annual temperatures ranging between 18˚C in the west to 14˚C in the east.

A locality map of the area is shown in Figure 3-1.

The Sub-Catchments and Related Quaternary Drainage Regions within the Middle Vaal River System (adapted DWAF, 2002b) is shown in Figure 3-2.

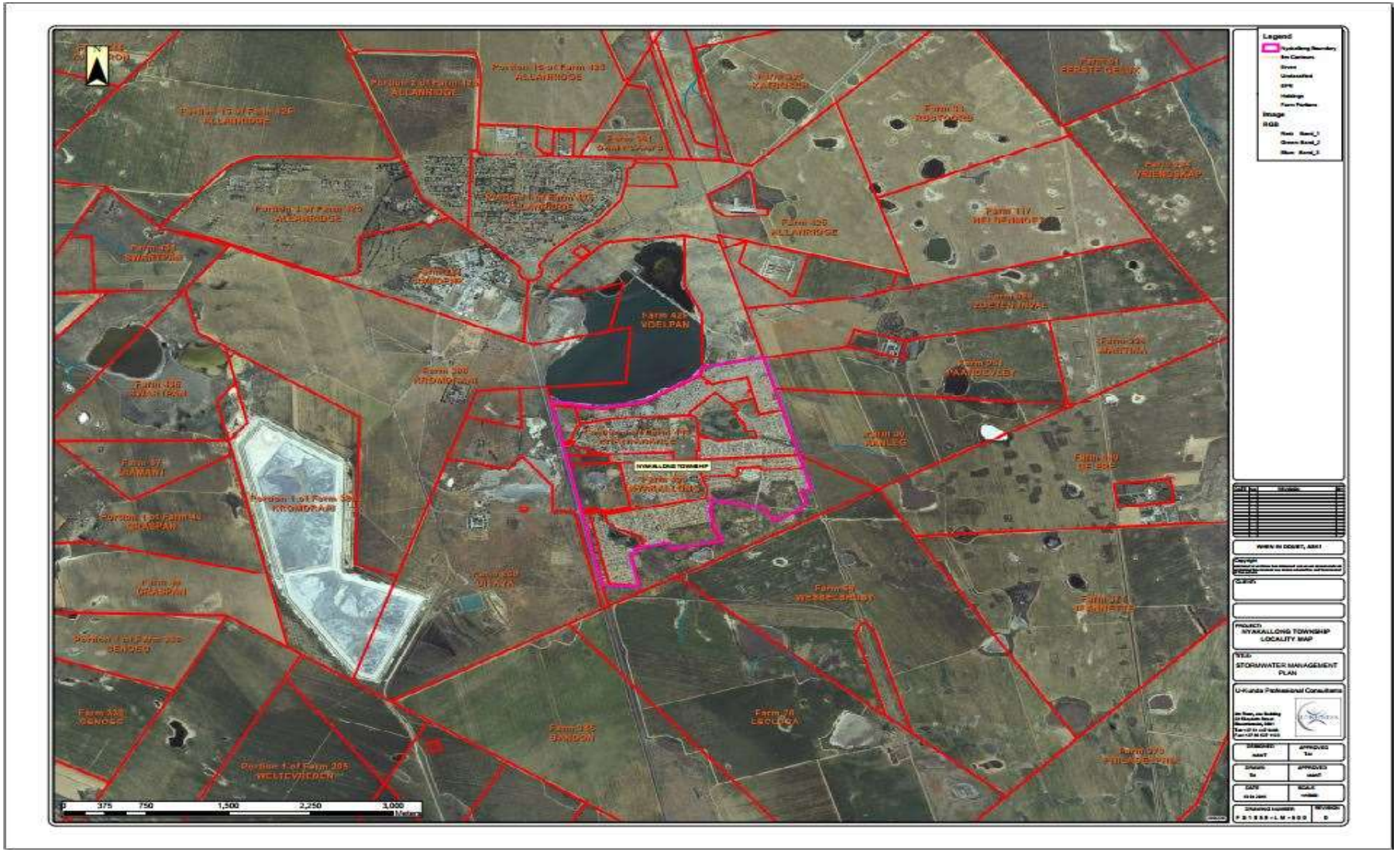

Figure 3-1: Nyakallong Township Locality Map

Figure 3-2: Sub-Catchments and Related Quaternary Drainage Regions within the Middle Vaal River System (adapted DWAF, 2002b)

3.2 Problem Statement and Goals

3.2.1 Community Needs

The current suburb does not have a fully developed stormwater management system that collects and decants the surface runoff away from the development. This poses the following adverse impact to the Nyakallong community:

a) Standing water in the form of pools during storms. Areas with stagnant water endanger the community for they serve as both a health hazard (breeding spot for related insects) and dangerous to the elderly and children.
b) Damage to property and road infrastructure during storms.
c) Decreased safety of motorists during storms.

