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SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD



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BUILDING SOUTH AFRICA
THROUGH BETTER ROADS

**THE SOUTH AFRICAN NATIONAL
ROADS AGENCY SOC LIMITED**

CONTRACT SANRAL R335-010-2017/1

**THE IMPROVEMENT OF NATIONAL ROUTE
R335 FROM MOTHERWELL (KM 5.16) TO ADDO
TOWN (KM 37.16)
PHASE 1: KM 5.16 TO KM 27.5**

PROJECT DOCUMENT

DATE: JULY 2022

TENDER DOCUMENT
VOLUME 3
BOOK 3 OF 3

**CHIEF EXECUTIVE OFFICER
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED
48 TAMBOTIE AVENUE
VAL DE GRACE
PRETORIA, 0184**

NAME OF TENDERER:

Set sequential number

CONTRACT SANRAL R335-010-2017/1

FOR

THE IMPROVEMENT OF NATIONAL ROUTE R335 FROM MOTHERWELL (KM 5.16) TO ADDO TOWN (KM 37.16) PHASE 1: KM 5.16 TO KM 27.5

PROJECT DOCUMENT

DATE: JULY 2022

TENDER DOCUMENT
VOLUME 3
BOOK 3 OF 3

THIS DOCUMENT COMPILED BY:

.....
TBA

UNDER THE DIRECTION OF THE REGIONAL MANAGER
THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED
20 SHOREWOOD DRIVE
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LIST OF CONTRACT DOCUMENTS

The following documents form part of this contract:

- Volume 1: The Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (1999), published by the Federation Internationale des Ingenieurs-Conseils (FIDIC) which the tenderer shall purchase himself. (See note 1 below).
- Volume 2: The COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition), issued by the Committee of Transport Officials which the tenderer shall obtain himself. (See Note 2 below).
- SANS 1200: Standardised Specifications for Civil Engineering Construction (1990, including later editions and amendments).
 - SANS 10098-1:2007 or as per latest amendments for South African National Roads Standard public lighting.
 - SANS 60598-1:2014 Edition 6 IEC 60598-1:2014 General requirements and tests on lights.
 - SANS 10142-1 and SANS 10142-2 Part 2: Medium-voltage installations above 1 kV a.c. not exceeding 22 kV a.c. and up to and including 3 MVA installed capacity.
- Volume 3: The Project Document, containing the tender notice, Conditions of Tender, Tender Data, Returnable Schedules, general and particular conditions of contract, project specifications, Pricing Schedule, Form of offer and Project Information is issued by the Employer (see note 3 below). The Employer's Form of Acceptance and any correspondence from the selected tenderer, performance security-demand guarantee, and all addenda issued during the period of tender will also form part of this volume once a successful tenderer has been appointed.
- The conditions of tender are the standard conditions of tender as contained in Annex C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts (August 2019), which the tenderer shall purchase himself.
- Volume 4: The road works drawings.
- Volume 5: The structural drawings.
- Volume 6: Materials investigation and utilisation.
- Volume 7: Environmental Management Plan report.

Notes to tenderer:

1. Volume 1 is obtainable from CESA, P. O. Box 68482, Bryanston, 2021. Tel: (011) 463 2022 Fax: (011) 463 7383, [e-mail: general@cesa.co.za](mailto:general@cesa.co.za).
2. Volume 2 is obtainable from SANRAL and can be downloaded free of charge from the SANRAL's website WWW.nra.co.za.
3. Volume 3 is issued at tender stage in electronic format downloaded from the SANRAL's website

The link contains the following files:

- The full Project Document in .pdf format (excluding the standard conditions of tender)
- The returnable forms in word format
- The pricing data in Excel format

The standard conditions of tender contained in Annex C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts (August 2019) is obtainable from the Construction Industry Development Board (CIDB) website: <http://www.cidb.org.za/News/Documents/Standard%20for%20Uniformity%20August%202019.pdf>.

At contract stage Volume 3 will be a bound signed paper copy containing the following documents:

- Returnable schedules relevant to the project
 - Agreements and Contract Data
 - Pricing Data
 - Scope of Work
 - Project Information
4. **SUBMISSION OF TENDER** – Of the contract documents, only the following elements of Volume 3 needs to be submitted in printed and bound hard copy and electronically on flash drive marked “Postulated (followed by the Tenderer name)” in a sealed envelope, in the following order:
 - Form of Offer (signed and scanned as .pdf and hard copy);
 - All returnable schedules and attachments and certificates (signed and scanned as .pdf and hard copy);
 - Completed pricing schedule (scanned copy in .pdf and copy in Excel and hard copy).

Information provided by a tenderer over and above the above elements of Volume 3 shall be treated as information only and will only be bound into the document if the tenderer notes on Form A4: Schedule of Variations or deviations that the information has a bearing on the tender price.

5. For alternative offers the tenderer shall submit the following additional documentation, in printed and bound hard copy and electronically in a separate flash drive marked “Alternative (followed by the Tenderer name)” in a sealed envelope in the following order:
 - Form of Offer (signed and scanned as .pdf and hard copy and state “Alternative Form of Offer”);
 - All returnable schedules and attachments and certificates applicable to the alternative offer (signed and scanned as .pdf and hard copy);
 - Alternative Pricing Schedule (scanned copy in .pdf and copy in Excel and hard copy);
 - Other relevant information.

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PART C2: PRICING DATA

PART C2: PRICING DATA

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C2.1 PRICING INSTRUCTIONS

C2.1.1 Measurement and payment shall be in accordance with the relevant provisions of Chapter 1, Section C1.1 of the COTO Standard Specification for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition) or as amended in the Scope of Works.

C2.1.2 The units of measurement described in the Pricing Schedule are metric units. Abbreviations used in the Pricing Schedule are as follows:

%	=	percent
h	=	hour
ha	=	hectare
kg	=	kilogram
kl	=	kilolitre
km	=	kilometre
km-pass	=	kilometre-pass
kPa	=	kilopascal
kW	=	kilowatt
l	=	litre
m	=	metre
mm	=	millimetre
m ²	=	square metre
m ² -pass	=	square metre-pass
m ³	=	cubic metre
m ³ -km	=	cubic metre-kilometre
MN	=	meganewton
MN.m	=	meganewton-metre
MPa	=	megapascal
No.	=	number
Prov sum	=	Provisional sum
PC Sum	=	Prime Cost sum
R/only	=	Rate only
sum	=	lump sum
t	=	ton (1000kg)
W/day	=	Work day

C2.1.3 For the purpose of the Pricing Schedule, the following words shall have the meanings assigned to them:

Unit:	The unit of measurement for each item of work as defined in the COTO Standard Specification for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition).
Quantity:	The number of units of work for each item.
Rate:	The payment per unit of work for which the Service Provider tenders to do the work.
Amount:	The product of the quantity and the rate tendered for an item.

C2.1.4 Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

C2.1.5 It will be assumed that prices included in the Pricing Schedule are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to www.sabs.co.za for information standards)

- C2.1.6 The prices and rates in the Pricing Schedule are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices will be used as a basis for assessment of payment for additional work that may have to be carried out. The Contractor shall submit to the Engineer within 28 days after the Commencement Date a full breakdown of all rates. The rates are to be clearly referenced to the relevant payitem numbers, with each rate broken down into its labour, materials, plant, fuel, overhead charges and profit components.
- C2.1.7 Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered such items.
- C2.1.8 A single lump sum will apply should a number of items be grouped together for pricing purposes.
- C2.1.9 The quantities set out in the Pricing Schedule are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Pricing Schedule.
- C2.1.10 Reasonable compensation will be received where no payitem appears in the Pricing Schedule in respect of work required in terms of the Contract and which is not covered in any other payitem.
- C2.1.11 The short descriptions of the items of payment given in the Pricing Schedule are only for the purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.
- C2.1.12 The item numbers appearing in the Pricing Schedule refer to the corresponding item numbers in the COTO Standard Specification for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition). Where a standard COTO payitem is amended or a new payitem added, the item number is preceded by the letter "P" in the Pricing Schedule.
- C2.1.13 The pricing schedules are provided electronically. A printout of the entire completed pricing schedule must be signed and scanned and saved in .pdf format, and an electronic copy of the priced pricing schedule must be saved in Excel format and the printed copy bound. In the event of any discrepancy between the signed .pdf copy, and the electronically submitted copy in Excel format and the printed hard copy, the tender rates in the printed hard copy will govern. The item numbers and description of the printed hard copy document will govern. For all addenda issued relating to the pricing schedule, the item numbers, description and quantities of the issued document will govern.

C2.2 PRICING SCHEDULE (INCORPORATING SBD3)

SCHEDULE A

ROADWORKS

SCHEDULE B

BRIDGES

SCHEDULE C

CULVERTS

SCHEDULE D

BRIDGES

CALCULATION OF TENDER SUM

C2.3 SUMMARY OF PRICING SCHEDULE

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SCHEDULE B: BRIDGES	R
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SCHEDULE C2: CULVERT C0734 at km 26.668	R
SCHEDULE C3: UNDERPASS C0732 at km 27.575.....	R
SCHEDULE D: STAKEHOLDER AND COMMUNITY LIAISON, TARGETED LABOUR TARGETED ENTERPRISES UTILISATION AND DEVELOPMENT	R
SUBTOTAL A	R
CONTRACT SKILLS DEVELOPMENT GOAL: 0.25% of Subtotal A.....	R
SUBTOTAL B	R
VALUE ADDED TAX:	
15% of Subtotal	R
<hr/>	
TOTAL CARRIED TO C.1.1.1: FORM OF OFFER	R
<hr/>	

SIGNED BY TENDERER:

PART C3: SCOPE OF WORKS

PART C3: SCOPE OF WORKS

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PHASE 1: KM 5.16 TO KM 27.5

SECTION A1: STANDARD AMENDMENTS ISSUED BY COTO

Notes to tenderer:

- 1. The Standard Specifications for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition) prepared by the Committee of Transport Officials, (COTO), as amended, shall apply to this contract. The amendments are those issued by COTO and reproduced in Section A1, together with additional amendments as set out in Section A2 and Project specific Specification Data as set out in Section B.**

As at **JULY 2022** no amendments have been issued by COTO.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

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FOR THE IMPROVEMENT OF NATIONAL ROUTE R335 FROM MOTHERWELL (KM 5.16) TO
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PHASE 1: KM 5.16 TO KM 27.5

SECTION A2: PROJECT SPECIFICATION AMENDMENTS TO THE COTO STANDARD SPECIFICATIONS

Notes to tenderer:

- 1. This Section A2 contains amendments to the Standard Specification, including additional clauses, amendment to clauses or deletion of clauses and specifications, required for this particular contract. Where the Standard Specifications allow a choice to be specified in the Contract Documentation or Project Specifications, between alternative materials or methods of construction, and for additional requirements to be specified to suit a particular contract, these selections are not made in this Section A2. Details of such alternatives or additional requirements applicable to this contract are contained in Section B: Specification Data. Section B also contains project specific sections for Sections C, D and E.**
- 2. The number of each clause and each payment item in this part of the project specifications follows the numbering format of the standard specifications.**

SECTION B: PROJECT SPECIFICATIONS

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COTO CHAPTER 1: GENERAL

SECTION 1.1: GENERAL PREAMBLE

PART C: MEASUREMENT AND PAYMENT

C1.1.3 PAYMENT

C1.1.3.5 Payment for materials on the Site

In the last sentence of the 1st paragraph, delete the following:

“, or, in the case of crushed stone which has not been purchased but has been produced on the site, at 80% of a fair evaluation of such crushed material”.

Add the following new subclauses:

"C1.1.3.9 Reduced payments for substandard work

Where provision for reduced payments for sub-standard work is made in the Contract Documentation, acceptance of reduce payment for substandard work may be accepted by the Engineer subject to prior approval by the Employer.

C1.1.3.10 Procurement of sub-services and omitted rates (Second tier procurement)

Second tier procurement include the procurement of any work where either the particulars of the work is not scheduled and priced, or where the process of procurement of the sub-service provider is specified elsewhere in the contract specification. It includes the procurement of work where rates have been omitted or where allowance for the work is made under a Provisional sum or Prime sum item or where allowance for the work is made under a Provisional sum or Prime sum item but the particulars of the work is not scheduled, or where work is instructed under clause 13[Variations and Adjustments] or where work is to be performed by Targeted Enterprises.

The following procurement methods is to be followed as appropriate:

- a) **Where the particulars of the work is not scheduled but existing rates for similar work exist in the contract and the work can therefore be executed by the contractor or his sub-contractor at the existing contract rates.**

No separate procurement process is required. The work is to be quantified and scheduled utilising existing rates and approved through the Works Authorisation process.

- b) **Where the payment calculation is based on a formula specified in the contract document, or where the payment rate is pre-determined or fixed by the client.**

No separate procurement process is required. The work is to be quantified and approved through the Works Authorisation process.

- c) **Where the supplier is not selected by the contractor and actual cost is reimbursable and no procurement process is possible.**

No separate procurement process is required. The work is invoiced by supplier on completion and approved through the Works Authorisation process at the end of the contract.

- d) **Where there are omitted items as part of the existing scheduled scope of work and no existing rates for similar work exist in the contract, or**

where there are no existing rates for the materials to be supplied and suitable rates for material to be determined.

A proposal for a new rate shall be submitted by the contractor and evaluated by the engineer, by comparing with either adjusted relevant rates in the contract, or by comparing with similar rates on similar contracts, or by comparing three informal quotes to substantiate the rate. The new agreed rate is approved through the Works Authorisation process.

- e) **Where the particulars of the work is not scheduled and the estimated cost of the work (including VAT and excluding Contract Price Adjustment) is equal or less than R1 000,000.00 and there are no existing rates for similar work and the contractor's proposal submitted in terms of FIDIC Variation 13.1 is not accepted and the work is to be performed by a sub-contractor.**

A minimum of three quotations shall be obtained from Targeted Enterprises (as defined in Section D1000). The following is the minimum requirements for this process:

- Prequalification for BEE level 1 or 2 and EME or QSE (Approval to deviate must be granted by the Employer, based on market research)
- Quotation to include form of quotation, CSD registration, CIDB (where applicable),

A Works Authorisation shall be approved prior to execution of the work.

- f) **Where the particulars of the work is not scheduled and the estimated cost of the work is more than R1 000,000.00 (including VAT and excluding Contract Price Adjustment) and there are no existing rates for similar work and the contractor's proposal submitted in terms of FIDIC Variation 13.1 is not accepted and the work is to be performed by a sub-contractor.**

The work is to be procured through a tender process. The following is the minimum requirements for this process:

- Prequalification for BEE level 1 or 2 and EME or QSE (Approval to deviate must be granted by the Employer, based on market research)
- Tenders to close at the relevant site offices at a specific date and time
- Tender documents to include form of Offer, CSD registration, Tax compliance, CIDB (where applicable), SBD1, SBD 4, SBD 8, SBD 9, SBD 6.2, BEE certificate, Form A2.2
- Tenders to be evaluated on price and preference
- Evaluation by contractor for review by engineer

A Works Authorisation shall be approved prior to execution of the work.

- g) **Where the particulars of the work is identified by the contractor to be performed by subcontractors who are Targeted Enterprises to form part of the specified Contract Participation Goals for Targeted Enterprises.**

The work is to be procured as per the process specified in clause D1007.

- h) **Where the work is unforeseen, urgent and the relevant procurement method as indicated above will result in a delay to the contract and payment for a claim for extension of time and/or cost, or where the above procurement methods are not applicable or cannot fully be complied with.**

The Employer will determine the most appropriate procurement process to be followed and approved through the Works Authorisation process."

SECTION 1.2: GENERAL REQUIREMENTS AND PROVISIONS

PART A: SPECIFICATIONS

A1.2.3 GENERAL

A1.2.3.15 Routine maintenance

Add the following new subclause:

"A1.2.3.24 Reference Manuals, other specifications and test methods

In various chapters of this Standard Specification, reference is made to Manuals, other specifications and test methods. If not otherwise indicated in the Contract Documentation, the latest published Manual, other specification and test methods at time of close of tender will apply. Any changes to be implemented on a project as a result of revisions to manuals, other specifications and test methods, will be handled in terms of the Conditions of Contract.

Certain TRH and TMH documents are published as Manuals/TRH or Manuals/TMH publications. Where reference is made to the TRH or TMH document, it shall be read as referring to the latest version of the Manual/TRH publication or Manual/TMH publication, respectively."

A1.2.7 EXECUTION OF THE WORKS

A1.2.7.1 Programme of work

a) General

Add the following new paragraphs:

"The contractor shall note that the examination of a road with a view to rehabilitation is normally undertaken a considerable period of time before the commencement of the contract, and that conditions may subsequently change. The engineer will make further examinations during the period of contract, and, depending on the results of such examinations, the quantities of any items of work may be drastically increased or decreased.

The contractor shall base his initial programme for road rehabilitation on the scope of the work as described in the project specifications on the quantities contained in the Pricing Schedule (Part C2)."

PART C: MEASUREMENT AND PAYMENT

Add the following new pay item:

"Item	Unit
C1.2.10 Dispute Adjudication Board (DAB)	
C1.2.10.1 Employer's contribution to DAB (50%)	prime cost (PC) sum"

SECTION 1.3: CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS

PART C: MEASUREMENT AND PAYMENT

Item	Unit
C1.3.1 The Contractor's general obligations	

Delete subitem C1.3.1.3 and replace with the following:

"C1.3.1.3 Time related obligations:

- a) Mobilisation period month
- b) Execution of the works month”

Add the following pay subitems:

- “C1.3.1.4 Suspension Cost
 - a) De-establishment Number
 - b) Re-establishment Number
 - c) Suspension period month
 - d) Engineer’s cost prime cost sum (PC) sum

Under the heading “Item C1.3.1.3”, delete the 2nd paragraph and replace with the following:

“The contract rate shall include full compensation for that part of the Contractor's general obligations which are mainly a function of construction time. The contract rate shall be deemed to include, hire costs or cost of ownership or minimum hourly charges (standing time costs) per month for Contractor’s Equipment The contract rate will be paid monthly, pro rata for parts of a month, from the Commencement Date in terms of the Contract Documentation until the end of the Mobilisation Period for item C1.3.1.3(a). For item C1.3.1.3(b) the contract rate will be paid monthly, pro rata for parts of a month, from the end of Mobilisation Period until the end of the original Contract Period specified for completion of the Works.”

Add the following new paragraphs:

“Item C1.3.1.4

The rates tendered under subitem C1.3.1.4 shall represent full compensation for all Costs for Suspension of Work and all Costs during Suspension of Works as per amended Condition of Contract clause 8.9.

Payment of subitems C1.3.1.4(a) and C1.3.1.4(b) shall be made for the number of de-establishments and re-establishments of all Personnel and Goods (Contractor’s Equipment, Materials, Plant and Temporary Works) as instructed by the Engineer. Payment of subitems C1.3.1.4(a) and C1.3.1.4(b) shall not apply during the Mobilisation Period.

Payment of subitem C1.3.1.4(c) shall be made monthly, pro rata for parts of a month, from the date on which the Contractor has suspended progress of all of the Works in terms of Conditions of Contract clause 8.8 and commenced with de-establishment of the site, until permission or instruction to proceed in terms of Conditions of Contract clause 8.12 is given. Payment of subitem C1.3.1.4(c) shall not apply during the Mobilisation Period.

The Prime Sum in subitem C1.3.1.4(d) is provided to cover the cost of the Engineer during the period of suspension of the works. The amounts certified by the Employer shall be made to the Engineer, within 30 days of it being certified by the Employer.”

SECTION 1.4: FACILITIES FOR THE ENGINEER

PART A: SPECIFICATIONS

A1.4.3 GENERAL

In the last sentence of the 7th paragraph delete: “not later than six weeks after the Contract commencement date” and replace with: “not later than the end of the Mobilisation period as defined in sub-clause 8.1 of the FIDIC Conditions of Contract”

COTO CHAPTER 2: SERVICES

SECTION 2.1: GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES

PART A: SPECIFICATION

A2.1.3 GENERAL

A2.1.3.2 Location, identification, protection and relocation of existing services

b) Location of existing services

The lead times required to make the necessary arrangements for the protection, removal or relocation of services which the Contractor shall allow are as follows:

- i) Lifting or relocation of Telkom and Electrical lines:*
 - 11 months made up as follows
 - 3 months to locate and confirm positions
 - 2 months to prepare and submit wayleave application
 - 6 months for wayleave approval
- ii) Wayleave applications for ducting for large diameter watermain crossing the road:*
 - 11 months made up as follows
 - 1 month to locate and confirm positions
 - 2 months to prepare and submit wayleave application
 - 6 months for wayleave approval

All known services on the site, including those requiring removal, realignment, temporary replacement or raising are indicated within Tables **A2.1.3/1 /1A, B, C and D** below.