This project seeks to address the above-stated challenges in providing stormwater infrastructure for the conveyance of a 1:20 year event storm away from the township development.

Drainage and cleaning systems for these selected water pans will be carefully designed and maintained to keep them attractive and posing no danger of drowning to the community.

It is the intention that the project be executed in full support of the adopted procurement policy of the Matjhabeng Local Municipality. It is furthermore expected that the existing local planning and development forums with the assistance of the local labour desk will assist in the attainment of local labour and communal matters and to monitor the tendered goals in support of the policy.

All labour utilised on this contract will be drawn from the immediate local community where large unemployment prevails and the need for a better quality of life exists.

The Infrastructure Guideline February 2010, proposes a minimum number of person days of work to be created per million rand of expenditure as 1041.9-person days.

3.2.2 Existing Stormwater Drainage System Details

Nyakallong Township is a well built-up residential area. The land-use of the area is primarily single residential. Except for five (5) local schools, one (1) clinic, one (1) taxi rank and one (1) sports and recreational facility, there are no any other sites that are non-residential. The majority of the stands have been developed.

The complete area is serviced with basic services of water, sanitation and electricity. A few of the major roads are surfaced. To a large extent the area does not have any form of a formalised stormwater drainage system. Measures have been put in place in some parts of the township to install stormwater pipes, for example, at road crossings, and by creating natural open channels in order to protect life and property from flood hazards. The culverts and channels collect water from the Nyakallong suburb and the mining area situated upslope to the catchment and opposite the residential suburb across the R30 road. The storm water from the

mine area enters the suburb through culverts installed by The Free State Provincial Roads Department across the tarred R30 road. The existing culverts and channels vary in shape and size from box culverts to circular pipe culverts, with the pipe culverts mostly of 600mm and 900mm diameter at road crossings. Unlined earth channels are fairly shallow v-drains and trapezoidal drains.

4 PROJECT SCOPE

4.1 Original Scope

The scope of works as revised and recommended by CoGTA and registered under MIG was as follows:

- The supply and installation of portal/box culverts
  Varying sizes (1800 X 900mm to 3000 X 900mm) **Total length = 448.00m**
- The supply and installation of pipe culverts
  Varying sizes (450mm to 1050mm diameter) **Total length = 627.00m**
- The construction of concrete lined channels
  100mm thick mesh reinforced slab **Total length = 648.00m**
- The construction of roads and crossings
  Interlocking concrete paving blocks and concrete **Total length = 36.60m**
- The construction of kerb inlets **Total number = 5**
- The construction of grid inlets **Total number = 11**
- The construction of sand traps **Total number = 3**
- The construction of the attenuation dam **Total area = 83 700m^2**

The revised scope originally comprised mainly of the above-stated works.

4.2 Revised Scope (Variation Order No. 2)

The revised scope of works as recommended by the Matjhabeng Local Municipality (Ref.: Revised Technical Report, dated 05 July 2017) and the additional scope as per Variation Order No. 2 is subject to consideration by CoGTA and registration under MIG. The revised scope shall entail works in section 4.1 above, and adding the following:

- Construction and operating of extraction well for ground water control, added;
- 26.77m^3 cement-stabilised backfilling with 5% cement for road crossing, added;
- 282.53m^3 dump rock material imported from commercial sources for bedding, added;
- 5.28m^3 reinforced concrete encasing of existing services the intersect trenches, added;
- 192.84m^3 in-situ reinforced concrete slab for portal/box culverts base and road crossing, added;
- Setting out of the works by registered land surveyor, added; and
- Provision of personal protective clothing and equipment, added.

4.2.1 Site Conditions

The revised scope of work mainly comprises of a combination of additions due to unforeseen site conditions (including ground water and unsuitable soil strata).

In mitigating the adverse effect of the ground water table to the ongoing trench excavation works, the extraction well option for the dewatering of trenches was sort in order to divert the ground water from the open excavations so that bedding and concreting operations could continue unhindered and completed within the envisaged/planned period for construction.

An additional 450mm thick compact dump rock foundation layer was also introduced in order to act as a buffer and enhance stability to the saturated natural foundation which is subjected to varying pressures and resultant movement due to the rise and fall of the groundwater table.

4.2.2 Design and Specifications Modifications

The design and specifications changes incorporated include the grid inlet (MH44) at the railway and the in-situ cast reinforced base slab for the portal/box culvert drainage system.

The portal/box culvert system base slab option agreed upon as works progressed was that of in-situ concrete casting so as to advance optimal labour generation during the execution of the works and as required in terms of the Expanded Public Works Programme prescripts, as opposed to pre-cast concrete base slabs acquired from the manufacturers. The revised design drawings were hence developed in order to meet this requirement. The revised design drawings are attached hereto under Annexure D.

The specification change to the attenuation dam perimeter fencing is intended to provide a permanent solution beyond construction phase. That is, a durable and cut resistant security fencing for the protection of the dam area forever.

5 PROJECT PROGRESS

The project progress is summarised on the table below.

Table 5-1: Summary of Project Progress

Activity	Scope	Work Done
Preliminary and General	100%	60%
Stormwater Drainage System	100%	97%
Attenuation Dam	100%	93%
Road Works	100%	42%

In terms of the entire scope of work and project cost the progress is currently at an average of 90%. The contractor is continuing with the construction of the works on site.

6 PROJECT COST

6.1 Cost of the Approved Revised Scope of Works

The cost of the approved revised scope of work in terms of the revised registration was as follows:

Table 6-1: Summary of Approved Revised Scope of Works

Summary of Bill of Quantities	Estimated Amount
Preliminary and General	1 122 120,00
Stormwater Drainage	3 509 479,20
Attenuation Dam	8 852 240,91
Road Works	420 128,90
Sub Total A	**13 903 969,01**
Plus: Contingencies Sum	1 046 131,11
Sub Total B	**14 950 100,12**
Plus: % CPA	-
Sub Total C	**14 950 100,12**
Professional Fees	2 085 595,35
Sub Total D	**17 035 695,47**
Plus: 14 %VAT	2 384 997,37
TOTAL	**19 420 692,83**

6.2 Cost of Revised Scope of Works

6.2.1 Project Scope of Works

The cost for the revised scope of works, that is, the revised plus the shortfall has been computed at R 20 060 126,38 as detailed in Table 6-2 below:

Table 6-2: Approved Scope of Works

Item	Summary of Bill of Quantities	Revised Budget Amount	Revised Contracted Budget Amount	Shortfall
A	Preliminary and General	1 122 120,00	1 122 120,00	0.00
B	Stormwater Drainage	3 509 479,20	3 509 479,20	0.00
C	Attenuation Dam	8 852 240,91	8 852 240,91	0.00
D	Road Works	420 128,90	420 128,90	0.00
E	**Sub Total A**	**13 903 969,01**	**13 903 969,01**	**0.00**
F	Plus: Contingencies Sum	1 046 131,11	1 046 131,11	0.00
G	**Sub Total B**	**14 950 100,12**	**14 950 100,12**	**0.00**
H	Plus: 5% CPA	-	-	-
I	**Sub Total C**	**14 950 100,12**	**14 950 100,12**	**0.00**
J	Professional Fees	2 085 595,35	2 085 595,35	0.00
K	**Sub Total D**	**17 035 695,47**	**17 035 695,47**	**0.00**
L	Plus: 14/15 %VAT	2 384 997,36	2 555 354,32	170 356,96
M	**TOTAL**	**19 420 692,83**	**19 591 049,79**	**170 356,96**

The above table provides a 0,87 % shortfall for the amount of R 170 356,96 due to the increase in VAT from 14% to 15%.

6.2.2 Variations to the Scope of Works

The cost for the additional works, that is, variations plus the approved scope of works, has been computed at R 21 250 365,83 as detailed in Tables 6-3, 6-4 and 6-5 below.

6.2.2.1 Revised Budget Shortfall Caused by Variations

The shortfall due to Variation Order Number 2 is indicated in Table 6-3 and Table 6-4 below.