Table A2.1.3/1A Water infrastructure along the route

start (km)	End (km)	SERVICE	SERVICE OWNER	DESCRIPTION	ACTION REQUIRED
8.8	8.8	Water	NMBMM	1 .3 m diameter steel pipeline	Construct new duct for road crossing
14.7	14.7	Water	NMBMM	1 .3 m diameter steel pipeline	Construct new duct for road crossing at km 14.7
27.8	30.3	Water	NMBMM	0.8 m diameter steel pipeline	Construct new duct for road crossing at km 30.3

Table A2.1.3/1B Telkom and Electrical lines crossing farm intersections

Item	Description	km Value	CL Level	Level of Line	Action required on line
1	Elec overhead Cable	6.58	70.471		Raise the overhead line 1m
2	Elec overhead Cable	7.18	77.68		Raise the overhead line 1m
3	Telkom Overhead	7.27	77.181		None
4	Elec overhead Cable	7.92	79.125		Raise the overhead line 1.8m
5	Elec overhead Cable	8.39	78.223		None
6	Elec overhead Cable	8.63	78.498		None
7	Elec overhead Cable	9.1	80.871		None
8	Telkom Overhead	9.26	70.906		None
9	Elec overhead Cable	10.72 - 10.78	78.199 - 75.99		None
10	Elec overhead Cable	11.14	60.524		Raise the overhead line 3.25m
11	Elec overhead Cable	11.28 - 11.31	54.711 - 53.621		Raise the overhead line 2.25m
12	Elec overhead Cable	11.67	45.99		Raise the overhead line 0.5m
13	Telkom Overhead	13.2	51.845		Raise the overhead line 1.2m
14	Elec overhead Cable	13.37	53.85		Raise the overhead line 0.8m
15	Elec overhead Cable	17.14	170.097		Locate stays
16	Elec overhead Cable	20.5	190.153		Raise the overhead line raise 0.5m
17	Elec overhead Cable	27.28	79.053		Raise the overhead line 1.8m
18	Telkom Overhead	31			Raise the overhead line 5m
19	Elec overhead Cable	31.76 - 32.00	27.790 - 26.608		Raise the overhead line 2.5m
20	Telkom Overhead	33.86	26.534		Raise the overhead line 1m
21	Telkom Overhead	35.55	30.875		Raise the overhead line 2m
22	Elec overhead Cable	36.08	35.164		None
23	Telkom Overhead	36.3	36.912		Raise the overhead line 1.5m

Table A2.1.3/1C Telkom and Electrical along the length of the R335

Item	Description	Start km	End km	Action required on line
1	Elec overhead Cable	5.6	6.04	Relocate
2	Elec overhead Cable	7.86	8.42	Relocate
3	Telkom Overhead	8.68	8.86	Relocate

Table A2.1.3/1D Telkom and Electrical crossing the R335

Item	Description	km Value	CL Level	Level of Line	Action required on line
1	Elec overhead Cable	6.58	70.471		Raise the overhead line 1m
2	Elec overhead Cable	7.18	77.68		Raise the overhead line 1m
3	Telkom Overhead	7.27	77.181		None
4	Elec overhead Cable	7.92	79.125		Raise the overhead line 1.8m
5	Elec overhead Cable	8.39	78.223		None
6	Elec overhead Cable	8.63	78.498		None
7	Elec overhead Cable	9.1	80.871		None
8	Telkom Overhead	9.26	70.906		None
9	Elec overhead Cable	10.72 - 10.78	78.199 - 75.99		None
10	Elec overhead Cable	11.14	60.524		Raise the overhead line 3.25m
11	Elec overhead Cable	11.28 - 11.31	54.711 - 53.621		Raise the overhead line 2.25m
12	Elec overhead Cable	11.67	45.99		Raise the overhead line 0.5m
13	Telkom Overhead	13.2	51.845		Raise the overhead line 1.2m
14	Elec overhead Cable	13.37	53.85		Raise the overhead line 0.8m
15	Elec overhead Cable	17.14	170.097		Locate stays
16	Elec overhead Cable	20.5	190.153		Raise the overhead line raise 0.5m
17	Elec overhead Cable	27.28	79.053		Raise the overhead line 1.8m
18	Telkom Overhead	31			Raise the overhead line 5m
19	Elec overhead Cable	31.76 - 32.00	27.790 - 26.608		Raise the overhead line 2.5m
20	Telkom Overhead	33.86	26.534		Raise the overhead line 1m
21	Telkom Overhead	35.55	30.875		Raise the overhead line 2m
22	Elec overhead Cable	36.08	35.164		None
23	Telkom Overhead	36.3	36.912		Raise the overhead line 1.5m

COTO CHAPTER 3: DRAINAGE

There are no amendments to this Chapter

COTO CHAPTER 4: EARTHWORKS AND PAVEMENT LAYERS: MATERIALS

There are no amendments to this Chapter

COTO CHAPTER 5: EARTHWORKS AND PAVEMENT LAYERS: CONSTRUCTION

PART A: SPECIFICATION

A5.3.8 WORKMANSHIP

A5.3.8.5 Surface regularity

Add the following to the 1st paragraph:

“The surface regularity shall be assessed on the final prepared layer after all excess fines have been swept off the surface.”

c) By using a profiler

In the paragraph following Table A3.5.8--6, delete the following: " for payment items *** _____ ", and replace with the following: "for payment items as specified in the Contract Documentation".

COTO CHAPTER 8: PRETREATMENT AND REPAIR OF EXISTING LAYERS

SECTION 8.1: PRIME COAT

PART A: SPECIFICATION

A8.1.5 MATERIALS

A8.1.5.1 Bituminous material

In Table A8.1.5-1 Delete “the excavated area” in the table caption and heading.

A8.1.8 WORKMANSHIP

A8.1.8.2 Testing

Replace the last sentence of the 1st paragraph with the following: “Unless agreed in advance and in writing, the Contractor shall only spray when the Engineer’s representative is present.”

COTO CHAPTER 9: ASPHALT LAYERS

There are no amendments to this Chapter

COTO CHAPTER 10: SURFACE TREATMENTS

SECTION 10.1: GENERAL REQUIREMENTS FOR SURFACE TREATMENTS

PART D: GUARANTEES AND COMPLIANCE CERTIFICATES

D10.1.5 VISUALLY ASSESSED PROPERTIES

D10.1.5.4 Acceptance criteria

In note 3 below Table D10.1.5-3, delete “May 2016” and replace with “Latest version”.

COTO CHAPTER 11: ANCILLARY ROAD WORKS

SECTION 11.4: ROAD RESTRAINT SYSTEMS

PART C: MEASUREMENT AND PAYMENT

Item	Unit
------	------

C11.4.2 Performance based vehicle restraint systems	
---	--

Where the Concrete barrier system is utilised as temporary restraint systems for Traffic Accommodation and scheduled under C1.5 in the Pricing Schedule, the unit of measure shall be metre.month.

COTO CHAPTER 13: STRUCTURES

SECTION 13.4: CONCRETE

PART A: SPECIFICATION

A13.4.2 DEFINITIONS

Fresh phase of concrete

Add the following at the end of the definition of “Fresh phase of concrete”:

“This is also known as the plastic phase.”

Add the following definition between “Fresh phase of concrete” and “Hardened phase of concrete”:

“Hydration or curing phase – this is concrete that is no longer a semi-liquid but has not yet reached a solid state.”

A13.4.7 EXECUTION OF THE WORKS

A13.4.7.12 Placing and Compaction

b) Placing

Delete the 3rd sentence of the 1st paragraph and replace with the following:

“The Contractor shall not be permitted to pour unless the specific method statement for that pour has been accepted by the Engineer.”

SECTION 13.8: ANCILLARY STRUCTURAL ELEMENTS

PART C: MEASUREMENT AND PAYMENT

Item	Unit
C13.8.18 CULVERT JOINT PROTECTION PLATES	
C13.8.18.1 (Description of joint cover plate with drawing number)	metre(m)
<i>The unit of measurement shall be the metre of joint cover plate provided as specified on the drawings. The tender rate shall include full compensation for supplying (galvanizing), installing, labour and all incidentals required for installing the cover plates as specified.</i>	

COTO CHAPTER 14: REPAIR AND REHABILITATION OF STRUCTURES

There are no amendments to this Chapter

COTO CHAPTER 20: QUALITY ASSURANCE

SECTION 20.1: TESTING MATERIALS AND JUDGEMENT OF WORKMANSHIP

PART A: SPECIFICATION

A20.1.2 DEFINITIONS

Independent site laboratory

In the definition of "Independent site laboratory", add the following:

"Independent Site laboratory in COTO is equivalent to the combined laboratory in the Employer documentation"

A20.1.4 PUBLISHED TEST METHODS

A20.1.4.7 Testing of bituminous binders

*Replace: "SABITA PG1 –Series on modified binders " with:
"SABITA TG1 –Series on modified binders ".*

A20.1.7 ACCEPTANCE CONTROL BY STATISTICAL JUDGEMENT PRINCIPLES

A20.1.7.2 Taking samples

a) Stratified random sampling

Add the following new paragraph:

"Where the SARDS Laboratory module is used, the sampling locations must be as per the software. The Engineer may specify additional sampling locations."

b) Minimum samples per lot

Add the following new paragraph:

"Where the SARDS Laboratory module is used, the number of samples per lot must be as per the software, as a minimum. The Engineer may specify additional numbers of samples. The Number of samples must be sufficient to meet the requirements of TMH5."

PART C: MEASUREMENT AND PAYMENT

C20.1.5 Financial contribution for an independent laboratory

Replace reference to: "Independent laboratory" with: "Independent site laboratory".

Add the following new pay item:

"Item	Unit
-------	------

C20.1.6 Payment of independent site laboratory

C20.1.6.1	Direct payment by contractor	prime cost (PC) sum
a)	Handling cost and profit in respect of item C20.1.6.1 ...	percentage (%)

The contractor shall pay the appointed site laboratory monthly for the amount as certified by the Engineer.

The charge or mark-up tendered or allowed for is a percentage of the amount actually paid under the prime cost item. The percentage shall cover all the Contractors' sourcing,

handling, profit, and payment of the service provider in providing the services. The Contractor shall forfeit his mark-up when the service provider is not paid in time.”

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R335-010-2017/1
FOR THE IMPROVEMENT OF NATIONAL ROUTE R335 FROM MOTHERWELL (KM 5.16) TO
ADDO TOWN (KM 37.16)
PHASE 1: KM 5.16 TO KM 27.5

SECTION B: SPECIFICATION DATA

Notes to tenderer:

1. In certain clauses, the Standard Specifications allow a choice to be specified in the Contract Documentation or Project Specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this Section B: Specification Data.
2. The number of each clause and each payment item in this part of the project specifications follows the numbering format of the COTO standard specifications.

COTO CHAPTER 1: GENERAL

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
1			GENERAL	
	A1.1		GENERAL PREAMBLE	
		A1.1.2	DEFINITIONS	
			Conditions of Contract	The Conditions of Contract for Construction for Building and Engineering Works designed by the Employer as published by the International Federation of Consulting Engineers First Edition 1999, shall apply.
			Site / Site of the Works	The limits of construction is provided in Section C4.1
	C1.1		GENERAL PREAMBLE	
	A1.2		GENERAL REQUIREMENTS AND PROVISIONS	
		A1.2.3	GENERAL	
			A1.2.3.3 Environmental management	The requirements of the Environmental Management Plan (EMPI) are indicated in Section C.
			A1.2.3.4 Extension of time for delays caused by rainfall	
			c) Method 3 (Critical path method without consequential delays)	Method 3 (Critical path method without consequential delays) is specified. The value of "N" = 88 In calculations of payment for approved extensions of time granted for delays caused by rainfall, payment will be made utilising the applicable payment items for which the unit of measurement is "month" but excluding payment items with negative rates and non-applicable payment items such as pay item C1.3.1.4.
			A1.2.3.5 Handing-over of the Site of the Works	The conditions for handing-over of the Site of the Works are as follows: a) Sequence 3 month Mobilisation period during which the DOL permit application will be submitted and The Mobilisation Period shall only be concluded once the DOL permit is received and CPG Plan has been accepted and all associated duties above have been executed to the satisfaction of, the Employer and the Engineer. Thereafter the contract can commence with setting out of the works, site establishment and construction of temporary deviations. b) Temporary deviations Allowance has been made for 6km of temporary deviations to be constructed at structures and intersections. c) Half or partial width sections

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA						
				<p>13km of the road will be subject to temporary widening in order to retain 2 way traffic (accommodation).</p> <p>d) Unrestricted sections Approximately 20 km of the road will be constructed using an offset alignment, whereby traffic is retained on the existing road while the first half of the new road is constructed. Refer to Section C4 for more detail.</p> <p>e) Routine Maintenance The Contractor shall take over the maintenance responsibility on the date of Access to site but may liaise with the routine maintenance contractor by arranging a transition period immediately after the Access to site to allow sufficient time to muster his resources required for routine maintenance of the road. However, the transition period may not extend beyond the end of the Mobilisation Period defined in sub-clause 8.1 of the FIDIC Conditions of Contract and C1.2.2 Contract Data.</p> <p>f) Other None</p>						
			A1.2.3.9 Monthly reports	<p>Other information to be included in monthly progress reports are as follows:</p> <p>a) Information as required in terms of Conditions of Contract Clause 4.21</p> <p>b) Aerial progress footage (images and video)</p>						
			A1.2.3.10 Notices, signs and advertisements	<p>Details of the contract sign board is provided in Drawing J27218/TD-R-RS-1300</p>						
			A1.2.3.12 Ownership of assets and disposal of non-usable assets	<p>The Non-usable assets to be disposed by the Contractor is listed in the following disposal plan:</p> <p>Disposal plan</p> <table><tr><td>Asset description</td><td>Estimated quantity</td><td>Disposal requirement</td></tr><tr><td>Guardrails</td><td>5000m</td><td>RRM Yard</td></tr></table>	Asset description	Estimated quantity	Disposal requirement	Guardrails	5000m	RRM Yard
Asset description	Estimated quantity	Disposal requirement								
Guardrails	5000m	RRM Yard								
			A1.2.3.13 Prevention of damage to nearby properties and services	<p>Structures that could be affected by excessive ground vibrations are listed in the following table:</p> <table><tr><td>Structure</td><td>Type</td><td>Location</td></tr><tr><td>+80No Houses and outbuildings</td><td>Low Cost (quality) Housing</td><td>Km5.4 to km6.1 LHS</td></tr></table>	Structure	Type	Location	+80No Houses and outbuildings	Low Cost (quality) Housing	Km5.4 to km6.1 LHS
Structure	Type	Location								
+80No Houses and outbuildings	Low Cost (quality) Housing	Km5.4 to km6.1 LHS								

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A1.2.3.18 Stakeholder liaison	Additional requirements related to structured engagement with project Stakeholders and affected Communities, as well as guidance on the selection and the enhanced utilisation and development of Targeted Labour and Targeted Enterprises is provided in Section D1000.
			A1.2.3.20 Road safety audits	A Work zone traffic management audit as well as a Pre-opening stage road safety audit, shall be carried out.
			A1.2.3.22 Wayleaves/Agreements and Permits	The Contractor shall be responsible for applying for the following wayleaves: <ul style="list-style-type: none"> • Telkom • Fibre • Water • Power
		A1.2.7	EXECUTION OF THE WORKS	
			A1.2.7.1 Programme of work	
			a) General	A scheme 2 programme shall apply.
			b) Scheme 2	The programme shall be drawn up or be compatible with MS Project Additional schedules, other than required in terms of Conditions of Contract Clause 8.3, to be provided are: not-applicable
			A1.2.7.4 Work on, over, under or adjacent to utilities	Refer to Section A2.1.3.2 Location, identification, protection and relocation of existing services. Wayleaves must be obtained prior to commencing with works adjacent to services.
	A1.3		CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS	
		A1.3.3	GENERAL	
			A1.3.3.1 Construction camps	The Contractor is to make his own arrangements for a site camp as stipulated in this clause.
	A1.4		FACILITIES FOR THE ENGINEER	
		A1.4.3	GENERAL	The contractor shall liaise with the engineer to finalise details of the site offices once the contractor has proposed a site camp.
		A1.4.7	EXECUTION OF THE WORKS	
			A1.4.7.1 Offices and laboratories	
			a) General	The site laboratory shall be supplied with three-phase electricity.
			b) Offices	As per specifications
			c) Laboratories	Details of the site laboratory layout to be provided to the successful contractor.
			f) Ablution unit	As per specifications
			A1.4.7.2 Housing	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			a) Prefabricated houses	Not required
			A1.4.7.3 Services	
			b) Water, electricity and gas	A standby generator shall be provided on site.
			A1.4.7.5 Office staff	An office secretary is to be provided
	A1.5		ACCOMMODATION OF TRAFFIC	
		A1.5.3	GENERAL	
		A1.5.7	EXECUTION OF THE WORKS	
			A1.5.7.3 Accommodation of traffic where the road is constructed in half or partial widths	<p>The length of the half or partial width construction sections where the traffic can only pass in one direction at a time shall not exceed 1 km.</p> <p>The number of one-way sections under construction at any one time shall not exceed 2 No. Stop/go's will only be allowed for a maximum of 48 hours.</p> <p>No STOP / GO one-way traffic sections shall be in operation and two-way traffic shall be accommodated safely within the contract limits during the following additional periods: Refer to Clause A8.3(m)</p>
			A1.5.7.6 Maintenance of existing roads used as detours	All existing roads used as detours by public traffic, and/or by the Contractor's vehicles, for bypassing the Site of the Works are to be maintained by the Contractor.
			A1.5.7.10 Construction of temporary deviations	
			d) Earthworks and pavement layers for temporary deviations	Refer to Pay Items under C1.5.4/C5.3.2, C1.5.4/C5.4.2 and C1.5.4/C5.4.5 in the schedule of quantities
			e) Surfacing of temporary deviations	Refer to Pay Items under C1.5.4/C8.1.1 and C1.5.4/C10.1.22 in the schedule of quantities
	A1.6		CLEARING AND GRUBBING	
		A1.6.7	EXECUTION OF THE WORKS	
			A1.6.7.2 Clearing	No significant trees or vegetation on site
	A1.7		LOADING AND HAULING	
		A1.7.7	EXECUTION OF THE WORKS	The Contractor must provide the Engineer with the certified carrying capacity of each vehicle before any construction materials can be transported.

COTO CHAPTER 2: SERVICES

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
2			SERVICES	
	A2.1		GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES	
		A2.1.1	SCOPE	
			A2.1.1.1 Installation of new services	New Traffic Signals and street lighting will be installed in the urban section between km5.16 and km8.66
			A2.1.1.2 Location, identification, protection and relocation of existing services	Refer to drawings J27218/US001 to US012 for existing services.
		A2.1.2	DEFINITIONS	
		A2.1.3	GENERAL	
			A2.1.3.1 Installation of new services	As per A2.1.1.1 above.
			A2.1.3.2 Location, identification, protection and relocation of existing services	
			a) Existing as-built records	Refer to drawings J27218/US001 to US012 for existing services
			b) Location of existing services	The contractor will be required to use Ground Penetration Radar (GPR) to detect existing services
			d) Protection of services	
			<i>(i) Service owners</i>	The lead times required to make the necessary arrangements for the protection, removal or relocation of services which the Contractor shall allow are stated in Part A, Item A2.1.3.2 (b)
			A2.1.3.5 Programming for services	
			b) Programme and delays	The lead times required to make the necessary arrangements for the protection, removal or relocation of services which the Contractor shall allow in his programme are stated in Part A, Item A2.1.3.2 (b)
			A2.1.3.6 Provision of record drawings and details	PLATO registration is not required for site surveyor.
			A2.1.3.9 Limitations and restrictions	
			c) Installation under special conditions	None

COTO CHAPTER 3: DRAINAGE

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
3			DRAINAGE	
	A3.1		DRAINS	
		A3.1.5	MATERIALS	
			A3.1.5.2 Subsoil Drainage Materials a) Pipes	110 mm OD slotted HDPE pipe for subsoil drains and 110mm OD mesh structured HDPE geopipe for fin drains
		A3.1.7	EXECUTION OF THE WORKS	
			A3.1.7.4 Subsoil drainage a) Construction of subsoil drainage systems	
			<i>(ii) With polymer film lining to trenches for subsoil drainage systems</i>	Polyethylene sheeting 0,15 mm thick, or similar, approved material, for lining subsoil drainage systems. Refer to dwg No J27218 / XS003
			A3.1.7.5 Manholes, outlet structures and cleaning eyes	Refer dwgs J27218/TD-D-SD-1002 and 3
	A3.2		CULVERTS	

COTO CHAPTER 4: EARTHWORKS AND PAVEMENT LAYERS: MATERIALS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
4			EARTHWORKS AND PAVEMENT LAYERS: MATERIALS	
	A4.1		BORROW MATERIALS	
		A4.1.3	GENERAL	
			A4.1.3.1 Employer identified borrow pits and quarries	4No materials sources have been identified as follows: 1. PPC borrowpit 2. Borrowpit 2 3. Borrowpit 3 4. Kudu Kloof cutting
			A4.1.3.2 Contractor identified borrow pits and quarries	50% of the selected subgrade 100% of subbase material, 100% of the G1 base, concrete and surfacing aggregates will be sourced from commercial sources or contractor identified quarry or borrow pits.
		A4.1.5	MATERIALS	
			A4.1.5.4 Sand, normal and coarse fill material in the earthworks layers (Table A4.1.5-2)	The CBR and swell for depth more than 10m shall be as per COTO specification
			A4.1.5.5 Rock fill material in the earthworks layers	As per COTO specification
		A4.1.7	EXECUTION OF WORKS	
			A4.1.7.2 Borrow pit and Quarry operations	
			a) General control at the borrow pits and quarries	The contractor shall have a part time materials manager on site who shall have at least 10 years experience as a SANAS accredited senior materials technician.
			b) Classes of excavations	
			<i>(i) Soft excavation</i>	The reference construction equipment shall be per COTO specification
			<i>(iv) Hard excavation</i>	The reference construction equipment shall be a 30Ton excavator fitted with a rock bucket.
	C4.1		BORROW MATERIALS PART C: MEASUREMENT AND PAYMENT	
		C4.1.19	Excavating hard material	The unit of measurement for excavating, producing and the stockpiling of crushed material shall be per ton
	A4.2		CUT MATERIALS	
		A4.2.7	EXECUTION OF WORKS	
			A4.2.7.1 Excavation operations	
			a) Control at the cuttings, designated excavations and box cuts	The contractor shall have a part time materials manager on site who shall have at least 10 years experience as a SANAS accredited senior materials technician.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			b) Classes of excavation	The reference construction equipment shall be per COTO specification
	A4.3		EXISTING ROAD MATERIALS	
		A4.3.3	GENERAL	
			A4.3.3.1 Employer identified existing road materials	Refer to Volume 6 for centre line test data and proposed materials utilisation for the project.
		A4.3.5	MATERIALS	
			A4.3.5.2 Reclaimed Asphalt Material	As the existing road has a seal surface asphalt is only expected to be reclaimed from old patches and such material will be incorporated in layerworks.
	A4.5		ALTERNATIVE MATERIALS	
		A4.5.3	GENERAL	AThe use of alternative construction materials will not be permitted.

COTO CHAPTER 5: EARTHWORKS AND PAVEMENT LAYERS: CONSTRUCTION

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
5			EARTHWORKS AND PAVEMENT LAYERS: CONSTRUCTION	
	A5.1		ROADBED	
		A5.1.2	DEFINITIONS	
			Batter	Batter slopes will be constructed at 1:5 or as instructed by the engineer, based on site conditions.
		A5.1.3	GENERAL	
			A5.1.3.1 Roadbed material Investigation	Refer to Volume 6 for details of the materials and geotechnical investigations and laboratory tests. Roadbed treatment shall be per engineer's instruction, but shall generally consist of three methods: 1. Remove unsuitable insitu subgrade and replace with a pioneer layer, to a depth of 600mm or deeper as applicable. 2. Roadbed treatment by ripping or blasting in hard rock cuttings 3. Where the new pavement is constructed on top of the existing, the existing pavement will be scarified and reshaped to form either the roadbed or top of lower selected.
		A5.1.7	EXECUTION OF WORKS	
			A5.1.7.3 Normal roadbed treatment	
			a) Construction overview	Refer A5.1.3.1 for roadbed treatment
			b) Removal of unsuitable roadbed material	Unsuitable material shall be disposed of to spoil sites identified by the contractor and approved by the ECO.
			f) Hard material	
			<i>(i) In situ treatment by ripping</i>	If shales or mudrock is located at a depth of less than 500mm below roadbed level, it is to be removed and replaced with a pioneer layer.
	C5.1		ROADBED PART C: MEASUREMENT AND PAYMENT	
		C5.1.13	Construction of a levelling layer	The volume of the levelling layer will be computed as an area with an average thickness of 150mm.
	A5.2		FILL	
		A5.2.3	GENERAL	
			A5.2.3.2 Fill adjacent to existing fill	Refer to Clause C1.1.3.2 b) – No additional compensation will be paid for partial width construction or working in restricted areas.
			A5.2.3.3 Fill layer thickness	Fill layer thicknesses will be determined by the engineer in accordance with the type of fill material being utilised for each section.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A5.2.3.4 Fill compaction classification	
			a) MDD compaction	
			<i>(ii) Normal fill and Coarse Fill</i>	93% of MDD or method spec (eg 8 roller pass) as applicable. Layer thicknesses will be per engineers instruction.
			<i>(iii) Fill widening</i>	93% of MDD or method spec (eg 8 roller pass) as applicable.
		A5.2.5	MATERIALS	
		A5.2.7	EXECUTION OF THE WORKS	
			A5.2.7.3 Benching for fill construction	The method of benching shall be per the engineer's instruction.
			A5.2.7.4 Widening of fills	In order to obtain sufficient working width for road-building equipment when an existing road fill is widened, it may be necessary to form benches that extend beyond the normal road prism or to cut back into the existing road fill, or both. The contractor shall submit his proposals in this regard to the engineer for approval before proceeding with such work. The contractor will be paid in accordance with the relevant payment items for work required to obtain a working width of up to 4 m. Additional work required to provide a working width in excess of 4 m shall be at the contractor's expense.
		A5.3.5	MATERIALS	
			A5.3.5.1 Material information	Refer to Volume 3 Part C4, the Typical Cross Section in Volume 4.1 and Volume 6 for material properties of the earthworks and layerworks.
		A5.3.8	WORKMANSHIP	
			A5.3.8.5 Surface regularity	Riding quality shall be assessed by method c) – using a profiler
			c) By using a profiler	The payment items for adjustment shall be: C5.3.2.1 (aa) G1 crushed stone base layer (150mm thick) compacted to 88 % of AD
	A5.4		STABILISATION	
		A5.4.5	MATERIALS	
			A5.4.5.3 Cementitious stabilising agents	Cement for stabilising shall comply with the requirements of SANS 50197. Only extended common cement (CEM II) with a strength of class 32.5N shall be permitted

COTO CHAPTER 8: PRETREATMENT AND REPAIR OF EXISTING LAYERS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
8			PRETREATMENT AND REPAIR OF EXISTING LAYERS	
	A8.1		PRIME COAT	
		A8.1.3	GENERAL	
			A8.1.3.1 Weather limitations	The limiting moisture contents for treated layers before priming shall be 50% of optimum moisture content.
		A8.1.5	MATERIALS	
			A8.1.5.1 Bituminous material	The priming material shall be one of the following as specified in Part C: Measurement and Payment: - MC -30 cut-back bitumen MC – 10 cut-back bitumen - Inverted bitumen emulsion
		A8.1.7	EXECUTION OF THE WORKS	
			A8.1.7.5 Opening to traffic	A blinding layer will be instructed by the engineer for sections of base that has been primed and will need to be opened to traffic prior to surfacing.

COTO CHAPTER 9: ASPHALT LAYERS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
9			ASPHALT LAYERS	
	A9.1		ASPHALT LAYERS	
		A9.1.2	DEFINITIONS	
			Asphalt mix types	A medium, continuously graded sand skeletal mix, with 14mm nominal maximum particle size and A-E1 binder will be used.
			Aggregate	Class 2 aggregate will be used
		A9.1.3	GENERAL	
			Table A9.1.3-1 *Note 2:	Standard mix proportions will apply
			Table A9.1.3-2: Nominal Mix Proportions of Sand Skeletal Mixes for Tender Purposes Bitumen (type and grade according to Contract Documentation) (%)	Standard mix proportions will apply
		A9.1.4	DESIGN BY THE CONTRACTOR	
			A9.1.4.2 Mix design requirements	Asphalt mix design level II will be required for design traffic >10-30 MESA, with traffic speed of 21-80km/hr and a PG 58 binder
		A9.1.5	MATERIALS	
			A9.1.5.2 Bituminous binders for asphalt mixes	<p>A-E1 binder will be used in a medium, continuously graded sand skeletal mix.</p> <p>Asphalt mix design level II will be required for design traffic >10-30 MESA, with traffic speed of 21-80km/hr and a PG 58 binder.</p> <p>No RA is available for the mix.</p>
		A9.1.8	WORKMANSHIP	
			A9.1.8.8 Sampling	
			b) Coring of completed layers	The Contractor shall provide suitable coring machines capable of cutting 100mm or 150mm diameter cores from the completed asphalt layers.
		D9.1.10	ACCEPTANCE CRITERIA	
			D9.1.10.1 Visual Assessments	TMH 13 Assessment to be done – automated road condition assessment.
			D9.1.10.2 Deflection	At the end of the Performance Guarantee Period, the structural capacity of the road pavement, as determined in terms of deflection measurements, shall conform to be acceptance criteria presented in Table D9.1.10-2

COTO CHAPTER 11: ANCILLARY ROAD WORKS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
11			ANCILLARY ROAD WORKS	
	A11.1		PITCHING, STONework, CAST IN SITU CONCRETE FOR PROTECTION AGAINST EROSION	
		A11.1.5	MATERIALS	
			A11.1.5.6 Geotextiles	Non-woven needle punched type geofabric, grade 3 or approved equivalent to be used for subsoil drains and fin drains.
	A11.2		NON-STRUCTURAL GABIONS	
		A11.2.7	EXECUTION OF WORKS	
			A11.2.7.2 Constructing gabion boxes and mattresses	
			g) Assembly	The final for gabions will be per the engineer's instructions, to suit conditions on site.
	A11.4		ROAD RESTRAINT SYSTEMS	
		A11.4.1	SCOPE	<u>Guardrails:</u> Method specification timber post systems shall conform to SANS 1350 and other SANS compliant materials requirements. <u>Temporary concrete barriers:</u> Performance based systems shall conform to EN 1317
	C11.6		ROAD SIGNS PART C: MEASUREMENT AND PAYMENT	
			ii) Notes on measurement and pay items	Measurements for excavations will be taken from the road shoulder or ground surface as applicable
	A11.7		ROAD MARKINGS AND ROAD STUDS	
		A11.7.5	MATERIALS	
			A11.7.5.2 Materials	
			a) Marking materials	
			(iii) Thermoplastic road marking material	The timing for the application of thermoplastic road marking over the previously applied marking will be 6 months into the defects liability period.
			b) Road studs	RSA-1 road studs to be used for the permanent works
	A11.8		LANDSCAPING AND PLANTING PLANTS	
		A11.8.5	MATERIALS	
			A11.8.5.2 Materials	
			b) Fertiliser/soil-improvement material	Fertiliser to be recommended by the contractor for engineer's approval.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA																																													
			d) Grass seeds	<div>Summer Mix</div> <table><tr><th>GRASS SPECIES</th><th>COMMON NAME</th><th>APPLICATION RATE (kg/ha)</th></tr><tr><td><i>Chloris gayana</i></td><td>Rhodes grass</td><td>4</td></tr><tr><td><i>Cynodon dactylon</i></td><td>Couch grass</td><td>5</td></tr><tr><td><i>Desmodium intortum</i></td><td>Green leaf desmodium</td><td>3</td></tr><tr><td><i>Digitaria eriantha</i></td><td>Smutsfinger grass</td><td>8</td></tr><tr><td><i>Eragrostis tef</i></td><td>Teff</td><td>8</td></tr><tr><td><i>Panicum maximum</i></td><td>Guinea grass</td><td>4</td></tr><tr><td>TOTAL</td><td></td><td>32</td></tr></table> <div>Winter mix</div> <table><tr><th>GRASS SPECIES</th><th>COMMON NAME</th><th>APPLICATION RATE (kg/ha)</th></tr><tr><td><i>Desmodium intortum</i></td><td>Green leaf desmodium</td><td>3</td></tr><tr><td><i>Digitaria eriantha</i></td><td>Smutsfinger grass</td><td>8</td></tr><tr><td><i>Lolium multiflorum</i></td><td>Italian rye grass</td><td>20</td></tr><tr><td><i>Panicum maximum</i></td><td>Guinea grass</td><td>4</td></tr><tr><td><i>Phalaris tuberosa</i></td><td>Harding grass</td><td>3</td></tr><tr><td>TOTAL</td><td></td><td>38</td></tr></table>	GRASS SPECIES	COMMON NAME	APPLICATION RATE (kg/ha)	<i>Chloris gayana</i>	Rhodes grass	4	<i>Cynodon dactylon</i>	Couch grass	5	<i>Desmodium intortum</i>	Green leaf desmodium	3	<i>Digitaria eriantha</i>	Smutsfinger grass	8	<i>Eragrostis tef</i>	Teff	8	<i>Panicum maximum</i>	Guinea grass	4	TOTAL		32	GRASS SPECIES	COMMON NAME	APPLICATION RATE (kg/ha)	<i>Desmodium intortum</i>	Green leaf desmodium	3	<i>Digitaria eriantha</i>	Smutsfinger grass	8	<i>Lolium multiflorum</i>	Italian rye grass	20	<i>Panicum maximum</i>	Guinea grass	4	<i>Phalaris tuberosa</i>	Harding grass	3	TOTAL		38
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		A11.8.7	EXECUTION OF THE WORKS																																														
			A11.8.7.3 Grassing																																														
			c) Hydroseeding	Seedmix as per A11.8.5.2d)																																													

COTO CHAPTER 14: REPAIR AND REHABILITATION OF STRUCTURES

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
14			REPAIR AND REHABILITATION OF STRUCTURES	
	A14.1		ACCESS FOR BRIDGE REHABILITATION	
		A14.1.3	GENERAL	Rope access will not be permitted.

COTO CHAPTER 20: QUALITY ASSURANCE

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
20			QUALITY ASSURANCE	
	A20.1		TESTING MATERIALS AND JUDGEMENT OF WORKMANSHIP	
		A20.1.3	TESTING METHODS	
			A20.1.3.3 The Costs of Testing	
			a) Material and workmanship for quality control	Testing will be undertaken by an independent site laboratory

SANRAL STANDARD SPECIFICATION SECTIONS

SECTION	CL	SUB-CLAUSE	SPECIFICATION DATA
SECTION C		ENVIRONMENTAL MANAGEMENT PLAN	
	C1004	ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS	
		(d) The Designated/Dedicated Environmental Officer (DEO)	DEO means: Designated Environmental Officer The approved DEO should be full-time and must be dedicated to this function.
	C1008	AREAS OF SPECIFIC IMPORTANCE	South African Heritage Resource Agency (SAHRA) demolition permit for Coega River Bridge and Alteration permit for Sundays River Bridge.
	C1012	PROJECT SPECIFIC CONDITIONS	The Employer will consider monitoring and reporting in terms of a sustainability rating tool and the Contractor will be required to engage through its appointed DEO with the ECO to provide all the relevant information.
SECTION D		STAKEHOLDER AND COMMUNITY LIAISON AND TARGETED LABOUR AND TARGETED ENTERPRISES UTILISATION AND DEVELOPMENT	
	D1002	DEFINITIONS AND APPLICABLE LEGISLATION	
		D1002.01 Definitions	
		(p) Target Area(s)	For Targeted Labour: Nelson Mandela Bay Municipality (NMBM)
		(u) Targeted Labour	Target Group for Targeted Labour: a. black designated groups (As per latest PPPFA Regulations); b. black people; c. women; d. people with disabilities
	D1003	TARGET GROUP PARTICIPATION	
		D1003.04 Contract Participation Goal (CPG)	
		CPG for Targeted Labour:	Minimum of 8% of the Final Contract Value by the end of the contract to Targeted Labour The Final Contract Value includes the value of scheduled work and extra work but exclude Community Development work and any Contract Price Adjustment and adjustments for reduced payments, Rise and Fall, Retention Money, Penalties and VAT
		Targeted Labour minimum contributions by the following Target Groups:	

		a. black designated groups; (i) Black people who are youth	30% of targeted labour value
		(ii) Black people who are persons with disabilities	0.3% of targeted labour value
		b. Black women;	30% of targeted labour value
		CPG for Targeted Enterprise	Minimum of (30%) of the Final Contract Value by the end of the contract to Targeted Enterprises The Final Contract Value includes the value of scheduled work and extra work but excludes Community Development work, Contract Price Adjustment and adjustments for reduced payments, Rise and Fall, Retention Money, Penalties and VAT.
		Targeted Enterprise minimum contribution by the following Target Groups:	
		i) Targeted Enterprise with ≥51% ownership by Youth	Minimum of 5% of the Final Contract Value
		ii) Targeted Enterprise with ≥51% ownership by Women	Minimum of 5% of the Final Contract Value
		iii) Targeted Enterprise with ≥51% ownership by Military veterans	Minimum of 1% of the Final Contract Value
		iv) Targeted Enterprise with ≥51% ownership by Disabled persons (Differently abled)	Minimum of 0.5% of the Final Contract Value
		v) Targeted Enterprise with CIDB 1 or 2 grading	Minimum of 1% of the Final Contract Value
		vi) Targeted Enterprise with CIDB 3 or 4 grading	Minimum of 1% of the Final Contract Value

	D1008	WORK SUITABLE FOR EXECUTION BY TARGETED ENTERPRISES	<ul style="list-style-type: none"> • Site Security Services • Construction of the site laboratory and engineers offices • Clearing and grubbing. • Traffic Accomodation – construction of bypasses/provision of barriers • Construction and clearing of drains. • Installation of prefabricated culverts including inlet and outlet structures. • Concrete channelling and concrete linings for open drains. • Construction of small concrete and other structures. • Pitching, stonework and protection against erosion. • Construction of gabions. • Erection of guardrails. • Landscaping. <p>Finishing the road and road reserve.</p>
SECTION E		REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS	
SECTION F			Refer to Section F for the Street Lighting specification, which is not contained in COTO.

SECTION C: ENVIRONMENTAL MANAGEMENT PLAN

SECTION C: ENVIRONMENTAL MANAGEMENT PLAN

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C1001 SCOPE

The South African National Roads Agency SOC Limited (SANRAL) recognises environmental management as a key component of road infrastructure development and as part of its environmental policy has developed this Environmental Management Plan (EMPI) as a tool for continual improvement in environmental performance.

This EMPI prescribes the methods by which proper environmental controls are to be implemented by the Contractor. The duration over which the Contractor's controls shall be in place cover the construction period of the project as well as the limited time after contract completion defined by the Conditions of Contract for Construction for Building and Engineering Works Designed by SANRAL (1999 edition) published by the Federation Internationale des Ingenieurs-Conseils (FIDIC) as the Defects Notification Period (maintenance period).

The provisions of this EMPI are binding on the Contractor during the life of the contract. They are to be read in conjunction with all the documents that comprise the suite of documents for this contract, particularly the conditions of any environmental authorisation and associated Environmental Management Programme (EMPr). In the event that any conflict occurs between the terms of the EMPI and the project specifications or environmental authorisation, the terms herein shall be subordinate.

The EMPI is a dynamic document subject to similar influences and changes as are brought by variations to the provisions of the project specification. Any changes to the EMPI and/or environmental authorisation cannot occur without being submitted to SANRAL who will manage the process of amending the EMPI.

The EMPI identifies the following:

- Relevant parties and their responsibilities;
- Construction activities that will impact on the environment;
- Specifications with which the Contractor shall comply in order to protect the environment from the identified impacts; and
- Actions that shall be taken in the event of non-compliance.

C1002 DEFINITIONS

Alien Vegetation: undesirable plant growth which includes but is not limited to all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA), 1983 regulations. Other vegetation deemed to be alien are those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable.

Construction Activity: any action taken by the Contractor, his sub-contractors, suppliers or personnel during the construction process as defined in the contract documents.

Environment: the surroundings within which the contract exists and comprises land, water, atmosphere, micro-organisms, plant and animal life (including humans) in any part or combination thereof as well as any physical, chemical, aesthetic or cultural inter-relationship among and between them.

Environmental Aspect: any component of a contractor's construction activity that is likely to interact with the environment.

Environmental authorisation: a written statement from the National Department of Environmental Affairs, (DEA), with the general and specific conditions and the EMPr recording its approval of an application for a planned undertaking that triggers listed activities in the Environmental Impact Assessment (EIA) regulations of the National Environmental Management Act (NEMA).

Environmental Impact: any change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.

Environmental Impact Assessment (EIA): a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and scoping and environmental impact reporting.

Environmental Management Programme (EMPr): the embodiment of this EMPI to ensure that undue or reasonably avoidable adverse impacts of a development are prevented, and to ensure that positive impacts are enhanced. It thus addresses the how, when, who, where and what of integrating environmental mitigation and monitoring measures through identified projects.

Road Reserve: a corridor of land, defined by co-ordinates and/or proclamation, within which the road, including access intersections or interchanges, is situated. A road reserve may, or may not, be bounded by a fence.

Site; the site is defined in the FIDIC Conditions of Contract and in the scope of works. It is bound by the limits of construction as shown in the drawings or the title of the project and extends to also include the following:

- Areas outside the construction zones where accommodation of traffic is placed;
- All borrowpits defined in the applications approved by the relevant Department of Mineral Resources (DMR);
- All haul roads constructed by the Contractor for purposes of access;
- Any non-adjacent sites specified in the contract documentation;
- The Contractor's and his subcontractors' camp sites.

For the purposes of this EMPI, the site includes areas outside of, but adjacent to, the road reserve that may be affected by construction activities.

Spoil material: is material unsuitable for construction of the road pavement and for which no other useful purpose can be found in additional works on the project (e.g. for the provision of protection berms). Such material is considered as waste material that requires spoiling at convenient areas to be identified by the Engineer and/or Contractor within the Site. Spoil material does not require removal to a designated landfill site unless it contains identifiable hazardous contaminants.

C1003 LEGAL REQUIREMENTS

(a) General

Construction shall be according to the best industry practices, as identified in the project documents. This EMPI, which forms an integral part of the contract documents, informs the Contractor as to his duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The Contractor should note that obligations imposed by the EMPI are legally binding in terms of this contract. In the event that any rights and obligations contained in this EMPI contradict those specified in the standard or project specifications then the latter shall prevail.

(b) Statutory and other applicable legislation

The Contractor is deemed to have made himself conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract.

Major environmental legislation, as amended from time to time, includes but is not limited to the following:

(i) Conservation of Agricultural Resources Act (Act No. 43 of 1983)

This act provides for control over the utilisation of the natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and vegetation, as well as combating weeds and invader plants.

(ii) The Constitution (Act 6 of 1996)

The Constitution states that everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected through reasonable legislative and other measures to prevent pollution and ecological degradation; promote conservation and ensure ecologically sustainable development and use of natural resources.

(iii) Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)

This act makes provision for equitable access to, and sustainable development of, minerals and petroleum resources.

(iv) National Environmental Management Act (NEMA), (Act No. 107 of 1998)

This act supports the Bill of Rights within the Constitution and highlights principles of sustainable development including preservation of ecosystems and biological diversity and avoidance, minimisation and remediation of pollution and environmental degradation. It also sets the stage for the EIA Regulations.

(v) National Environmental Management: Air Quality Act (Act No. 39 of 2004)

This act provides reasonable measures for the prevention of pollution and ecological degradation; and provides for specific air quality measures; for national norms and standards regulating air quality monitoring, management and control by all spheres of government.