Table 6-3: Revised Budget Shortfall Caused by Variations

Item	Summary of Bill of Quantities	Budget Amount	Revised Budget Amount	Shortfall
A	**Preliminary and General**	1 122 120,00	1 124 620,00	
	VO No.2: Items A3.2, A3.3, A4.3, A4.4, A5.2 & A6.5		**Sub Total A**	**2 500,00**
B	**Stormwater Drainage**	3 509 479,20	4 722 922,48	
	VO No.2: Items B1.3, B1.6, B1.7, B1.15, B1.16, B1.17 & B1.18		**Sub Total B**	**1 213 443,28**
C	**Attenuation Dam**	8 852 240,91	9 928 321,85	
	VO No.2: Items C1.9		**Sub Total C**	**1 076 080.94**
D	**Road Works**	420 128,90	399 122,90	(**21 006,00**)
			VO Sub Total E	**2 271 018,22**
			Add: 15% VAT	340 652,73
	TOTAL SHORTFALL DUE TO VARIATIONS			**2 611 670,95**

The above table provides the summary on variations as indicated on Table 6-3 and further elaborated on Tables 6-4 and 6-5 for Section A, Section B and Section C of the contracted schedule of quantities.

Table 6-4: Revised Scope of Works During Construction

Item	Summary of Bill of Quantities	Contracted Budget Amount	Revised Budget Amount	Shortfall
A	Preliminary and General	1 122 120,00	1 124 620,00	2 500,00
B	Stormwater Drainage	3 509 479,20	4 722 922,48	1 213 443,28
C	Attenuation Dam	8 852 240,91	9 928 321,85	1 076 080.94
D	Road Works	420 128,90	399 122,90	(21 006,00)
E	**Sub Total A**	**13 903 969,01**	**16 174 987,22**	**2 271 018,21**
F	Plus: Contingencies	1 046 131,11	0,00	(1 046 131,11)
G	**Sub Total B**	**14 950 100,12**	**16 174 987,22**	**1 224 887,10**
H	Plus: CPA	-	-	-
I	**Sub Total C**	**14 950 100,12**	**16 174 987,22**	**1 224 887,10**
J	Professional Fees	2 085 595,35	2 426 248,08	340 652,73
K	**Sub Total D**	**17 035 695,47**	**18 601 235,30**	**1 565 539,83**
L	Less: Previously Claimed	14 105 476,92	14 105 476,92	0,00
M	**Sub Total E** (Balance Remaining Excluding VAT)	**2 930 218,55**	**4 495 758,38**	**1 565 539,83**
N	Plus: 14/15% VAT	410 230,60	674 363,76	264 133,16
O	**Sub Total F** (Budget Remaining Including 14/15% VAT)	**3 340 449,15**	**5 170 122,14**	**1 829 672,99**
P	Add: Previously Claimed Amount Including 14% VAT	16 080 243,69	16 080 243,69	0,00
M	**TOTAL**	**19 420 692,84**	**21 250 365,83**	**1 829 672,99**

The above table provides an 8,61% shortfall for the amount of R 1 829 672,99 due to variations and the VAT increase from 14% to 15%.

6.3 Causes of Escalation of the Works

The causes for the cost variations indicated in Table 6-2 for Items A – D above are as shown in Table 6-5 below.

Table 6-5: Causes of Escalation of the Works

Item	Summary of Bill of Quantities	Contracted Budget Amount	Revised Budget Amount	Shortfall	Remarks
A	Preliminary and General	1 122 120,00	1 124 620,00	2 500,00	Shortfall in budget amount due to additions to scheduled items A4.3 & A4.4.
B	Stormwater Drainage System **Scheduled Works V.O. No.2** Additional BOQ Items: B1.3, B1.6, B1.7, B1.15, B1.16, B1.17 & B1.18	3 509 479,20	4 722 922,48	1 213 443,28	Shortfall in budget amount due to modification in design and specifications. Grid inlet details, bedding material, portal/box culvert slab details, stabilisation of backfill material at major road crossing, concrete encasing of existing services and labour generation with respect to EPWP prescripts.
C	Attenuation Dam **Scheduled Works V.O No.2** Public Fencing: 1.8m high galvanized aluminium coated fence including gates to be erected around dam area perimeter	8 852 240,91	9 928 321,85	1 076 080.94	Shortfall in budget amount due to specifications modification.
D	Road Works	420 128,90	399 122,90	(21 006,00)	Excess in budget due to arithmetical error
E	**Sub Total A**	**13 903 969,01**	**16 174 987,22**	**2 271 018,21**	Shortfall in budget amount total to revised contract amount total.
F	Plus: Contingencies	1 046 131,11	0,00	(1 046 131,11)	
G	**Sub Total B**	**14 950 100,12**	**16 174 987,22**	**1 224 887,10**	
H	Plus: 5% CPA	-	-	-	
I	**Sub Total C**	**14 950 100,12**	**16 174 987,22**	**1 224 887,10**	
	Professional Fees	2 085 595,35	2 426 248,08	340 652,73	Shortfall in budget amount due to design and specifications modification.
	Sub Total D	**17 035 695,47**	**18 601 235,30**	**1 565 539,83**	
J	Add VAT 14/15%	2 384 997,37	2 649 130,53	264 133,16	Shortfall in initial budget amount due to VAT increase from 14% to 15%
K	**TOTAL**	**19 420 692,83**	**21 250 365,83**	**1 829 672,99**	Requested revised budget amount total.