(vi) National Environmental Management: Biodiversity Act (Act No. 10 of 2004)

This act makes provisions to accomplish the objectives of the United Nations' Convention on Biological Diversity. SANRAL may be required to apply for permits to conduct certain listed activities which, together with the listed threatened or protected species, may be identified by the Minister.

Section 73 (3) of this act empowers a competent authority to direct a person to take steps to remedy any harm to biodiversity resulting from the actions of that person or as a result of occurrence of listed invasive species occurring on land on which that person is the owner. Thus SANRAL may be directed to remedy harm caused by listed invasive species.

(vii) National Environmental Management: Protected Areas Act (Act No. 57 of 2003)

This act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity, natural landscapes and seascapes.

(viii) National Environmental Management: Waste Act (Act No. 59 of 2008)

This act aims to regulate waste management practices through provision of national norms and standards, specific waste measures, licensing and control of waste activities, remediation of contaminated land as well as providing for compliance and law enforcement.

(ix) National Forests Act (Act No. 84 of 1998)

This act makes provision for promoting the sustainable management and development of forests, and for the protection of certain forests and trees for environmental, economic, educational, recreational, cultural, health and spiritual purposes.

(x) National Heritage Resources Act (Act No. 25 of 1999)

This act provides for an integrated and interactive system for identification, assessment and management of South Africa's heritage resources, and empowers civil society to nurture and conserve their heritage resources.

(xi) National Water Act (Act No. 36 of 1998)

This act makes provision for the protection of surface water and groundwater and their sustainable management for the prevention and remediation of the effects of pollution, as well as for the management of emergency situations.

(xii) The South African National Roads Agency Limited and National Roads Act (Act No. 7 of 1998)

This Act makes provision for a National Roads Agency for the Republic to manage and control the Republic's national roads system and take charge, amongst others, of the development, maintenance and rehabilitation of national roads within the framework of government policy.

C1004 ADMINISTRATION OF ENVIRONMENTAL OBLIGATIONS

Copies of this EMPI shall be kept at the site office and must be distributed to all senior contract personnel who shall familiarise themselves with its contents.

Implementation of this EMPI requires the involvement of several stakeholders, each fulfilling a different but vital role as outlined herein, to ensure sound environmental management during the construction phase of a project.

(a) SANRAL

SANRAL and anyone acting on SANRAL's behalf is accountable for the potential environmental impacts of any activities that are undertaken and is responsible for managing these impacts.

(b) The Engineer

The Engineer has been appointed by, and acts for, SANRAL as its on-site implementing agent and carries the responsibility to ensure that the Contractor undertakes its construction activities in such a way that SANRAL's environmental responsibilities are not compromised.

The Engineer will, within seven days of receiving a contractor's request for approval of a nominated Designated Environmental Officer (DEO), approve, reject or call for more information on the nomination. The Engineer will be responsible for issuing instructions to the DEO where environmental considerations call for action to be taken.

If in the opinion of the Engineer the DEO is not fulfilling his/her duties in terms of this EMPI, the Engineer may, after discussion and agreement with SANRAL, exercise his powers under FIDIC general conditions of contract and instruct replacement of the DEO in writing and with stated reasons.

(c) The Contractor

The Contractor is responsible for project delivery in accordance with the prescribed specifications, among which this EMPI shall be included.

The Contractor shall receive and implement any instruction issued by the Engineer relating to compliance with the EMPI including the removal of personnel or equipment.

Compliance with the provisions contained herein or any condition imposed by the environmental approvals shall become the responsibility of the Contractor through an approved Designated Environmental Officer (DEO). The Contractor shall nominate a person from among his site personnel to fulfil this function and submit to the Engineer for his approval the *curriculum vitae* of the proposed DEO. This request for approval shall be given, in writing, at least fourteen days before the commencement of any construction activity clearly setting out reasons for the nomination, and with sufficient detail to enable the Engineer to make a decision.

(d) The Designated/Dedicated Environmental Officer (DEO)

Once a nominated representative of the Contractor has been approved, he/she shall become the DEO and shall be the responsible person for ensuring that the provisions of this EMPI are complied with during the life of the contract. The DEO shall submit regular written reports to the Engineer, but not less frequently than once a month.

The DEO may undertake other construction duties unless Section B: Specification Data, prescribes this position as 'Full-time dedicated' as opposed to the standard position being 'designated'. However, the DEO's environmental duties shall hold primacy over other contractual duties and the Engineer has the authority to instruct the Contractor to reduce the DEO's other duties or to replace the DEO if, in the Engineer's opinion, he/she is not fulfilling his/her duties in terms of the requirements of this EMPI. Such instruction will be in writing clearly setting out the reasons why a replacement is required.

As a minimum the DEO shall have an accredited diploma qualification in environmental or natural sciences or equivalent and a minimum of 2 years' experience in a similar role in construction or other environmental regulatory field.

In addition to the compliance duties relating to EMPI the DEO shall also provide full cooperation whenever the Contractor is subjected to regular environmental audits.

(e) Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is an independent environmental specialist appointed by the Engineer to objectively and regularly monitor the Contractor's compliance with the conditions of the authorisations issued for the project and the approved EMPr (that is this EMPI augmented with specifics of the project). These are external audits and the regularity is determined by the environmental authorisations.

C1005 TRAINING

(a) Qualifications

The (DEO) shall have the minimum qualifications as prescribed above and must be conversant with all legislation pertaining to the environment applicable to the contract. He/she must be appropriately trained in environmental management and possess the skills necessary to impart environmental management skills to all personnel involved in the contract.

The Contractor shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental

awareness. Where possible, the presentation needs to be conducted in the language of the employees.

(b) Content

Apart from induction environmental training should, as a minimum, include the course content below and no induction or course should be given until the Engineer has been afforded the opportunity to appraise it and provide comment.

- (i) The importance of conformance with all environmental policies and the consequences of departure from standard operating procedures;
- (ii) Environmental impacts, actual or potential, caused by work activities, prevention measures to avoid them and mitigation measures when they occur;
- (iii) Work force roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements; and
- (iv) The environmental benefits of improved personnel performance.

(c) Induction

In the case of permanent staff the Contractor shall provide evidence that such induction courses have been presented. In the case of new staff (including contract labour) the Contractor shall inform the Engineer when and how he intends concluding his environmental training obligations.

C1006 ACTIVITIES/ASPECTS CAUSING IMPACTS

Typical environmental aspects and impacts associated with road construction are listed in Table 1: Aspects and Impacts Associated with Road Construction. Actual impacts will differ from project to project and, therefore, so may the mitigation measures employed. The commonest aspects and impacts are addressed separately, and typical avoidance and/or mitigation measures described. The list and descriptions are not by any means exhaustive and they shall be used for guideline purposes only.

Table 1: Aspects and Impacts Associated with Road Construction

Aspect	Impact
Waste generation/storage	Water pollution; nuisance; visual impact
Water use and stormwater discharge	Change in flow regime and/or reduction in downstream availability; soil erosion: water pollution
Vehicle use and maintenance	Air pollution; noise
Chemical/fuel storage	Water/air/soil pollution; health impacts; accidents e.g. spills, fire
Site clearing; earthworks; layer-works; seal works	Change in landform; impact on heritage resources; noise; soil erosion; air pollution
River bridges; installing drainage structures	Water pollution; impact on river flows; noise
Land acquisition	Loss of land &/or livelihood; change in land use;
Acquisition of building material from borrow pits	Change in landform and use

(a) General approach

The role of the DEO cannot be underestimated and once approved he/she shall be on the site at all times, and before the Contractor begins each construction activity, he/she shall give to the Engineer a written statement setting out the following:

- (i) The type of construction activity about to be started.

- (ii) Locality where the activity will take place.
- (iii) Identification of the environmental aspects and impacts that might result from the activity.
- (iv) The methodology of impact prevention for each activity or aspect.
- (v) The methodology of impact containment for each activity or aspect.
- (vi) Identification of the emergency/disaster potential for each activity (if any) and the reaction procedures necessary to mitigate impact severity.
- (vii) Treatment and continued maintenance of impacted environment.

The Contractor shall programme his work in such a way that each cause and effect of a construction activity is also identified, and the activity planned so as to prevent any impact from happening and shall demonstrate that he is capable of carrying out any repair and reinstatement of the damaged environment. These requirements shall be concurrent with the time constraints to produce method statements for each construction activity in compliance with the provisions of these project specifications.

The Contractor shall provide such information in advance of any or all construction activities provided that new submissions shall be given to the Engineer whenever there is a change or variation to the original.

The Engineer may provide comment on the methodology and procedures proposed by the DEO, but he shall not be responsible for the Contractor's chosen measures of impact mitigation and emergency/disaster management systems. However, the Contractor shall demonstrate at inception and at least once during the contract that the approved measures and procedures function properly.

(b) Spillages

Streams, rivers and dams shall be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous products. In the event of a spillage, the Contractor shall be liable to arrange for professional service providers to clear the affected area.

Responsibility for spill containment and treatment (whether hazardous or not) lies with the Contractor. The individual causing a spill, or who discovers a spill, must report the incident to his/her DEO or to the Engineer. The DEO will assess the situation in consultation with the Engineer and act as required. In all cases, the immediate response shall be to contain the spill. The exact treatment of polluted soil/water shall be determined by the Contractor in consultation with the DEO and the Engineer. Areas cleared of hazardous waste shall be re-vegetated according to the Engineer's instructions.

Should water downstream of the spill be polluted, and fauna and flora show signs of deterioration or death, specialist hydrological or ecological advice will be sought for appropriate treatment and remedial procedures to be followed. The requirement for such input shall be agreed with the Engineer. The costs of containment and rehabilitation shall be for the Contractor's account, including the costs of specialist input as well as the sampling and testing of the water quality upstream and downstream of the spill. Water quality sampling and testing, and further treatment shall continue until upstream and downstream results correspond with each other.

(c) Water use and control

The Contractor's use of water shall take into consideration that it is a scarce commodity and shall be optimised. Authorisation shall be obtained from the Department of Water and Sanitation (DWS) before water is drawn from streams or new boreholes developed.

The Contractor shall also ensure that any stream deviations or diversions are undertaken in such a manner that the impact on the environment is minimised. Method statements shall be submitted to the Engineer for comment, detailing how

the work will be undertaken, what risks are foreseen and what measures will be employed to minimise such risks. Notwithstanding any comments by the Engineer, no work on stream deviations or diversions shall be undertaken in accordance with the General Authorisation.

The quality, quantity and flow direction of any surface water runoff shall be established prior to disturbing any area for construction purposes. Cognisance shall be taken of these aspects and incorporated into the planning of all construction activities. Before a site is developed or expanded, it shall be established how this development or expansion will affect the drainage pattern. Recognised water users/receivers shall not be adversely affected by the expansion or re-development. No water source shall be polluted in any way due to proposed changes.

Streams, rivers, pans, wetlands, dams, and their catchments shall be protected from erosion and flooding by dredging, daylighting, removal of debris and vegetation, etc. These shall also be protected from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous products.

The Contractor shall submit to the Engineer his proposals for prevention, containment and rehabilitation measures against environmental damage of the identified water and drainage systems that occur on the site. Consideration shall be given to the placement of sedimentation ponds or barriers where the soils are of a dispersive nature or where toxic fluids are used in the construction process. The sedimentation ponds must be large enough to contain runoff so that they function properly under heavy rain conditions up to 1:5-year severity.

The Contractor shall submit to the Engineer the results of the baseline water quality test taken above and below the site of the proposed activity, and thereafter monthly testing results or at the frequency as may be specified by the Water Use Licence/General Authorisation, where applicable. No taking-over can be authorised until the water quality is shown to be at pre-construction levels or better.

(d) Vegetation management

The Contractor shall be responsible for the management of vegetation by protection of indigenous vegetation, especially identified protected species, and the prevention of alien vegetation germinating in areas disturbed by road construction activities within and outside the road reserve. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for or from road construction has been stored temporarily. This responsibility shall continue for the duration of the defects notification period. The project specification may instruct the removal of CARA and/or NEMBA-listed category 1 and 2 alien species and planting of specified indigenous species.

(e) Dust control

Dust caused by construction activities shall be controlled by means such as water spray vehicles and applied at sufficient frequency so as not to cause nuisance to adjacent habitation or affect farming activities or natural vegetation. Vegetation cover should also be kept for as long as possible to reduce the area of exposed surfaces. Dust emissions from batching and screening plants shall be subject to the relevant legislation and shall be the subject of inspection by the relevant authorities.

(f) Noise control

The Contractor shall endeavour to keep noise generating activities to a minimum. Noises that could cause a major disturbance, for instance blasting and crushing activities, should only be carried out during the hours prescribed by the conditions of contract (i.e. normal hours). Should such noise generating activities have to occur at any time outside normal hours the people in the vicinity of the noise-generating activity shall be warned about the noise well in advance and the activities kept to a

minimum. Relevant legislation shall also be taken into consideration, and any practical mitigation measures adopted. No noise generating activity outside of normal hours, regardless of its proximity to residences, can take place without application to the Engineer for approval. The application shall be accompanied by the noise containment measures proposed.

(g) Energy consumption

The Contractor shall take into consideration the impacts of high energy consumption, both from a cost and emissions point of view. Energy use shall be minimised, and where possible, alternative energy sources such as solar utilised.

Furthermore, the Contractor shall undertake a study of the consumption of carbon units his chosen method of construction produces in the execution of his programme. In conjunction with the Engineer who will provide complete cooperation in this study, a month by month output shall be compiled and efforts made to see how these outputs can be curtailed and reduced.

C1007 ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION ACTIVITIES

The Contractor shall undertake “good housekeeping” practices during construction as stated in the COTO Standard Specifications for Roads and Bridges and the FIDIC conditions of contract. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of construction methods that leaves production in a safe state from the ravages of weather to include the care for and preservation of the environment within which the site is situated.

The construction activities addressed below shall become part of the Contractor’s obligations regarding his programme of work and incorporated into the required method statements for workmanship and quality control.

a) Site establishment

i) Site Plan

The site refers to an area with defined limits on which the project is located. The Contractor shall establish his construction camps, offices, workshops, staff accommodation and testing facilities on the site in a manner that does not adversely affect the environment. However, before any site establishment can begin, the Contractor shall submit to the ECO for his comments and to the Engineer for his approval, plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the Contractor proposes to put in place.

The plans shall detail the locality as well as the layout of the waste management facilities for litter, kitchen refuse, sewage and workshop-derived effluents. The site offices should not be sited in close proximity to steep areas, as this will increase soil erosion. Preferred locations would be flat areas along the route. If the route traverses water courses, streams and rivers, it is recommended that the offices, and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles are located as far away as possible from any water course. No camp establishment, including satellite camps, can be placed within 150 metres of an identified wetland unless the Contractor has applied to DWS and received authorisation to do so. Regardless of the chosen site, the Contractor’s intended mitigation measures shall be indicated on the plan. The site plan shall have been submitted and approved before establishment commences. Detailed, electronic colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the ECO and the Engineer for consultation during rehabilitation of the site in order that

rehabilitation is, as a minimum, done to a standard similar to pre-construction activities.

ii) Vegetation

The Contractor has a responsibility to inform his staff of the need to be vigilant against any practice that will have a harmful effect on vegetation.

The natural vegetation encountered on the site is to be conserved and left as intact as possible. Vegetation planted at the site shall be indigenous and in accordance with instructions issued by the Engineer. Only trees and shrubs directly affected by the works, and such others as may be indicated by the Engineer in writing, may be felled or cleared. In wooded areas where natural vegetation has been cleared out of necessity, the same species of indigenous trees as were occurring shall be re-established. Protected trees may not be removed without a permit from the Department of Agriculture, Forestry and Fisheries.

Contravention of a notice of listed protected tree species under the National Forests Act, 1998 is regarded as a first category offence that may result in a fine or imprisonment for a period up to three years, or to both a fine and imprisonment. The DEO must be conversant with the latest gazette of declared protected trees.

Rehabilitation shall be undertaken using only indigenous tree, shrub and grass species. Special attention shall be given to any search and rescue operation identified during the environmental assessment process and any removal to an on-site nursery for continuous nurturing and protection and later replanting.

Any proclaimed weed or alien species that propagates during the contract period shall be cleared by hand before seeding.

Fires shall only be allowed in facilities or equipment specially constructed for this purpose. The need for a firebreak shall be determined in consultation with the Engineer and the relevant authorities, and if required a firebreak shall be cleared and maintained around the perimeter of the camp and office sites.

iii) Water management

Water for human consumption shall be available at the site offices and at other convenient locations on site.

All effluent water from the camp/office sites shall be disposed of in a properly designed and constructed system, situated so as not to adversely affect water sources (streams, rivers, pans, dams etc.). Only domestic type wastewater shall be allowed to enter this system.

iv) Heating and cooking fuel

The Contractor shall provide adequate facilities for his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. The Contractor shall ensure that energy sources are available at all times for construction and supervision personnel for heating and cooking purposes.

b) Sewage management

Particular reference in the site establishment plan shall be given to the treatment of sewage generated at the site offices, site laboratory and staff accommodation and at all localities on the site where there will be a concentration of labour. Sanitary arrangements should be to the satisfaction of the Engineer, the local authorities and legal requirements.

Safe and effective sewage treatment will require one of the following sewage handling methods: septic tanks and soak-aways, dry-composting toilets such as “enviro loos”, or the use of chemical toilets which are supplied and maintained by a specialist service provider. The type of sewage management will depend on the geology of the area selected, the duration of the contract and proximity (availability) of providers of chemical toilets. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system. The waste material generated from these facilities shall be serviced on a regular basis. The positioning of the chemical toilets shall be done in consultation with the Engineer.

Toilets and latrines shall be easily accessible and shall be positioned within walking distance from wherever employees are employed on the works. Use of the veld for this purpose shall not, under any circumstances, be allowed.

Outside toilets shall be provided with locks and doors and shall be secured to prevent them from blowing over. The toilets shall also be placed outside areas susceptible to flooding. The Contractor shall arrange for regular emptying of toilets and shall be entirely responsible for enforcing their use and for maintaining such latrines in a clean, orderly and sanitary condition to the satisfaction of the Engineer.

c) Waste management

The Contractor’s intended methods for waste management shall be outlined and implemented at the outset of the contract and shall be to the satisfaction of the Engineer. Opportunities for avoiding, reducing, reusing and recycling of materials should be identified upfront, as should constraints for their implementation. All personnel shall be instructed to dispose of all waste in the proper manner.

i) Solid waste

Solid waste shall be stored in an appointed area in covered, tip-proof metal drums or similar container for collection and disposal. Disposal of solid waste shall be at a licensed landfill site or at a site approved by the relevant authority in the event that an existing operating landfill site is not within reasonable distance from the project area. No waste shall be burned or buried at or near the project area.

ii) Litter

No littering by construction workers shall be allowed and particular emphasis on litter control measures shall apply at stop/go facilities.

During the construction period, the various contractors’ facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. At all places of work the Contractor shall provide litter collection facilities for later safe disposal at approved sites.

iii) Hazardous waste

Hazardous waste such as oils shall be disposed of at an approved landfill site. Special care shall be taken to avoid spillage of bitumen products such as binders or pre-coating fluid to avoid water-soluble phenols from entering the ground or contaminating surface water.

Under no circumstances shall the spoiling of bituminous products on the site, over embankments, in borrow pits or any burying, be allowed. Unused or rejected bituminous products shall be returned to the supplier’s production plant. Any spillage of bituminous products shall be attended to immediately and affected areas shall be promptly reinstated to the satisfaction of the Engineer.

iv) Construction and demolition waste

The opportunity for recycling and reuse of construction and demolition waste as fill for road embankments, land reclamation and drainage control must first be explored and take priority before the option of declaring these materials a 'waste'.

The Contractor is encouraged to actively engage with authorities and landowners adjacent to the site and identify where such 'waste' materials can be usefully deployed to repair existing environmentally damaged areas such as erosion dongas.

d) Control at the workshop

The Contractor's management and maintenance of his plant and machinery will be strictly monitored according to the criteria given below.

i) Hazardous Material Storage

Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials such as bitumen binders shall be stored in a secured, appointed area that is suitably fenced, bunded and has restricted entry. Storage of bituminous products shall only take place using suitable containers to the approval of the ECO and the Engineer.

The Contractor shall provide proof to the Engineer that relevant authorisation to store such substances has been obtained from the relevant authority. In addition, hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Before containment or storage facilities can be erected, the Contractor shall furnish the Engineer with details of the preventative measures he proposes to install in order to mitigate pollution of the surrounding environment from leaks or spillage. The preferred method shall be a concrete floor that is bunded. Any deviation from the method will require proof from the relevant authority that the alternative method proposed is acceptable to that authority. The proposals shall also indicate the emergency procedures in the event of misuse or spillage that will negatively affect an individual or the environment.

ii) Fuel and gas storage

The Contractor shall take cognisance of the limits set by legislation for the storage of fuels and acquire the necessary authorisation for storage capacity beyond these. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any leakage spillage or overflow of these substances. The area inside the bund wall shall be lined with an impervious lining to prevent infiltration of the fuel into the soil. Any leakage, spillage or overflow of fuel shall be attended to without delay.

Gas welding cylinders and LPG cylinders shall be stored chained in a secure, well-ventilated area exterior to any building wall.

iv) Oil and lubricant waste

Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery shall be collected in a holding tank and sent back to the supplier. Water and oil should be separated in an oil trap. Oils collected in this manner, shall be retained in a safe holding tank and removed from site by a specialist oil recycling company for disposal at approved waste disposal sites for toxic/hazardous materials. Oil collected by a mobile servicing unit shall be stored in the service unit's sludge tank and discharged into the safe holding tank for collection by the specialist oil recycling company.