The above table provides the cumulative amount of R 1 829 672,99 that is requested for budget maintenance.

6.4 Professional Fees

The estimated professional fees for engineering design services, including VAT, were revised to R 2 377 578.70. These costs are in accordance with the Government Gazette for Professional Engineers. This cost includes supervision Fees and Disbursements.

The revised professional fees including the cost of supervision and reimbursable disbursements is computed at R 2 769 366,13 including 14% and 15% VAT.

6.4.1 Determination of Professional Fees

Guideline Scope of Services and Tariff of Fees for Persons Registered in terms of Section 34(2) of Engineering Profession Act, 2000 (Act 46 of 2000) No. 35944, 7 December 2012

Fee Category A

15% Construction Cost (excl. contingencies & VAT)	=	2 426 248,08
Sub Total	=	2 426 248,08
14/15% VAT	=	343 118,05
TOTAL	**=**	**2 769 366,13**

6.5 Contract Cash Flow

The table below provides the cash flow for the project inclusive of the additional cost and works.

Table 6-6: Cash Flow Projections

Month	Direct Cost	Indirect Cost	Total Amount
Feb 2017		1 893 157,52	1 893 157,52
May 2017	3 532 549,42	78 761,36	5 504 468,29
June 2017	2 443 040,02	54 481,82	8 001 990,13
July 2017	2 019 127,95	-	10 021 118,08
August 2017	1 545 427,17	-	11 566 545,26
September 2017	1 421 455,80	260 887,93	13 248 888,98
October 2017	-	-	
November 2017	1 192 589,47	28 193,39	14 469 671,83
December 2017	-	-	
January 2018	-	-	
February 2018	401 109,18	27 845,90	14 898 626,92
March 2018	540 008,04	30 056,32	15 468 691,27

Month	Direct Cost	Indirect Cost	Total Amount
April 2018	852 646,56	121 519,04	16 442 856,87
May 2018	1 370 161,96	95 682,54	17 908 701,37
June 2018	2 189 534,32	103 629,13	20 201 864,82
July 2018		69 786,70	20 271 651,52
June 2019	978 714,31	-	21 250 365,83
TOTAL	**18 480 999,70**	**2 769 366,13**	**21 250 365,83**

6.6 Funding for the Project Including Additional Works

It is now the intention for the Matjhabeng Local Municipality apply for MIG funding for the amount of R 21 250 365,83 (all inclusive) to undertake portion of the additional cost and works to this contract. This amount covers the shortfall due to market related prices as received on tender, variation to the scope of work, and professional fees.

7 BENEFICIARIES AND BENEFITS

7.1 Number of Beneficiaries and House Holds

The project will be registered for the amount of R 21 250 365,83 at a unit cost of R 3 702.15 per household for a total of 34 440 beneficiaries and 5 740 households.

7.2 Labour Intensive Construction Methods (EPWP)

A project of this nature does lend itself to the use of labour intensive construction exclusively. The engagement of local labour cannot be over emphasised and the contracting entities shall be forced to make use of local labour. Engagement of local labour shall be controlled in a formal manner through a liaison body or a labour desk, namely, the Project Steering Committee.