Drip trays shall be used to collect any lubricants or fuel spilled where any vehicle and machinery are repaired or refuelled. The lubricants and fuel collected shall be handled as specified above.

All used filter materials shall be stored in a secure bin for disposal off site. Any contaminated soil shall be removed and replaced. Soils contaminated by oils and lubricants shall be collected and disposed of at a facility designated by the local authority to accept contaminated materials.

e) Clearing the site

In all areas where the Contractor intends to or is required to clear the natural vegetation and soil, either within the road reserve, or at designated or instructed areas outside the road reserve, a plan of action shall first be submitted to the Engineer for his approval. Working areas shall be clearly defined and demarcated on site to minimise the construction footprint. 'No-go- areas' and other sensitive areas shall also be clearly demarcated on site, and staff must be made aware of them.

The plan of action shall contain a photographic record and chainage/land reference of the areas to be disturbed. This shall be submitted to the Engineer for his records before any disturbance/stockpiling may occur. The record shall be comprehensive and clear, allowing for easy identification during inspections.

f) Soil management

i) Topsoil

Topsoil shall be removed from all areas where physical disturbance of the surface will occur and shall be stored and adequately protected. The contract will provide for the stripping and stockpiling of topsoil from the site for later re-use. Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth may vary at each site. The areas to be cleared of topsoil shall include all storage areas. All topsoil stockpiles and windrows shall be maintained throughout the contract period in a weed-free condition. Weeds appearing on the stockpiled or windrowed topsoil shall be removed by hand. Soils contaminated by hazardous substances shall be disposed of at an approved waste disposal site. The topsoil stockpiles shall be stored, shaped and sited in such a way that they do not interfere with the flow of water to cause damming or erosion, or itself be eroded by the action of water.

The Contractor shall ensure that no topsoil is lost due to erosion – either by wind or water. Areas to be top-soiled and grassed shall be done so systematically to allow for quick cover and reduction in the chance of heavy topsoil losses due to unusual weather patterns. The Contractor's programme shall clearly show the proposed rate of progress of the application of topsoil and grassing. The Contractor shall be held responsible for the replacement, at his own cost, for any unnecessary loss of topsoil due to his failure to work according to the progress plan approved by the Engineer. The Contractor's responsibility shall also extend to the clearing of drainage or water systems within and beyond the boundaries of the road reserve that may have been affected by such negligence.

ii) Subsoil

The subsoil is the layer of soil immediately beneath the topsoil. It shall be removed, to a depth instructed by the Engineer, and if not used for road building it shall be stored and maintained separately from the topsoil so that neither stockpile is contaminated by the other. This soil shall be used for

rehabilitation purposes by first spreading it over the excavated slopes without interfering with or contaminating the stockpiled topsoil.

Whilst in stockpile it shall be maintained free from erosion and weed infestation in the same way as for topsoil stockpile maintenance.

g) Earthworks and layerworks

This section includes all construction activities that involve the mining of all materials, and their subsequent placement, stockpile, spoil, treatment or batching, for use in the permanent works, or temporary works in the case of deviations. Before any stripping prior to the commencement of construction, the Contractor shall have complied with the requirements of this EMPI. In addition, the Contractor shall take cognisance of the requirements set out below.

i) Quarries and borrow pits

The Contractor's attention is drawn to the requirement of the Department of Mineral Resources, that before entry into any quarry or borrow pit, an Environmental Authorisation for the establishment, operation and closure of a quarry or borrow pit shall have been approved by the Department. It is the responsibility of the Contractor to ensure that he is in possession of the authorisation prior to entry into the quarry or borrow pit. The conditions imposed by the relevant authorisation are legally binding on the Contractor and may be more extensive and explicit than the requirements of this specification. In the event of any conflict occurring between the requirements of the specific authorisation and this EMPI, the former shall apply.

ii) Excavation, hauling and placement

The Contractor shall provide the ECO and the Engineer with detailed plans of his intended construction processes prior to starting any cut or fill or layer. The plans shall detail the measures by which the impacts of pollution (noise, dust, litter, fuel, oil and sewage), erosion, vegetation destruction and deformation of landscape will be prevented, contained and rehabilitated. Particular attention shall also be given to the impact that such activities will have on the adjacent built environment. The Contractor shall demonstrate his "good housekeeping", particularly with respect to closure at the end of every day so that the site is left in a safe condition.

iii) Spoil sites

The Contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site he uses during the contract period, including the defects notification period. This shall include existing spoil sites that are being re-entered. Before spoil sites may be used proposals for their locality, intended method of operation, maintenance and rehabilitation shall be given to the ECO for his/her comments and to the Engineer for his approval. The location of these spoil sites shall have signed approval from the affected landowner before submission to the ECO and the Engineer. No spoil site shall be located within 500m of any watercourse. A photographic record shall be kept of all spoil sites for monitoring purposes. This includes before the site is used and after re-vegetation.

The use of approved spoil sites for the disposal of any waste shall be prohibited. Spoil sites will be shaped to fit the natural topography. Depending on availability these sites shall receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture. Appropriate grassing measures to minimise soil erosion shall be undertaken by the Contractor. This may include both strip and full sodding. The Contractor may motivate to the Engineer for other acceptable stabilising methods. The Engineer may only

approve a completed spoil site at the end of the defects notification period upon receipt from the Contractor of a landowner's clearance notice.

iv) Stockpiles

The Contractor shall plan his activities so that materials excavated from borrow pits and cuttings, in so far as possible, can be transported direct to and placed at the point where it is to be used. However, should temporary stockpiling become necessary, the areas for the stockpiling of excavated and imported material shall be indicated and demarcated on the site plan submitted in writing to the Engineer for his approval. The Contractor's proposed measures for prevention of environmental damage, containment and subsequent rehabilitation shall also be submitted.

The areas chosen shall have no naturally occurring indigenous trees and shrubs present that may be damaged during operations. Care shall be taken to preserve all vegetation in the immediate area of these temporary stockpiles. During the life of the stockpiles the Contractor shall at all times ensure that they are positioned and sloped to create the least visual impact, constructed and maintained so as to avoid erosion of the material and contamination of surrounding environment and kept free from all alien/undesirable vegetation.

After the stockpiled material has been removed, the site shall be re-instated to its original condition. No foreign material generated/deposited during construction shall remain on site. Areas affected by stockpiling shall be landscaped, top soiled, grassed and maintained at the Contractor's cost until clearance from the Engineer and the landowner is received.

Material milled from the existing road surface that is temporarily stockpiled in areas approved by the Engineer within the road reserve, shall be subject to the same condition as other stockpiled materials. Excess materials from windrows, in situ milling or any leftover material from road construction activities may not be swept off the road and left unless specifically instructed to do so in the contract documentation or under instruction from the Engineer.

The ECO shall comment on and the Engineer shall approve the areas for stockpiling and disposal of construction rubble before any operation commences and shall approve their closure only when they have been satisfactorily rehabilitated.

v) Blasting activities

Wherever blasting activity is required on the site (including quarries and/or borrow pits) the Contractor shall rigorously adhere to the relevant statutes and regulations that control the use of explosives.

h) On site plant

i) Crusher, screening plants and concrete batching plants

Crushing plants and concrete batching plants, whether sited inside or outside of defined quarry or borrow pit areas, shall be subject to the requirements of the applicable industrial legislation that governs gas and dust emissions into the atmosphere. Such sites will be the subject of regular inspections by the relative authorities during the life of the project. In addition, the selection, entry onto, operation, maintenance, closure and rehabilitation of such sites shall be the same as for those under section C1007(g)(i) of this EMPI, with the exception that the Contractor shall provide additional measures to prevent, contain and rehabilitate against environmental damage from toxic/hazardous substances. In this regard the Contractor shall provide plans that take into account such additional measures as concrete floors, bunded storage facilities, linings to drainage channels and settlement dams. Ultimate approval

of these measures shall be from the relevant authority, as shall approval of closure. The Engineer will assist the Contractor in his applications to the relevant authority.

Screening activities shall be undertaken so that dust and noise is minimised. This can be done by carefully choosing the site for the activity, and by using slightly damp material.

Effluent from concrete batch plants and crusher plants shall be reused where possible or treated in a suitable designated sedimentation dam to the legally required standards to prevent surface and groundwater pollution. The designs of such a facility should be submitted to the Engineer for approval.

ii) Asphalt Plant

Asphalt plants shall be subject to the applicable legislation that governs establishment and operation of batching plants. The Contractor shall be responsible to obtain the necessary permit from the relevant authority.

Operation of the plant shall conform to the same requirements as for a crushing plant or concrete batching plant under C1007(h)(i) above.

C1008 AREAS OF SPECIFIC IMPORTANCE

Any area, as determined and identified within the project documents as sensitive or of special interest within the site shall be treated according to the express instructions contained in these specifications or the specific environmental authorisation, as well as the approved EMPr. The Contractor may offer alternative solutions to the Engineer in writing should he consider that construction will be affected in any way by the hindrance of the designated sensitive area or feature. However, the overriding principle is that such defined areas requiring protection should not be changed. Every effort to identify such areas within the site will have been made prior to the project going out to tender. The discovery of other sites with archaeological or historical interest that have not been identified shall receive ad hoc treatment.

a) Archaeological sites

If an artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the Engineer of such discovery. The South African Heritage Resource Agency (SAHRA) is to be contacted, and a SAHRA-registered archaeological consultant may undertake the necessary work involved in confirming the find and advising on how it should be preserved or removed. Work may only resume once clearance is given in writing by the archaeologist. (Read with FIDIC condition of contract clause 4.24)

If a grave or midden is uncovered on site then all work in the immediate vicinity of the graves/middens shall be stopped and the Engineer informed of the discovery. The South African Heritage Resource Agency and the South African Police Services (SAPS) should be contacted and in the case of graves, arrangements made for an undertaker to carry out exhumation and reburial. The undertaker will, together with SAHRA, be responsible for attempts to contact family of the deceased and for the place where the exhumed remains can be re-interred.

C1009 REHABILITATION

The Contractor shall be responsible for the re-establishment of grass within the road reserve boundaries for all areas disturbed during construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for, or from, construction has to be stored temporarily, and designated or instructed areas outside the road reserve. It also includes the area where site offices were

erected which may require rehabilitation at the end of the contract. All construction material, including concrete slabs and barbecue (braai) areas shall be removed from the site on completion of the contract unless written approval from the relevant landowner demonstrates it is to be left in place.

Responsibility for re-establishment of vegetation shall extend until expiry of the defects notification period. However, SANRAL reserves the right to continue holding retention monies (or not releasing guarantees in lieu of retention) depending upon the state of cover at the end of the defects notification period. Such extension may continue until closure of the relevant quarry or borrow pit has been secured,

Rehabilitation of affected areas should be undertaken as early as possible when the relevant activities are done in order to reduce further environmental damage. All re-vegetation should be undertaken using indigenous vegetation. The standard of rehabilitation should be to the satisfaction of the Engineer and the relevant authorities. The Department of Minerals Resources will only issue closure certificates for borrow pits and quarries when they are satisfied with the rehabilitation undertaken. It should also be noted that in some cases there is a requirement for a final environmental audit covering the extent of the project.

C1010 RECORD KEEPING

The Engineer and the DEO will continuously monitor the Contractor's adherence to the approved impact prevention procedures and the DEO shall submit regular written reports to the ECO and to the Engineer at least once a month. The DEO will report the environmental compliance performance of the project at regular site meeting. The Engineer shall issue to the Contractor a notice of non-compliance whenever transgressions are observed. The DEO shall document the nature and magnitude of the non-compliance in a designated register, the action taken to discontinue the non-compliance, the action taken to mitigate its effects and the results of the actions. The non-compliance shall be documented and reported to the Engineer in the monthly report.

Copies of all authorisations shall be kept on site and made available for inspection by visiting officials from SANRAL, relevant authorities or internal/external auditors.

C1011 COMPLIANCE AND PENALTIES

The Contractor shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. This record shall be submitted with the monthly reports and an oral report given at the monthly site meetings.

Any non-compliance/omissions with the procedures in this EMPI, environmental authorisations and the approved EMPr constitute a breach of the Conditions of Contract. Regulatory financial penalties imposed on SANRAL shall be passed onto the defaulting parties.

C1012 PROJECT SPECIFIC CONDITIONS

The project specific conditions related to the THE IMPROVEMENT OF NATIONAL ROAD R335 BETWEEN MOTHERWELL AND ADDO, PHASE 1 (km 5.16 to km 27.5) are listed in the EMPr and in the Environmental Authorisation as included in Volume 7.

The conditions for commencement of work are listed below:

The construction activity must commence within a period of five (5) years of the date of Authorisation, being 25 March 2020.

A written notification of operation must be given to the Department of Environmental Affairs no longer than fourteen (14) days prior to the commencement of the operational phase.

TABLE 7/1: MECHANISMS THAT CAUSE ENVIRONMENTAL IMPACTS DURING CONSTRUCTION ACTIVITIES

Contents	Environmental Impacts				
	Pollution Type	Deformation of Landscape	Soil erosion	Alien Vegetation	Sensitive Areas
Camp Establishment	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	When the site camp known compliance with the EMPr will be enforced.
Housing, Offices and laboratories	Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Accidental waste water discharges to water and land.
Accommodation of Traffic	Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	The EMPr conditions will be enforced during traffic control operations. Litter will be managed, and toilet facilities will be available.
Overhaul	Spillage Storage Noise/lights Dust control Exhaust fumes Washing waste	Turning circles Parking areas	Restrict access to sensitive areas	Protection of indigenous vegetation Preserve topsoil	No sensitive areas known on haul routes. No-go areas will be enforced during haulage operations.
Clearing and grubbing	Waste treatment Hazardous waste Water supply Noise /lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Protection of indigenous vegetation Preserve topsoil	Removal and/or damage to fauna, flora, cultural or heritage objects on site will be prohibited without the required permits being in place.

Contents	Environmental Impacts				
	Pollution Type	Deformation of Landscape	Soil erosion	Alien Vegetation	Sensitive Areas
Drainage	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Pollution of water sources. Damage to sensitive environments.
Borrow pits	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Hazardous chemical/oil spill and/or dumping in non-approved sites. Damage to sensitive environments.
Stockpiling	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Hazardous chemical/oil spill and/or dumping in non-approved sites. Damage to sensitive environments.
Mass Earthworks	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Uncontrolled/unmanaged erosion. Unauthorised blasting activities Excess dust or excess noise emanating from site.
Pavement layers	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Unauthorised blasting activities Any vehicles being driven in excess of designated speed limits. Persistent or unrepaired fuel and oil leaks

Contents	Environmental Impacts				
	Pollution Type	Deformation of Landscape	Soil erosion	Alien Vegetation	Sensitive Areas
Asphalt works / sealing operations	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control Storage of materials	Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil	Hazardous chemical/oil spill Persistent or unrepaired fuel and oil leaks
Ancillary roadworks	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Urination and defecation anywhere except at designated facilities Littering on site. Lighting of illegal fires on site.
Structures	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Persistent or unrepaired fuel and oil leaks Littering on site. Urination and defecation anywhere except at designated facilities

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL NRA-R335-010-2017/1

FOR THE IMPROVEMENT OF NATIONAL ROUTE R335 FROM MOTHERWELL (KM 5.16) TO
ADDO TOWN (KM 37.16)

PHASE 1: KM 5.16 TO KM 27.5

**SECTION D: STAKEHOLDER AND COMMUNITY LIAISON, AND TARGETED LABOUR AND
TARGETED ENTERPRISES UTILISATION AND DEVELOPMENT**

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D1001 SCOPE

Section D of the Specifications describes the structured engagement with project Stakeholders and affected Communities to the project. It also guides the selection and the enhanced utilisation and development of Targeted Labour and Targeted Enterprises.

D1001.01 Employer's Fourteen Point Plan

The scope of the work described in this Section D of the Specifications shall be based on the Employer's 14 principles for project liaison, sub-contracting and labour sourcing in all SANRAL projects, which are stipulated below:

1. Establish project liaison committees (PLCs) in each project to create a platform for project liaison, works execution, sub-contracting and employment facilitation.
2. SANRAL to chair PLCs and provide secretarial support. Representation to comprise: SANRAL; contractor; consultant; business representatives; traditional representatives; provincial and municipal government representatives (not politicians); community representatives; and any other critical local stakeholder that may be deemed necessary by the PLC.
3. Project Liaison Officer (PLO) selection to be done under the auspices of the PLC.
4. Definition of a target area (sometimes referred to as a local area or traffic area) to be done under the auspices of the PLC.
5. Setup a database of contractors and suppliers (and consultants where relevant) to be done under the auspices of the PLC. The final database to be signed off by the PLC.
6. Setup of database of local labour for the target area to be done under the auspices of the PLC. The final list to be signed off by the PLC. An agreed system of labour selection from the database is to be agreed at the PLC.
7. Handover of signed-off databases for subcontracting and labour to contractor for open tender process and recruitment respectively done by the PLC.
8. Tender to be conducted by contractor using government principles (e.g. public opening of received bids, announcement of bidders and prices). Tabling of winning bidders in the PLC.
9. Appeals on the tender process to be escalated to SANRAL for an independent review.
10. Capability assessments of contractors and suppliers to be done under auspices of the PLC prior to tender stage, to identify any deficiencies in skills and experience. For labour, skills assessments are to be done at recruitment stage.
11. Contractor development support and training to be coordinated and conducted, ahead under the auspices of the PLC, prior to project commencement.
12. Identification of works areas that are deliverable by local service providers, and areas where capabilities are not available locally. All works areas where capabilities are not available locally shall be imported and locals will be given an opportunity to learn.
13. Formal contracting arrangements to be ensured for all projects.
14. Communication to be streamlined through the PLC and used to manage expectations of local business and communities.

These principles must be applied to facilitate better project level liaison with project Stakeholders and affected Communities. In addition, these principles serve to ensure communication and transparency in the execution of the Works and to facilitate inclusivity in the allocation of projects to benefit black business and local communities.

D1002 DEFINITIONS AND APPLICABLE LEGISLATION

The definitions and legislation listed below informs the requirements of this Section D of the Specifications for Stakeholder and Community Liaison, Targeted Labour employment and Targeted Enterprise subcontracting.

D1002.01 Definitions

Unless inconsistent with the context, in these Specifications, the following words, terms or expressions shall have the meanings hereby assigned to them:

a) Business Coaching

Business coaching establishes an atmosphere of mutual trust, respect, responsibility and accountability to motivate the emerging business owner and his team. To that end, the business coach must conduct an ethical and competent practice, based on appropriate professional experience and business knowledge.

b) Community¹

South African Citizens, as defined in terms of the South African Citizenship Act, 1995 (Act 88 of 1995), who permanently reside within the Target and Project Area(s) of the project.

c) Contract Participation

A process by which the Employer implements Government's objectives by setting targets to enhance Targeted Labour and Targeted Enterprises' utilisation and development, which the Contractor shall achieve as a minimum.

d) Contract Participation Goal (CPG)

The monetary value of the targets set by the Employer in the contract participation requirements as stated in the Contract Data.

e) Contract Participation Performance (CPP)

The measure of the Contractor's progress in achieving the CPG.

f) Designated Group^{2, 3}

Unless otherwise permissible in terms of procurement regulations or the PPPFA, "Designated Group" means:

- i) black designated groups;
- ii) black people;
- iii) women;
- iv) people with disabilities; or
- v) small enterprises, as defined in Section 1 of the National Small Enterprise Act, 1996 (Act No. 102 of 1996);

g) Guidance

Guidance is anticipating where one might go wrong, or where one is doing a task in a complicated, inefficient or ineffective way, and giving help, advice and direction as to how to achieve a better result. Guidance is mostly given by a person in the direct reporting line but can be given by anyone. Guidance is not imparting skills but suggesting ways to improve performance.

h) Labour

Persons:

- i) who are employed by the Contractor or a Subcontractor in the performance of the Contract; and
- ii) who resides in the Target and Project Area(s); and

¹ SANS 10845, Suite for Construction Procurement, 2015.

² Derived from Preferential Procurement Regulations, 2017. Government Gazette N. 40553, 20 January 2017.

³ Derived from Preferential Procurement Regulations, 2017. Implementation Guide.

- iii) whose monthly earnings are derived from hours worked for a fixed hourly rate which is adjusted from time to time by legislation (as a statutory minimum) and the Contractor's or Subcontractor's employment policies;
- iv) **but who are not Targeted Labour as stated in the Contract Data.**

The personnel employed by the suppliers of goods and material are not defined as "Labour" for the purposes of this Contract.

i) Mentoring

Mentoring is a professional relationship in which an experienced business person assists another by giving advice and imparting their knowledge in developing special skills and knowledge that will enhance the less experienced business person's professional and personal growth. The objective is to equip the emerging business owner and his team to improve their decision-making skills, being focussed and make positive progress quickly.

j) Mobilisation Period

The period from the Contract Commencement Date up to just before the commencement of the Works, which period (duration) is stated in the Contract Data.

k) Project Area

The area through which the road under construction traverse or which is adjacent to and/or in proximity to project operations.

Based on market research and/or resources and skills audits, Project Areas other than defined above may be identified where preference would be given to Targeted Enterprises for subcontracting opportunities.

l) Project Liaison Committee (PLC)⁴

The Committee that represents the Employer, Engineer, Contractor, project Stakeholders and the Communities affected by the project.