The project can be implemented in a labour-intensive manner without down grading on required standards and compromising quality. It is proposed that the following works be executed by applying labour intensive methods:

1) Excavation for the pipe culverts and channels;
2) Compaction of bedding by mechanical equipment;
3) Construction of culvert bed. (Concrete can be mixed on site but it is recommended that quality premixed concrete be imported to site from recognized suppliers);
4) Construction of walls with masonry bricks;
5) Construction of culvert roof with pre-cast FBE type of material. (This type of construction can be done without formwork and allowing for quicker construction);

6) Backfilling and compaction;
7) Building of field inlets and manholes;
8) Building of catch pits.

7.3 Job Creation

The Infrastructure Guideline February 2010, proposes a minimum number of person days of work to be created per million rand of expenditure as 1041.9-person days.

Therefore, for the Complete Phase 1 scope of works, the Direct Construction value of R 16 174 987,22 (excluding VAT), a total of 15 525-person days must be created.

7.4 Project Related Training Including Capacity Building

7.4.1 Training

This project does lend itself to the training of people and personnel in the various fields of construction i.e. concrete works, paving and masonry for the development of emerging contractors.

Accredited training can be provided in the fields mentioned in the section above. The main contractor will also be able to provide further training in various other fields of construction by means of in-house training schemes and training courses by accredited training institutions.

7.4.2 Generic Training

The contractor shall, from the commencement of the contract, implement a structured progressive training programme.

The generic training will inter alia comprise of, but not be limited to, the following subjects:

COURSE DESCRIPTION	
1	Site safety for construction workers and construction activities.
2	Occupational health and safety requirements
3	Accommodation of traffic
4	Construction of storm water and appurtenant works
5	Erosion protection measurements
6	Material testing and specifications

Training shall be at or conducted by an approved accredited organisation and shall be delivered by suitably qualified and experienced trainers.

The contractor shall provide with his construction schedule full details of the structured training programme they intend to implement; which details shall include the following:

- The name of the training institution and programme
- The manner in which the training is to be delivered
- The numbers and details of the trainers.

The contractor shall be responsible for the provision of everything necessary for the delivery of the generic training programme, including the following:

- A suitable venue with sufficient furniture, lighting and power
- All necessary stationery, consumables and study material
- Transport of the trainees (as necessary).

Generic training courses shall commence within one month of possession of site and be completed before the end of the contract period.

The contractor's training programme shall be subjected to the approval of the engineer, and the contractor shall, if so instructed by the engineer, alter or amend the programme and course content if a need is identified once the contract commences.

The contractor shall keep comprehensive records of the training given to each trainee and, whenever required, shall provide copies of such records to the engineer. At the successful completion of each course, each trainee shall be issued with a certificate indicating the successful completion of the identified course content as proof of attendance and completion.

8 IMPLEMENTATION PLAN

8.1 Conformity to Master and Local Plans

The project conforms to the stormwater management local and master plans. The project promotes and advances Municipal plans to supply the residents with basic and quality services. The stormwater management master plan was developed prior the development of the adopted design concept for Phase 1 taking into consideration the future scenario of a fully-fledged stormwater management system at optimal operation.

8.2 Choices and Options Available and Limitations

The project seeks to provide the most economical way to service the house holds such that they can improve the quality of life for the majority of people, and mitigate the adverse effect of unmanaged runoff, particularly during storms that fall within the 1:20 year return period/interval.

8.3 Original Scope Time Table

Table 8-1: Scope Time Table

Item to Track Date format (dd/mm/yyyy)	**Target Date**
Design Report Approved	08 September 2016
Tenders Awarded	12 April 2017
Contract Signed	12 May 2017
Contractor on Site	12 May 2017
Contractual Conditions met	22 June 2017
Construction Completion Date	30 June 2018
Final Payment (Retention Payment is Final)	30 June 2019

9 CONCLUSION

In order to realise the successful implementation of the project and in ensuring that the stormwater system attains its utmost potential, we recommend that the additional funding of **R 1 829 672,99** (all inclusive) should be sourced. This is now a legal requirement due to the awarded contract.

ANNEXURES

Item	Description
A	MIG 1 Registration Form
B	Adjudication Report
C	Contractor Appointment Letter
D	Variation Order Application Form
E	Revised Priced Bill of Quantities
F	Revised Construction Design Drawings

ANNEXURE A

MIG 1 Registration Form

ANNEXURE B

Adjudication Report

ANNEXURE C

Contractor Appointment Letter

ANNEXURE D

Variation Order Application Form

ANNEXURE E

Revised Priced Bill of Quantities

ANNEXURE F

Revised Construction Design Report