It is important to note that:

- i) elected and/or nominated political office bearers shall not be members of the PLC.
- ii) The Engineer and Contractor become members of the PLC on their appointment and participate in the Committee within the scope of their respective roles and responsibilities.

m) Project Liaison Officer (PLO)⁵

The person who acts as the liaison officer for the project. The PLO facilitates the selection of Targeted Labour to be employed by the Contractor and attends to the day to day project, Stakeholder, and Community matters that impact on the parties to the PLC.

n) Stakeholders⁶

Any Stakeholder listed in the Employer's Communication Policy who is affected by the Employer's operations in the Project Area(s) and/or who has an interest or concern in the project, either as a decision maker, participant or affected party and may include, amongst others, the following entities:

- i) Relevant Provincial departments;

⁴ Derived from CIDB Standard for Minimum Requirements for Engaging Contractors and Sub-Contractors on construction Works Contracts, 31 October 2017.

⁵ Derived from CIDB Standard for Minimum Requirements for Engaging Contractors and Sub-Contractors on construction Works Contracts, 31 October 2017; CLO definition.

⁶ Derived from SANRAL communication Policy, March 2018.

- ii) Relevant Municipal departments;
- iii) Traditional authorities;
- iv) Community interest groups;
- v) Organised youth representation;
- vi) Organised women representation;
- vii) Organised disabled people representation;
- viii) Other structured community groups such as religion, education, farming, etc.
- ix) Local transport industry forums, e.g. Bus and taxi;
- x) Business sector forums;
- xi) Road user forums;
- xii) Environmental interest groups;
- xiii) Road safety interest groups;
- xiv) Any other recognised relevant and representative structure.

o) Subcontractor

An entity appointed by the Contractor to execute a portion of the Works as defined in the Conditions of Contract.

p) Target Area

The geographic area defined in the Contract Data for Targeted Labour and which typically are:

- a. one or more Provinces;
- b. one or more Metropolitan or District Municipalities;
- c. one or more Local Municipalities;
- d. one or more Wards that are predominantly located within the Project Area;
- e. one or more of the areas listed in the definition of Designated Groups.

q) Targeted Enterprise⁷

A Targeted Enterprise is an entity to which the Contractor subcontracts a percentage of the contract value as a condition of contract and which is:

- i) an EME or QSE which is at least 51% owned by black people; or
- ii) an EME or QSE which is at least 51% owned by black people who are youth; or
- iii) an EME or QSE which is at least 51% owned by black people who are women; or
- iv) an EME or QSE which is at least 51% owned by black people with disabilities; or
- v) an EME or QSE which is at least 51% owned by black people who are military veterans; or
- vi) an EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships; or
- vii) a cooperative which is at least 51% owned by black people; or
- viii) more than one of the categories referred to in paragraphs i) to vii); and
- ix) which is tax and COID compliant; and.
- x) CIDB registered where applicable

r) Targeted Enterprise Construction Manager (TE Construction Manager)

The full-time staff member or sub-service provider appointed by the Contractor to develop, implement and monitor the training, development and support of Targeted Labour and Targeted Enterprises. The TE Construction Manager also mentors, guides and coaches the Targeted Enterprises.

s) Targeted Enterprise Procurement Coordinator (TE Procurement Coordinator)

The staff member or sub-service provider appointed by the Contractor to facilitate the procurement of Targeted Enterprise subcontractors.

⁷ Partially derived from SANS 10845-5:2015, definition 2.

t) Target Group

It is a group of entities and/or persons selected from the Designated Group as defined in the Preferential Procurement Policy Framework Act Regulations, 2017, and may include both Targeted Enterprises and Targeted Labour.

u) Targeted Labour⁸

Persons:

- i) who are employed by the Contractor or a Subcontractor in the performance of the Contract; and
- ii) whose monthly earnings are derived from hours worked for a fixed hourly rate which is adjusted from time to time by legislation (as a statutory minimum) and the Contractor's or Subcontractor's employment policies; and
- iii) permanently reside in the Target Area(s) or who are recognized as being residents of the Target Area(s) based on identification and association with, and recognition by, the residents of the Target Area(s); and
- iv) who are stated as being Targeted Labour in the Contract Data.

v) Training

Training refers to the process of teaching a Trainee, usually in a classroom or simulated work environment situation where principles, theory, knowledge and skills are taught, and demonstrations are given. Assignments are set to ensure that the Trainee can apply what has been taught. Training is done by a specialist in the subject, and who is qualified and accredited to train. The objective is to improve the competency of the Trainee.

D1002.02 Applicable Legislation, Regulations and Standards

The following Acts, as amended from time to time, are predominant amongst those which apply to the Construction Industry and are listed here for reference purposes only:

- a) The Constitution of South Africa;
- b) Public Finance Management Act, 1999 (Act No. 1 of 1999);
- c) Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) and its regulations;
- d) Construction Industry Development Board Act, 2000 (Act No. 38 of 2000);
- e) Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- f) The South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998);
- g) The Skills Development Act, 1998 (Act No. 97 of 1998); and
- h) The amended Construction Sector Codes published in Notice 931 of 2017 of Government Gazette No. 41287 on 1 December 2017 by the Department of Trade and Industry.

The following Standards and Practice Notes, as amended from time to time, are applicable in terms of Targeted Labour and Targeted Enterprises and are used fully or portions thereof in this Section D of the Specifications:

- i. SANS 10845: 2015, Parts 5, 7 and 8; and
- ii. CIDB Standard for Contract Participation Goals for Targeted Enterprises and Labour through Construction Works Contracts, 31 October 2017.

D1003 TARGET GROUP PARTICIPATION

This part of Section D of the Specifications describes the Employer's requirements for the establishment of Target Group databases from which participants in the project will be selected for employment and subcontracting.

⁸ SANS 10845-7:2015, definition 2.12

It also describes the measurement of, and penalties or bonus to be applied, with respect to the CPG as defined in the Contract Data.

D1003.01 Objectives of Target Group Participation

Amongst others, the key objectives of Government are to extend economic opportunities and build entrepreneurial capacity in rural and underdeveloped areas and townships by:

- a) optimising the utilisation of local resources in the Project Area;
- b) developing these local resources in the execution of the project; and
- c) maximising the amount of funds retained within the Project Area.

To give effect to these objectives the Contractor shall:

- i) employ Targeted Labour from the Target Area(s) as stated in the Contract Data; and
- ii) subcontract Targeted Enterprises as stated in the Contract Data; and
- iii) give preference to Targeted Enterprises which are from rural and underdeveloped areas and townships within the Project Area(s).

D1003.02 Targeted Labour Database

A Targeted Labour Database shall be compiled by the PLO, under the auspices of the PLC and with the inputs of the Department of Labour, for the Target Area(s) as stated in the Contract Data. Once the Database has been signed off by the PLC, it shall be utilised to facilitate the selection of Targeted Labour as per the resources and skills required by the Contractor during the different construction stages.

The Targeted Labour Database shall be updated as and when required and as agreed with the PLC to reflect new employment seekers in the labour market.

Only Labour recruited from the Targeted Labour Database will be measured for Contract Participation Performance (CPP).

D1003.03 Targeted Enterprise Database

The Contractor shall, under the auspices of the PLC, compile a Targeted Enterprise Database from which Targeted Enterprises shall be subcontracted to construct portions of the work as described in this part of Section D of the Specifications.

a) Market Analysis and Resources and Skills Audit

Following a market analysis and a resources and skills audit of Targeted Enterprises in the Project Area, the Contractor shall apply the CPG Target Group criteria in the Contract Data to compile a **preliminary** Targeted Enterprise Database.

To inform the market analysis and resources and skills audit, the Contractor shall use the National Treasury's Central Supplier Database (CSD) which can be obtained from the Employer, as well as the CIDB contractor database.

b) Call for an Expression of Interest

In addition to the CSD and the CIDB database, the Contractor shall call for an expression of interest from Targeted Enterprises in the Project Area. The call for an expression of interest shall outline the anticipated eligibility, functionality, preference and compliance criteria, as well as the anticipated Works content.

c) Preliminary Targeted Enterprise Database

Based on the information obtained from the CSD, CIDB and the call for an expression of interest, the Contractor shall compile a Preliminary Targeted Enterprise Database.

The purposes of the Preliminary Targeted Enterprise Database are:

- i. for the Contractor to determine if the required resources and skills to execute the identified Targeted Enterprise work packages are available in the Project Area(s);
- ii. for the PLC to verify that Targeted Enterprises on the Preliminary Targeted Enterprise Database are authentic in terms of the Contract Data and other Database criteria agreed with the Contractor, and
- iii. for the PLC to alert prospective Targeted Enterprises that are not on the Preliminary Database of the opportunity.

Based on the market analysis and resources and skills audit, and the information obtained from the call for an expression of interest, additional criteria for the Preliminary Targeted Enterprise Database may be agreed between the Contractor and the PLC to ensure Target Group participation as intended by the Employer.

d) Final Targeted Enterprise Database

Once the Preliminary Targeted Enterprise Database has been accepted by the PLC, the Contractor shall invite Targeted Enterprises to tender for the Targeted Enterprise work packages. The Preliminary Targeted Enterprise Database shall remain a “live database” until the day of tender closure when a print-out of the CSD, based on the Database criteria, shall become the **Final** Targeted Enterprise Database for the tender and shall be signed off by the PLC.

Any Targeted Enterprise may respond to the invitation to tender, but preference shall be given to those Targeted Enterprises that satisfy the tender criteria.

The Targeted Enterprise Database shall be updated at every instance that a new subcontract tender or group of similar subcontract tenders are to be let for Targeted Enterprise work packages.

Targeted Enterprises within the Project Area shall be encouraged and assisted to register on the CSD and to become compliant with all other statutory requirements.

D1003.04 Contract Participation Goal (CPG)

The CPG is the monetary value of the participation targets set by the Employer and will be calculated as follows:

$$\text{CPG} = \text{Final Contract Value} \times (\% \text{ Targeted Labour} + \% \text{ Targeted Enterprise})$$

The Final Contract Value is the total value of the Contractor's final certified work measured at the date of issue of the Taking-Over Certificate. The Final Contract Value includes the value of scheduled work and extra work, but excludes Community Development Work and any Contract Price Adjustment and adjustments for reduced payments, Rise and Fall, Retention Money, Penalties and VAT.

The value of the Provisional Sum scheduled under item D10.05 will not necessarily make up the full value of the work required to meet the minimum target set by the Employer for Targeted Enterprises. It is the Contractor's responsibility to assess the work required to meet the targets and, if necessary, to engage additional Targeted Enterprises to execute work on the Contract as well as to ensure that the minimum targets are achieved.

D1003.05 Contract Participation Performance (CPP)

The CPP is the monetary value of the Contractor's actual progress towards achievement of the CPG calculated as follows:

$$\text{CPP} = \text{total value (excluding VAT) of Targeted Labour contribution} + \text{total value of Targeted Enterprises contribution (excluding VAT)}.$$

The Contractor's CPP shall be monitored monthly to determine the extent to which it is striving to achieve the CPG. The basis of monitoring shall be the levels of the individual

contributions for Targeted Labour and Targeted Enterprises. Monthly returns, in the format required by the Employer, shall be submitted by the Contractor with each interim Payment Certificate.

To assist in the measurement of the CPP the Contractor shall include in its contract programme details of how the CPG will be achieved. The detail shall be provided not later than 1 (one) month after the Engineer has accepted the original construction programme and updated with every subsequent revision.

As an incentive to encourage the Contractor to exceed the CPG, a bonus is offered, measured as follows:

a) CPP Bonus

$$\text{The bonus} = 0.05 \times (\text{CPP} - \text{CPG})$$

Any bonus due (or portion thereof) shall be calculated on the Final Contract Value (as defined in D1003.04). No bonus shall apply if either the Targeted Labour, Targeted Enterprises and/or any individual sub-targets for Target Groups are not reached.

b) CPP Penalties

Conversely, failure to reach either the CPG or any individual Target Group targets shall render the Contractor liable for a penalty as prescribed in clause 8.7 of the FIDIC Conditions of Contract unless there are compelling reasons why the target or sub-targets could not be achieved. Penalties for Targeted Labour and for Targeted Enterprises shall be calculated as follows:

$$\text{Penalty Targeted Labour} = 0.15 \times ((\text{TL} - \text{TG}) + \text{Sum} (\text{TL}_n - \text{TG}_n) - 1.2 \times \text{L dp})$$

Where:

n	=	Each lowest order subgroup of Targeted Labour stipulated in the Contract Data.
TL	=	Monetary value of the Targeted Labour calculated at the percentage stipulated in the Contract Data applied to the Final Contract Value (as defined in D1003.04).
TG	=	Cumulative monetary value of Targeted Labour employed on the contract by the Contractor and all Subcontractors.
L dp	=	Cumulative monetary value of black Disabled Persons employed on the Contract by the Contractor and all Subcontractors.
$(\text{TL}_n - \text{TG}_n)$	=	The monetary values calculated unless if any calculated value is negative, then it shall be a zero value.

$$\text{Penalty Targeted Enterprises} = 0.15 \times ((\text{TE} - \text{TGE}) + \text{Sum} (\text{TE}_n - \text{TGE}_n) - 1.2 \times \text{TE mv} - 1.2 \times \text{TE dp})$$

Where:

n	=	Each lowest order subgroup of Targeted Enterprise stipulated in the Contract Data.
TE	=	Monetary value (excluding VAT) of Targeted Enterprises calculated at the percentage stipulated in the Contract Data applied to the Final Contract Value (as defined in D1003.04)
TGE	=	Cumulative monetary value (excluding VAT) by Targeted Enterprises subcontracted to the contract by the Contractor and 50% of the cumulative monetary value (excluding VAT) by Targeted Enterprise suppliers of goods and/or services.
TE mv	=	Cumulative monetary value (excluding VAT) by Targeted Enterprises being majority owned by black Military Veterans, subcontracted to the Contract by the Contractor.

TE_{dp} = Cumulative monetary value (excluding VAT) by Targeted Enterprises being majority owned by black Disabled Persons, subcontracted to the Contract by the Contractor.

(TE_n – TGE_n) = The monetary values calculated unless if any calculated value is negative, then it shall be a zero value.

The total Penalty value shall be the sum of the Targeted Labour and Targeted Enterprises Penalty values unless the total Penalty value is negative then it shall be a zero value.

Interim penalty valuations should be calculated to interim Payment Certificate values (excluding VAT) to establish the anticipated outcome, and to plan corrective actions, but must not be applied to the interim certificate value.

Any Penalty payable shall be calculated on, and applied to, the Final Contract Value.

D1003.05 Accredited Registration

The CPP for Targeted Enterprises shall only be accepted if the respective Targeted Enterprises comply fully with the definition of a Targeted Enterprise, and documentary evidence to support the claim lodged with the Engineer before the work, goods or service may be considered as having been performed by a Targeted Enterprise. The responsibility for producing evidence of the respective documentation shall rest with the Contractor.

The Contractor shall assume responsibility for the compilation and maintenance of comprehensive records detailing each Targeted Enterprise's progress.

D1003.06 Contractor's Responsibility

In terms of the Conditions of Contract, all Targeted Labour recruitment and employment and Targeted Enterprises' subcontracting, as well as its associated risks, shall remain the sole responsibility of the Contractor.

The Employer's CPG requirements, and the compulsory utilisation of project specific Targeted Labour and Targeted Enterprises databases, shall not relieve the Contractor of its obligations under the Contract and shall not attract any liability to the Employer.

D1004 STAKEHOLDER AND COMMUNITY LIAISON AND SOCIAL FACILITATION

This part of Section D of the Specifications describes the Employer's requirements with respect to Stakeholder and Community liaison and social facilitation. It also describes the roles and responsibilities of the Project Liaison Committee (PLC) and the Project Liaison Officer (PLO).

D1004.01 Purpose of Stakeholder and Community Liaison

To give effect to the need for transparency and inclusion in the process of delivering services, the Contractor shall liaise with the project Stakeholders and affected Communities for the duration of the Contract's life cycle. This shall be achieved through structured engagement with the PLC which was established by the Employer for this purpose.

Appendix 7 - SANRAL Project Liaison Committee Guidelines, is included in Part C4 of the Contract for ease of reference.

D1004.02 Contractor's Responsibilities in Stakeholder and Community Liaison

The Contractor shall have the following general responsibilities in the Stakeholder and Community liaison process:

- a) Stakeholder and Community engagement shall be executed based on the Employer's social facilitation principles and processes described in this Section D of the Specifications.
- b) The Contractor shall make use of the PLC as the official communication channel and utilise it to facilitate harmonious relationships with project Stakeholders and affected Communities.
- c) PLC members, to which the Contractor is a party, shall be held accountable to disseminate project information discussed at the PLC meetings to the entities they represent.
- d) As a party to the PLC, the Contractor shall delegate from among his site personnel a responsible person to participate in the PLC and its business.
- e) The Contractor shall provide the PLC with any assistance and information that it requires to execute its duties, which amongst others, include training, providing a meeting venue on site, provide Target Group reports, etc.

It is important to note that in terms of the Conditions of Contract, all Targeted Labour recruitment and employment, and Targeted Enterprises' selection and sub-contracting, as well as its associated risks, shall remain the sole responsibility of the Contractor. The Employer's assistance in establishing a PLC and providing a PLO to the Contractor, shall not relieve the Contractor of its obligations under the Contract and shall not attract any liability to the Employer.

D1004.03 Project Liaison Committee (PLC)

The PLC is the official communication channel through which the Employer, Engineer, Contractor and project Stakeholders and affected Communities communicates on project matters. This platform is also used to communicate the impact that the project has or may have on project Stakeholders and the affected Communities. This part of Section D of the Specifications describes the general processes pertaining to the PLC, as well as its role and responsibilities.

a) Establishment of the PLC

A PLC has either been established prior to commencement of the Contract or shall be established as soon as possible by the Employer. The PLC consists of the Employer, Engineer, Contractor and representatives of project Stakeholders and affected Communities.

PLC meetings shall be chaired by the Employer which will typically be the Employer's Project Manager or a staff member with decision-making delegation. The Engineer's staff shall provide a secretarial service to take minutes of PLC meetings.

Secretarial support other than taking minutes at PLC meetings shall be provided by the PLO.

b) Duties of the PLC

The SANRAL Project Liaison Committee Guidelines requires of the PLC to execute specific duties during the design and construction phases of the project. Some of these duties overlap stages and hence, for completeness, a description of the PLC's duties in both project stages is provided here.

The PLC shall execute the following duties:

- i) Project Design Stage
 - a. Meet as often as required to discuss and resolve the project's design stage matters which are of interest or concern to the parties to the PLC.
 - b. Peruse the SANRAL Project Liaison Committee Guidelines and agree on the duties of, and procedures to be followed by, the PLC to fulfil its duties.

Note: The principles of the Guidelines shall not be amended, but duties and procedures may be altered to be project specific and to improve the functionality of the PLC.

- c. Act in accordance to the agreed terms of reference for the PLC.
- d. Inform the Employer of any training that project Stakeholder and affected Community representatives of the PLC require to execute their duties.
- e. Assist the Engineer to source suitable candidates, based on the Employer's qualifying criteria, for the position of PLO.
- f. Observe and verify that the qualifying criteria and procedures applied by the Engineer to select and employ the PLO were executed in a fair and transparent manner and were within the prescripts of the relevant labour legislation and regulations.
- g. Assist the Engineer to identify the project's Target and Project Area(s), from which Targeted Labour and Targeted Enterprises could be employed and subcontracted respectively and sign off the identified Target and Project Area(s).
- h. Assist the Engineer to identify the project's Target Groups for inclusion in the Tender Documents and sign off the identified Target Groups.

ii) Project Construction Stage

- a. Meet formally prior to the Employer's monthly site meeting, or as may be required, to discuss and resolve project matters, which are of interest or concern to the parties to the PLC.
- b. Assist the Contractor to establish the selection criteria and process to employ Targeted Labour and sign off the agreed criteria and process.
- c. Assist the Contractor to identify the eligibility, functionality, preference and compliance criteria to select and subcontract Targeted Enterprises and sign off the identified criteria.
- d. Sign off the Databases compiled by the PLO and the Contractor from which Targeted Labour will be selected and employed and Targeted Enterprises will be subcontracted respectively.
- e. Verify that the criteria and methodologies applied by the Contractor to select and employ Targeted Labour and subcontract Targeted Enterprises are executed in a fair and transparent manner and are within the Government legislation and regulations and the Employer's Policies.
- f. Verify that the conditions of employment and the conditions of subcontracting, in the employment of Targeted Labour and subcontracting of Targeted Enterprises are applied in a fair and transparent manner and according to the Employer's employment and subcontracting requirements.
- g. Make recommendations to the Contractor on the training needs, eligibility criteria and selection criteria for the provision of training to Targeted Labour, Targeted Enterprises, Designated Groups, project Stakeholders and the affected Communities.
- h. Verify that training and skills development programmes, which the Contractor committed to, are implemented and executed as approved and intended.
- i. Inform the entities whom they represent of any project matters which the respective parties to the PLC wish to communicate with each other.
- j. Inform the entities whom they represent of any project matters that are impacting or may impact, either positively or negatively, on the respective parties to the PLC.
- k. Inform the Contractor of Stakeholder and/or Community requests and/or needs which could possibly be addressed within the project's Scope of Work.
- l. Inform the Employer, Engineer and Contractor of any road safety concerns within the Project Area(s) and advise them of possible mitigating measures and/or road safety programs that will be most

- suitable for acceptance by the affected Communities to promote road safety.
- m. Agree on a dispute resolution mechanism to resolve any disputes that may arise between the parties to the PLC.
- n. Assist parties to the PLC to liaise with their respective entities to resolve any disputes amongst the parties which may occur due to the project.

D1004.04 Project Liaison Officer (PLO)

The PLO facilitates the selection and employment of Targeted Labour and coordinates communication between the members of the PLC to address the day to day project, Stakeholder, and Community matters that impact on the parties represented in the PLC.

a) Appointment of the PLO

The PLO is appointed by the Engineer under the auspices of the PLC and in accordance to the Employer's criteria for a PLO.

Although the PLO predominantly provides social facilitation support to the Contractor, the PLO shall report to the Engineer or his delegated representative, e.g. the Resident Engineer.

b) Duties of the PLO

The SANRAL Project Liaison Committee Guidelines requires of the PLO to execute specific duties during the design and construction phases of the project. These duties include the following:

- (i) Except for taking the minutes of PLC meetings, which is a duty of the Engineer, the PLO shall provide a secretariat function to the PLC which includes, amongst others, the following:
 - a. Schedule meetings;
 - b. Compile meeting agendas;
 - c. Compile document packages for meetings;
 - d. Distribute minutes of meetings;
 - e. Assist representatives of project Stakeholders and affected Communities to formulate their communication to the PLC in writing;
 - f. Distribute written communication between the parties to the PLC;
 - g. Keep records of all PLC correspondence and documentation; and
 - h. Provide any other reasonable secretariat function required by the PLC.
- (ii) Attend all PLC meetings to report on the day to day project, Stakeholder and Community matters that impact on the parties to the PLC.
- (iii) Attend all monthly project site meetings to report on the day to day project, Stakeholder and Community matters that impact on the parties to the PLC.
- (iv) Attend any other meetings related to the project and in which any of the project Stakeholders, affected Communities, Targeted Labour and Targeted Enterprises are involved.
- (v) Maintain a full-time presence on site to monitor and address the day to day project, Stakeholder and Community matters that impact on the parties to the PLC.
- (vi) Maintain a full-time presence on site to assist the parties to the PLC in the day to day liaison with each other.
- (vii) Assist the Engineer and the Contractor to disseminate information to PLC members such as:
 - a. the basic Scope of the Works and how it will affect the Community;
 - b. the project programme and regular progress updates;
 - c. the anticipated employment and subcontracting opportunities;
 - d. the project programme as it pertains to the employment of Targeted Labour and subcontracting of Targeted Enterprises;
 - e. Occupational Health and Safety precautions; and
 - f. any other information relevant to project Stakeholders and the affected Communities.

- (viii) Be well acquainted with the contractual requirements as it pertains to Targeted Labour employment and training.
- (ix) Assist the PLC to establish and agree the criteria to be followed when selecting and employing Targeted Labour.
- (x) Assist the Engineer and the Contractor in their resources and skills audits by providing a coordinating function between the Engineer, the Contractor, project Stakeholders, and the affected Communities.
- (xi) Ensure that Targeted Labour databases are compiled based on the agreed eligibility and selection criteria and that it is updated as and when required.
- (xii) Coordinate the selection and employment of Targeted Labour based on the agreed eligibility and selection criteria and based on the Contractor's labour and skills requirements.
- (xiii) Ensure that each Targeted Labourer enters into an employment contract which adheres to current and relevant Labour legislation.
- (xiv) Ensure that each Targeted Labourer understands the conditions of his/her employment contract with an emphasis on the employment start date, end date and wages payable.
- (xv) Identify and inform the Contractor of any relevant training required by the Targeted Labour.
- (xvi) Attend all disciplinary proceedings to ensure that hearings are fair and conducted in accordance to the current and relevant Labour legislation.
- (xvii) Be proactive in identifying project Stakeholder and affected Communities' (including Targeted Labour and/or Targeted Enterprise Subcontractor), requirements, disputes, unrest, strikes, etc. and bring it to the attention of the PLC.
- (xviii) Assist the parties to the PLC to resolve any disputes, which may occur due to the project.
- (xix) Other than the document records to be kept as mentioned above, keep record of all other documents and processes pertaining to the employment of Targeted Labour.
- (xx) Produce and submit a monthly report to the PLC on PLC and other meetings attended by the PLO, as well as on Targeted Labour employment, and project Stakeholder, affected Community and any other project matters that impact on the parties to the PLC.

D1005 MOBILISATION PERIOD

The Mobilisation Period starts at the Contract Commencement Date and ends just prior to the Commencement of the Works. Its duration is defined in the Contract Data.

D1005.01 Purpose of the Mobilisation Period

The Mobilisation Period is introduced as an aid to the Contractor to:

- a) become acquainted with the Stakeholder and Community liaison requirements of the Contract as prescribed in this Section D;
- b) allow for the Contractor's planning to obtain the CPG as required in the Contract Data;
- c) follow the processes prescribed in this Section D to employ the initially required Targeted Labour and enter into the first subcontracts with Targeted Enterprises; and
- d) provide the training required by Targeted Labour and Targeted Enterprises to commence with the construction of the Works.

D1005.02 Duties of the Contractor

During the Mobilisation Period, the Contractor shall execute the following duties:

a) Compile a CPG Plan

The Contractor shall compile an acceptable CPG Plan, which sets out how he intends to achieve the various CPG targets as stated in the Contract Data, complete with dates, work packages and values of work.

The accepted CPG Plan and any amendments thereof shall be made available to the PLC for their monitoring purposes.

The Employer and the Engineer shall monitor progress and adherence to the CPG Plan in the same manner as they would monitor the Works Programme.

The Mobilisation Period shall only be concluded once the CPG Plan has been accepted by, and all the duties above have been executed to the satisfaction of, the Employer and the Engineer.

An extension of the Mobilisation Period will not form grounds for an extension of the Contract duration and hence, any costs incurred by the Contractor for an extension of the Mobilisation Period shall be for the Contractor's cost. Should an extension of the Mobilisation Period result in a delay of the Contract, the Employer's delay penalties shall apply.

b) Subcontracting of Targeted Enterprises

During the Mobilisation Period the Contractor shall execute the following duties with regard to the subcontracting of Targeted Enterprises:

- i) Liaise with the Employer, Engineer and PLC to structure and finalise the work packages to be subcontracted to Targeted Enterprises.
- ii) Liaise with the Employer, Engineer and PLC to determine the Targeted Enterprise Database criteria for the subcontracting of Targeted Enterprises.
- iii) Compile the Targeted Enterprise Database(s) for sign off by the PLC.
- iv) Undertake a skills audit of the Targeted Enterprises which appear on the Targeted Enterprise Database(s).
- v) Based on the skills audit, and in consultation with the PLC, identify the pre-tender training requirements of Targeted Enterprises.
- vi) Provide an opportunity to Targeted Enterprises to receive the identified pre-tender training.
- vii) Tender the initial work packages and subcontract the first group of Targeted Enterprises for commencement of the Works.

c) Employment of Targeted Labour

During the Mobilisation Period the Contractor shall execute the following duties with regard to the employment of Targeted Labour:

- i) Liaise with the PLC and the PLO on the compiled Targeted Labour Database(s) for the employment of Targeted Labour.
- ii) Undertake a skills audit of the Targeted Labour which appear on the Targeted Labour Database(s).
- iii) Based on the skills audit, and in consultation with the PLC, identify the training requirements of Targeted Labour to enhance their employability.
- iv) Provide an opportunity to eligible Targeted Labour to receive the identified training to enhance their employability.
- v) Select and appoint the first group of Targeted Labour for commencement of the Works.

d) Training Requirements

The Contractor will not be able to address all the training requirements identified for Targeted Labour and Targeted Enterprises during the Mobilisation Period and it is accepted that training will take place over the duration of the Contract.

The training provided to both Targeted Enterprises and Targeted Labour during the Mobilisation Period shall focus on the activities and/or skills required for the commencement of the Works and shall include the mandatory Occupational Health and Safety training.

D1006 THE ROLE OF THE ENGINEER

The role and responsibilities of the Engineer are clearly described in the Conditions of Contract. This section elaborates on the Engineer's duties with respect to Stakeholder and Community liaison, Targeted Labour Employment and Targeted Enterprise subcontracting.

Together with the Employer and the Contractor, the Engineer is also a party to the PLC and hence, is co-responsible for successful project Stakeholder and Community liaison.

In addition, the Engineer shall play a supporting role to the Contractor in the successful implementation of the Employer's Targeted Labour and Targeted Enterprise utilisation and development goals.

D1006.01 Duties During the Design Phase

During the design phase, the Engineer undertook a preliminary skills and resources audit of the Targeted Enterprises in the Project Area. The purpose of the audit was to:

- a) obtain an understanding of the Community's skills, both academically and occupationally;
- b) obtain an understanding of the resources within the Community, i.e. Targeted Enterprise availability and capabilities;
- c) establish the CPG targets for Targeted Enterprises and Targeted Labour for inclusion of the Contract Data; and
- d) identify tender and other relevant training to be offered to Targeted Enterprises and Targeted Labour to prepare them for tendering and to enhance their employability.

D1006.02 Duties During the Construction Phase

To implement the Employer's Targeted Labour and Targeted Enterprise goals, the Engineer shall provide support to the Contractor by executing the following duties:

a) Targeted Enterprise Subcontracting

- i) Make recommendations to the Contractor in identifying and structuring the work packages to be subcontracted to Targeted Enterprises and approve the scope and extent of the work packages.
- ii) Verify that the Targeted Enterprise Database(s) has been updated prior to the letting of every new set of subcontracts.
- iii) Approve tender procedures, tender documents, tender submission requirements and adjudication processes for the subcontracting of Targeted Enterprises.
- iv) Review all tender adjudication reports and monitor that the criteria and procedures applied by the Contractor to subcontract Targeted Enterprises are executed in a fair and transparent manner and are within the Employer's and Government's Supply Chain Management Policies.
- v) Verify that subcontract agreements and the conditions of subcontracting with Targeted Enterprises are fair and transparent and within the prescripts of the Contract requirements.
- vi) Monitor the management of Targeted Enterprise subcontracts and ensure that conditions such as the application of penalties, the termination of contracts, etc. are applied in a fair and transparent manner and within the prescripts of the agreement.

b) Targeted Labour Employment

- i) Verify that the Labour Database(s) from which Targeted Labour will be employed is updated prior to every new Labour intake.
- ii) Monitor that the criteria and procedures applied by the Contractor to employ Targeted Labour are executed in a fair and transparent manner and is within the Contract requirements.

- iii) Monitor that the conditions of employment of Targeted Labour are applied in a fair and transparent manner and within the prescripts of the current and relevant Labour legislation.

c) Target Group Training Requirements

- i) Make recommendations to the Contractor in identifying the training requirements of Targeted Labour and Targeted Enterprises and approve the proposed training programmes.
- ii) Monitor that training programmes and support programmes, which the Contractor committed to, are implemented and executed as intended.

D1007 TENDER PROCESS FOR TARGETED ENTERPRISES

While the Contractor may utilise service providers, sub-contractors and suppliers of its choice and selected via its own internal processes, for the subcontracting of Targeted Enterprises based on the Employer's Contract Participation Goals, the Contractor shall follow the prescripts of this Section D.

D1007.01 Targeted Enterprise (TE) Procurement Coordinator

The Contractor shall appoint a TE Procurement Coordinator to facilitate the subcontracting of work to Targeted Enterprises as defined in the Contract Data. For Contracts with a value of less than R100 million the Contractor may appoint a TE Procurement Coordinator from its site staff. For Contracts with a value of more than R100 million the Contractor shall employ or subcontract a dedicated TE Procurement Coordinator, whose sole responsibility will be the management of Targeted Enterprise procurement and sub-contracting matters.

The TE Procurement Coordinator shall be knowledgeable of, and have experience in, the management of road construction and ancillary works, National Treasury supply chain management legislation and regulations, and stakeholder relations management.

Under the auspices of the PLC, the TE Procurement Coordinator shall conduct the tender processes and procedures for Targeted Enterprise subcontracting as prescribed in this Section D and shall adhere to the Employer's and Government's Supply Chain Management Policies and requirements as set out in the Contract Data.

D1007.02 Procedures for Targeted Enterprises Subcontracting

The identification and application of the eligibility and functionality criteria, and conducting the tender processes and procedures for subcontracting include, amongst others, the following tasks:

a) Tender Preparation

- i) Compile preliminary list of subcontracting work packages

Based on the Contract Data and the Scope of the Works, the Contractor shall compile a preliminary list of the work packages (scope of work and number of packages) that are anticipated to be subcontracted to Targeted Enterprises.

The Contractor shall refer to the construction activities that have been identified as being suitable for construction by Targeted Enterprises as listed in Section D1009 of these Project Specifications, and to any other construction activities which are required to execute the Works in terms of this Contract, to determine how to unbundle or package subcontracts for Targeted Enterprises.

- ii) Conduct a market analysis and resources and skills audit

Based on the preliminary list of work packages, the Contractor shall conduct a market analysis and resources and skills audits to determine the availability

of the required resources and skills in the Project Area to execute the anticipated subcontractor work packages. The Contractor shall consult the following databases as a minimum:

- a. Construction Industry Development Board (CIDB)'s contractor database.
- b. National Treasury's Central Supplier Database (CSD) to be obtained from the Employer.

iii) Call for an expression of interest

In addition to consulting the CIDB contractor database and National Treasury's CSD, the Contractor shall call for an expression of interest, which shall be published in newspapers and at locations as agreed by the PLC.

For each group of work packages, the call for an expression of interest shall outline:

- a. evaluation and selection criteria such as eligibility, preference and functionality.
- b. compliance requirements such as CSD and CIDB registration, tax clearance and COID.
- c. the anticipated scope of the works to be undertaken.

iv) Establish a Targeted Enterprise Helpdesk

Other than informing the Contractor's market analysis and resources and skills audits, the purpose of the call for an expression of interest is to alert Targeted Enterprises of the subcontracting opportunities and inform them of the anticipated eligibility, preference and functionality criteria, as well as of the compliance requirements.

The Contractor shall enhance the readiness of Targeted Enterprises to participate in the subcontracting opportunities by establishing a helpdesk at a suitable and easily accessible location in the Project Area.

The Contractor shall provide guidance to Targeted Enterprises in getting their statutory requirements in order in anticipation of the subcontracting opportunities. The helpdesk shall assist with, or provide guidance in, registering with the CSD and the CIDB, obtaining tax clearance and COID compliance and any other relevant qualifying requirements.

v) Compile Preliminary Targeted Enterprise Database

Based on the CPG targets listed in the Contract Data and the information obtained from the activities described in paragraphs ii) and iii) above, the Contractor shall compile a Preliminary Targeted Enterprise Database.

In compiling the preliminary Targeted Enterprise Database, the Contractor must bear in mind that the benchmark for an adequate number of tenderers to ensure a competitive tender process is ten (10) tenderers that are able to achieve the functionality threshold during the tender evaluation.

vi) Identify Targeted Enterprises, Target Groups and Project Area(s)

Based on the CPG targets listed in the Contract Data and the Preliminary Targeted Enterprise Database, the Contractor shall identify the:

- a. Targeted Enterprises (CIDB grades and types); and
- b. Designated Groups (woman, youth, etc.) which are anticipated to benefit from the subcontracting opportunities; and
- c. Project Area(s) from which Targeted Enterprises will be given preference for subcontracting opportunities.

vii) Compile a Contract Participation Goal (CPG) Plan

The Contractor shall utilise all the information gathered from the activities described in the paragraphs above to compile an acceptable CPG Plan. The plan shall contain:

- a. a list of work packages (scope of work and number of packages) to be subcontracted to Targeted Enterprises;
- b. the preliminary Targeted Enterprise Database(s) for each work package;
- c. the Targeted Enterprises (CIDB grades and types) and Designated Groups (woman, youth, etc.) which are to benefit from the subcontracting opportunities;
- d. the Project Area(s) from which Targeted Enterprises will be given preference for subcontracting opportunities; and
- e. the tender evaluation and selection criteria for the respective work packages.

viii) Approval and sign-off of the CPG Plan

The Contractor shall submit the CPG Plan to the Employer and the Engineer for approval and table it to the PLC for sign-off.

The Contractor shall ensure that the tender requirements and the outcome of different tendering scenarios are explained to the PLC, specifically with respect to the outcomes of evaluating:

- a. Eligibility criteria;
- b. Functionality structuring and scenarios;
- c. Price and Preference;
- d. Compliance requirements; and
- e. Negotiation processes (if applicable).

If required, the Contractor shall make amendments to the CPG Plan based on the PLC's recommendations and the Engineer's instructions.

ix) Compile tender documents

The Contractor shall compile the tender documents for each Targeted Enterprise subcontract work package. If the Employer has a proforma tender document available, the Contractor shall use this document.

In compiling the subcontract tender documents, the Contractor shall include in each tender document relevant Conditions of Tender and the FIDIC subcontract agreement. The Contractor shall compile each subcontract tender document in a manner that facilitates the achievement of all objectives and principles pertaining to the development of the Targeted Enterprises.

The draft subcontract tender documents shall be approved by the Engineer before letting the tender.

b) Tender Process

i) Advertise the subcontract packages

The Contractor shall advertise and invite tenders from Targeted Enterprises for the respective subcontract packages. Advertisements shall be placed in local newspapers, on community notice boards and any other place or medium as agreed with the PLC.

If the Employer has a proforma Tender Notice available, the Contractor shall use this document.

ii) Conduct a tender briefing and tender training session

For each group of subcontract packages, the Contractor shall conduct a compulsory briefing session to explain the tender process, the evaluation and selection criteria and the scope of the works to the Targeted Enterprises.

An Attendance Register shall be completed by all attendees and Minutes shall be taken during the briefing session. The Minutes of the briefing session shall be distributed to all attendees as an Addendum to the Tender Documents.

The Contractor shall conduct a “how to complete a tender document” training session as a component of the tender briefing to interested Targeted Enterprises. The level of detail and hence the duration of the training session shall be informed by the findings of the resources and skills audit conducted during the Tender Preparation Phase.

Notes of this training session shall be distributed to all attendees of the briefing session as an Addendum to the Tender Documents, irrespective if they have attended the training session or not.

A separate Attendance Register shall be completed for the training session for future reference.

iii) Minimum tender submission documents

It shall be a condition of tender that Targeted Enterprises include in their tender submissions the following documentation (if applicable, based on the CIDB grade required):

- a. Proof of the Tenderer's B-BBEE contributor level.
- b. Proof that the Tenderer is an EME or QSE entity.
- c. Proof that the Tenderer is registered on National Treasury's CSD.
- d. Proof that the Tenderer is registered with the CIDB in the required grading and class (not applicable to suppliers).
- e. Proof that the Tenderer is compliant with the COID Act.
- f. Proof that the Tenderer is tax compliant.

iv) Tender closure and opening of tenders

Tenders for the subcontract packages shall close at a stipulated time and date. Tenders shall be submitted to the Contractor in the format and at the address prescribed by the Contractor in the subcontract Tender Data.

The tender opening shall be conducted by the Contractor who shall publicly announce and record the names of all bidders and their tender prices.

v) Finalise Targeted Enterprise Database

The purposes of the preliminary Targeted Enterprise Database are described in paragraph (v) of the Tender Preparation phase above of which one is to alert Targeted Enterprises to assess their readiness to participate in the project's subcontractor opportunities.

The period between the Contractor's call for an expression of interest and the date of closure of the relevant subcontract tender allows for prospective Tenderers to become compliant to the database criteria. The preliminary database is thus a “live” database until the date of tender closure.

On the date of tender closure, the Contractor shall request the Employer to print out a list from National Treasury's CSD, of entities that adhere to the Targeted Enterprise Database criteria. This list shall become the Final Targeted Enterprise Database for relevant subcontract tender and shall be submitted to the PLC for sign-off.

c) Tender Evaluation

The Contractor shall evaluate the tenders and it shall be a condition of tender that tenders will only be accepted from Targeted Enterprises that fully comply with the definition of a Targeted Enterprise as described in the Contract Data.

The Contractor shall evaluate the tenders based on (1) Eligibility, (2) Functionality, (3) Price and Preference, and (4) Compliance.

i) Stage 1 – Eligibility

Tenderers shall be checked for their eligibility to tender for the advertised subcontract packages based on the following eligibility criteria:

- a. Proof that the Tenderer is registered on National Treasury's CSD (the Tenderer must be on the signed off Targeted Enterprise Database).
- b. The Tenderer's B-BBEE contributor level; and
- c. The Tenderer's entity status, i.e. being a EME or QSE.

Eligible Tenderers shall be further evaluated against the functionality criteria.

ii) Stage 2 – Functionality

No Targeted Enterprise may be prohibited from responding to the invitation to tender, however, preference shall be given to those Targeted Enterprises that adhere to the tender criteria which, amongst others, shall be measured by means of a functionality evaluation.

To ensure Targeted Enterprise participation as it is intended by the Employer and defined in the Contract Data, "locality", "Designated Group" and "CIDB grading and class" shall form part of the functionality criteria and a higher weighting shall be allocated to these three criteria

Functionality shall be scored based on:

- a. Locality (project area(s));
- b. CIDB grade and class (targeted entity); and
- c. Designated Groups e.g. woman, youth, etc.

Tenderers must score a minimum of 75% for functionality and Tenderers that do not obtain the threshold shall not be further evaluated.

The functionality matrixes below were developed as an **example** of the allocation of points for the respective functionality criteria:

Table D1007 (a) – Example of Maximum Points per Functionality Criteria

CIDB Grade and Package Value	Points out of 100			Total Points
	Locality	CIDB Grading	Designated Groups	
1 - R 500 000	60	30	10	100
2 - R 1 000 000	60	30	10	100
3 - R 3 000 000	60	35	5	100
4 - R 6 000 000	60	35	5	100
5 - R 10 000 000	60	35	5	100
6 - R 20 000 000	60	35	5	100
7 - R 60 000 000	60	30	10	100

The above maximum points per functionality criteria must be further broken down as in the example matrix below:

Table D1007 (b) – Example of Allocation of Points for Functionality Criteria

CIDB Package Category		1CE	2CE	3CE	4CE	5CE	6CE
Typical Package Value		Up to R 1 mill		R 1 mill to R 6 mill		R 6 mill to R 20 mill	
Locality	Tenderer is based in the Local Municipality(ies).	60	60	60	60	60	60
	Tenderer is based outside the Local Municipality(ies) but in the District Municipality(ies).	45	45	40	40	40	40
	Tenderer is based outside the District Municipality(ies), but in the Province.	0	0	35	35	35	35
	Tenderer is based outside the Province, but in the RSA.	0	0	0	0	30	30
CIDB Grading	Tenderer is registered as a CIDB 1	30	30	0	0	0	0
	Tenderer is registered as a CIDB 2	30	30	30	0	0	0
	Tenderer is registered as a CIDB 3	0	0	35	30	0	0
	Tenderer is registered as a CIDB 4	0	0	30	35	30	0
	Tenderer is registered as a CIDB 5	0	0	0	30	35	30
	Tenderer is registered as a CIDB 6	0	0	0	0	30	35
	Tenderer is registered as a CIDB 7 and higher	0	0	0	0	0	30
Designated Groups (no max score)	Tenderer is 51%+ owned by black people who are youth.	5	5	5	5	5	5
	Tenderer is 51%+ owned by black people who are women.	5	5	5	5	5	5
	Tenderer is 51%+ owned by black people with disabilities.	5	5	5	5	5	5
	Tenderer is 51%+ owned by black people who are military veterans.	5	5	5	5	5	5
	Maximum Total Points	100	100	100	100	100	100

iii) Stage 3 – Price and Preference

Tenderers that obtained the minimum threshold for functionality shall be further evaluated on their Price and Preference submissions, i.e.:

- a. Price = 80 / 90 %
- b. Preference = 20 / 10 %

The highest scoring tenderer for each subcontract package shall be checked for compliance.

The Contractor shall state in the tender advertisement and in the tender documents that only one subcontract package shall be awarded to an entity at any one time for this project, meaning that a Targeted Enterprise may be awarded a work package and on conclusion thereof may be awarded a subsequent work package, but more than one work package may not be awarded simultaneously for this project.

If a tenderer tendered for more than one subcontract package and scored the highest points in more than one package, the Contractor shall award to the tenderer the work package that has the most economic benefit to the Employer.

iv) **Stage 4 – Compliance Check**

The highest scoring tenderer for each subcontract package shall be checked for compliance with respect to the following criteria:

- a. Proof that the Tenderer is compliant with the COID Act (excluding CIDB 1 and 2 CE).
- b. Proof that the Tenderer is tax compliant.

If the highest scoring tenderer fails to meet any of the compliance criteria, he will be given seven (7) calendar days to become compliant.

If the highest scoring tenderer fails to submit the requested compliance information in the required timeframe, he shall be deemed non-compliant and the evaluator shall check the second highest tenderer for compliance. This process is repeated until a compliant tenderer has been identified.

d) Appoint successful Targeted Enterprises

i) **Table the Tender Report to the PLC**

The Contractor shall present the Tender Report for each subcontract package to the Employer and the Engineer and thereafter table it to the PLC prior to award of the subcontract.

ii) **Negotiating tender sum and/or rates with Targeted Enterprises**

a. **Rates**

If the Contractor chooses to include work for which he has tendered rates in the subcontract package and the tenderer who scored the highest points tendered higher rates than that of the Contractor, the Contractor may negotiate rates and the final sum with the tenderer.

If the Contractor fails to negotiate a reasonable tender sum or rates with the tenderer, he may:

- i. approach the second highest points scoring, compliant tenderer for negotiation. This process may be repeated up to the third highest points scoring compliant tenderer, whereafter the package shall be retendered. The Contractor shall be limited to negotiate down to 25% above his own rates (this process must be clearly explained prior to negotiation, when the tender report is tabled to the PLC); or
- ii. accept the highest points scoring tenderer's higher rates and total sum and remunerate the sub-contractor at the sub-contractor's tendered rates from the lump sum which the Contractor has tendered for the fluctuation between the Contractor's rates and that of the Targeted Enterprise sub-contractors.

b. Provisional Sum

If the Employer has provided a provisional sum for the work items in the subcontract package, the Contractor shall report on the feasibility of the highest points scoring compliant tenderer's tender rates and tender sum to the Employer and the Engineer.

- i. If the highest points scoring compliant tenderer's rates and tender sum are deemed market related by the Engineer, the Contractor shall obtain the Employer's approval to utilise the provisional sum provided for the work items.
- ii. If the highest points scoring compliant tenderer's rates and tender sum are deemed not market related and the Employer does not approve the utilisation of the relevant provisional sum, the Contractor may negotiate with the tenderer for market related rates and tender sum.
- iii. If the Contractor fails to negotiate market related rates and a tender sum with the tenderer, he may:
 - (a) approach the next highest point scoring, compliant tenderer for negotiation. This process may be repeated up to the third highest points scoring compliant tenderer, whereafter the package shall be retendered; or
 - (b) accept the highest points scoring tenderer's rates and total sum and remunerate the sub-contractor from the lump sum which the Contractor has tendered for the fluctuation between the Contractor's rates and that of the Targeted Enterprise sub-contractors. The Contractor shall not pay rates or tender sums that are more than 15% higher than what are deemed market related by the Engineer.

iii) Low tender sums submitted by Targeted Enterprises

The Contractor shall report to the Employer and the Engineer on the feasibility of tendered rates, sums or provisional sums of tenderers who tendered exceptionally low. Exceptionally low rates, sums or provisional sums are those that are more than ten percent (10%) less than what the Contractor tendered or, in the case of a provisional sum, what is deemed market related by the Engineer.

- a. If the tendered rates, sums or provisional sums of those tenderers who tendered exceptionally low are deemed by the Engineer to still be feasible, the Contractor may continue to include these tenders in his tender evaluation.
- b. If the tendered rates, sums or provisional sums of those tenderers who tendered exceptionally low are deemed by the Engineer to not be feasible, the Contractor may disqualify these tenders from his tender evaluation.

The Employer strongly discourages the appointment of Targeted Enterprises that did not tender feasible rates, sums or provisional sums. If all prices submitted are deemed exceptionally low by the Engineer, the subcontract package shall be retendered.

The consequences of exceptionally low prices must be clearly outlined in the Tender Report and clearly explained to the PLC prior to award or retendering of the subcontract packages.

iv) Payment to the Contractor

- a. The Employer shall not remunerate the Contractor, other than what has been provided for in the payment items, for accepting higher tender sums tendered by Targeted Enterprises.

- b. If the Contractor accepts tender sums that are higher than what have been provided for in the Contractor's tendered rates or the Employer's provisional and/or prime cost sums, the costs shall be paid by the Contractor from the lump sum which he tendered for the fluctuation between the Contractor's rates and that of the Targeted Enterprise sub-contractors.

v) **Entering the Subcontract Agreement**

The Contractor's TE Procurement Coordinator shall assist successful Targeted Enterprises to enter into a subcontract agreement with the Contractor as described in this Specification.

D1008 GENERAL RESPONSIBILITIES OF THE CONTRACTOR TOWARDS TARGETED ENTERPRISES

The Contractor shall have the responsibilities described in this Section, D1008, towards all Targeted Enterprises subcontracted in terms of the CPG as stated in the Contract Data.

D1008.01 Targeted Enterprise (TE) Construction Manager

The Contractor shall appoint a dedicated TE Construction Manager whose sole responsibility shall be to assist the Contractor with the execution of his responsibilities towards Targeted Enterprises and Target Groups as prescribed in this Section D, with an emphasis on D1008 and D1010.

Amongst others, the TE Construction Manager shall facilitate the training, mentoring, development and support of Targeted Enterprises as per the Contractor's approved Training and Skills Development Programme (see Section D1010).

a) TE Construction Manager's Qualifications and Experience

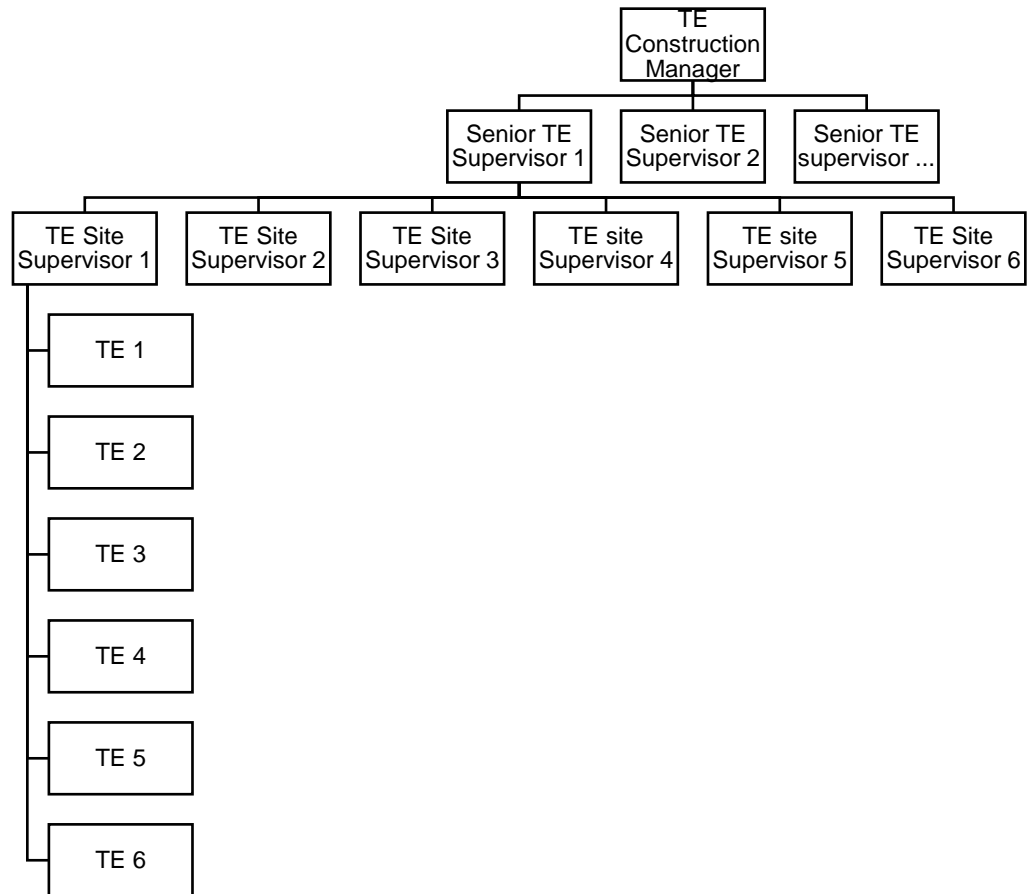
The TE Construction Manager shall have, as a minimum, a National Diploma: Management of Civil Engineering Construction Processes (NQF Level 5) or an equivalent qualification.

The TE Construction Manager shall have at least 5 years' experience as a Site Agent, managing construction processes in the fields of roads maintenance, new roads construction, roads rehabilitation, roads structures, etc. In addition, he shall have ample knowledge of, and experience in, the requirements of training and mentoring in the road construction environment.

b) TE Construction Manager's Team

The TE Construction Manager shall have on his team one (1) TE Site Supervisor for every six (6) Targeted Enterprises which are in their respective construction phases and one (1) Senior TE Supervisor for every six (6) TE Site Supervisors.

The qualifications and/or experience of TE Site Supervisors and Senior TE Supervisors shall be relevant and of a suitable level to enable them to supervise the level of Targeted Enterprise and the specific works under construction. Below is an indicative organogram of the TE Construction Manager and his team.



D1008.02 General Obligations

The Contractor shall, with the assistance of the TE Construction Manager, comply with the following general obligations:

- a) Assist the Targeted Enterprises in instituting a quality assurance system;
- b) Provide adequate training, coaching, guidance, mentoring and any other identified and approved assistance to Targeted Enterprises;
- c) Provide support and any other identified and approved assistance to ensure that the Targeted Enterprises meet their obligations and commitments with respect to their subcontracts, and
- d) Ensure that the CPG objectives are achieved.

D1008.03 Subcontract Agreements

The Contractor shall conclude subcontract agreements with each subcontracted Targeted Enterprise. The subcontract agreement shall be the FIDIC subcontract agreement and shall be in accordance with the provisions of amended sub-clause 4.4 of the Conditions of Contract and shall be consistent with the terms and conditions of this Contract.

a) Special Conditions of Contract

The following Special Conditions of Contract shall be included in the subcontract agreement:

- i) The Targeted Enterprise's entitlement to receive the training contemplated in this Contract;
- ii) The Targeted Enterprise's obligation to participate and co-operate in the training provided for in this Contract;
- iii) The allowable sources from which Labour may be drawn in terms of the Contract;
- iv) The terms and conditions relating to the recruitment, employment and remuneration of Labour engaged on the Contract;
- v) The training to be provided to the Targeted Enterprise's workforce;

- vi) The terms and conditions related to payment of the Targeted Enterprise;
- vii) Sanctions in the event of failure by the Targeted Enterprise to comply with the terms and conditions of the subcontract agreement; and
- viii) Dispute avoidance and resolution procedures.

Further Special Conditions of Contract shall only be included into the subcontract agreement once approved by the Engineer.

b) Monitoring of Subcontract Agreements by the PLC

The proforma subcontract agreement for each group of work packages shall be tabled to the PLC for their sign-off. Special Conditions of Contract, in addition to those listed in (a) above shall be developed under the auspices of the PLC.

The PLC may at any stage during the Contract request proof that subcontract agreements were entered into with the subcontracted Targeted Enterprises. The PLC may also request insight into the Conditions of Subcontract and Subcontract Data.

To protect Targeted Enterprises' competitive advantage and/or tender strategy, only the subcontract agreement shall be available to the PLC for perusal and not the pricing structure and/or Schedule of Quantities.

A copy of each subcontract agreement shall be filed with the Engineer after confirming that it is in accordance with the provisions of this Contract.

D1008.04 Payment of Targeted Enterprises

Targeted Enterprises shall be paid the rates and/or provisional sums which they have tendered or which have been negotiated as described in this Section D of the Specifications.

a) Payment of Provisional and General Obligations

Provision shall be made in the subcontract for the Targeted Enterprise's preliminary and general obligations (P&Gs), which shall be calculated as a minimum of 15% of the value of the scheduled subcontract work items.

Where the Contractor's subcontract work is not paid from a provisional sum, the P&Gs of the Targeted Enterprise shall be paid from the lump sum tendered by the Contractor for the P&Gs of Targeted Enterprises.

P&Gs shall be paid to Targeted Enterprises as per Section C1.3 of the COTO specification payment items, i.e.:

- i) C1.3.1.1 paid in 3 instalments of 50%, 35% and 15%;
- ii) C1.3.1.2 paid as a percentage of the total value progressively per certificate;
- iii) C1.3.1.3 paid monthly for the sub-contractor's contract duration.

D1008.05 Quality of Work and Performance of Targeted Enterprises

a) Ensuring Quality of Work and Performance

The Contractor's TE Construction Manager shall closely monitor and supervise all Targeted Enterprises and shall train, coach, guide, mentor and assist each Targeted Enterprise in all aspects of management, execution and completion of its subcontract. This shall typically include assistance with planning of the Works, sourcing and ordering of materials, labour relations, monthly measurements and invoicing procedures. The extent and level of such training, coaching, guidance, mentoring, and assistance to be provided by the Contractor shall commensurate with the level of subcontract applicable and shall be directed at enabling the Targeted Enterprise to achieve the successful execution and completion of its subcontract.

b) Failure by the Targeted Enterprise to Comply

If the Targeted Enterprise, in the opinion of the Engineer, fails to comply with any of the criteria listed below, the Engineer shall issue a written warning to the Contractor stating all the areas of non-compliance. A copy of the letter of warning shall be forwarded to the Employer. The criteria are as follows:

- i) Deliver acceptable standards of work as set out in the specifications;
- ii) Progress in accordance with the time constraints in the subcontract agreement;
- iii) Punctual and full payment of the workforce and suppliers;
- iv) Site safety; and
- v) Accommodation of traffic.

c) Assist the Targeted Enterprise to Make Good

The Contractor shall give reasonable warning to the Targeted Enterprise when any contravention of the terms and conditions of the subcontract agreement has occurred or appears likely to occur. The Contractor shall, whenever feasible, give the Targeted Enterprise reasonable opportunity to make good any such contravention, or to avoid such contravention, and shall render all reasonable assistance to the Targeted Enterprise in this regard.

D1008.06 Dispute Avoidance and Resolution Procedures

When any disputes arise, the Contractor shall explain fully to the Targeted Enterprise that such actions are provided for in the subcontract agreement. If such action is contemplated, it shall be discussed with the Engineer and tabled to the PLC before any action is taken.

The Targeted Enterprise shall have 21 calendar days from the date of receipt of the letter of warning by the Contractor to address and rectify the issues raised by the Engineer, except for issues pertaining to Site Safety and Accommodation of Traffic, for which the reaction time shall be in accordance with the relevant specifications for those aspects of the Works, but which shall not be longer than 24 hours.

Failure by the Targeted Enterprise to comply with a deadline, will be sufficient grounds for the Contractor to apply a penalty or terminate the subcontract agreement provided that the Employer and the Engineer are satisfied that the Contractor has made every effort to correct the performance of the Targeted Enterprise.

The Targeted Enterprise shall have the right to dispute any ruling given or deemed to have been given by the Contractor or the Engineer. Provided that, unless the Targeted Enterprise shall, within 21 calendar days after his receipt of a ruling or after a ruling shall have been deemed to have been given, give written notice (hereinafter referred to as a Dispute Notice) to the Contractor, referring to the relevant clause(s) in the subcontract agreement disputing the validity or correctness of the whole or a specified part of the ruling, he shall have no further right to dispute that ruling or the part thereof not disputed in the said notice.

D1009 WORK SUITABLE FOR EXECUTION BY TARGETED ENTERPRISES

To assist the Contractor in achieving his CPG, the following work items have been identified as being suitable for execution by Targeted Enterprises:

- a) Erection and maintenance of the Contractor's camp site
- b) Clearing and grubbing.
- c) Removal of trees.
- d) Provision of traffic control facilities.
- e) Management of traffic control facilities and traffic safety as part of the accommodation of traffic.
- f) Construction and clearing of drains.
- g) Installation of prefabricated culverts including inlet and outlet structures.
- h) Concrete channelling and concrete linings for open drains.

- i) Construction of concrete paving, kerbs and channels.
- j) Construction of small concrete and other structures.
- k) Construction of concrete walkways.
- l) Pitching, stonework and protection against erosion.
- m) Construction of gabions.
- n) Patching and repairing edge breaks.
- o) Erection of guardrails.
- p) Landscaping.
- q) Fencing.
- r) Road signs.
- s) Road markings.
- t) Finishing the road and road reserve.
- u) Site Security Services.
- v) Haulage of materials
- w) Supply of plant.
- x) Supply of fuel.
- y) Specialised subcontract work such as:
 - i) Construction of concrete pavements.
 - ii) Laying of asphalt using asphalt pavers.
 - iii) Structural concrete such as culvert and bridges.
 - iv) Crushing of materials.
 - v) Precast manufacture.
 - vi) Batch plant erection and operations.
 - vii) Earthworks, layerworks construction.

From the above work items, the following have been identified as suitable for execution by CIDB CE1 and CE2 Targeted Enterprises:

- a. Concrete sidewalks.
- b. Side drains.
- c. Clearing and grubbing.
- d. Construction and clearing of drains.
- e. Any other work identified by the Employer to be executed in the Target Area.

The work to be carried out by Targeted Enterprises is not limited to the work listed above and the Contractor may need to engage Targeted Enterprises on other aspects of the Works to achieve the CPG.

A Provisional Sum for the work by CIDB 1 and 2 Targeted Enterprise sub-contractors is allowed under pay item D10.05.

D1010 TRAINING, COACHING, GUIDANCE, MENTORING AND ASSISTANCE

The Contractor shall under the auspices of the PLC develop a Training and Skills Development Programme which shall be managed by the Contractor's TE Construction Manager.

D1010.01 Purpose of the Training and Skills Development Programme(s)

Skills development forms an integral part of the Employer's Transformation and Community Development Policies and hence, it is important to the Employer that Targeted Labour and Targeted Enterprises be equipped with skills that can be used to gain meaningful future employment and secure subcontracting opportunities.

It is, therefore, a requirement of this Contract that the Contractor provide adequate training, coaching, guidance, mentoring and assistance to the Targeted Labour and Targeted Enterprises to ensure skills development within the Construction Industry.

D1010.02 Skills Audit and Analysis

Prior to developing the Training and Skills Development Programme(s), the Contractor shall conduct a skills audit and analysis of its own employees and those of its

subcontractors to determine their levels of education, existing qualifications, and skills sets. The outcome of the skills audit and analysis shall be used to develop a Training and Skills Development Programme(s) that will benefit both the employee and the Construction Industry at large.

Included in the skills audit and analysis shall be a separate section, analysing the education, qualifications and skills sets of the Targeted Enterprise's owners and supervisors subcontracted by the Contractor to develop a Training and Skills Development Programme that will develop and improve the ability of small business owners and their supervisory staff to better manage their enterprises.

D1010.03 Developing the Training and Skills Development Programme

The Employer shall be involved in the decision making and quality control pertaining to the development and implementation of the Training and Skills Development Programme facilitated through this Contract.

The Employer has no service agreement or memorandum of understanding with any education and training quality assurance body and, therefore, does not function as the "Employer" as defined under any three-party-agreement between the Trainee, the Training Provider and the Employer.

However, the Employer requires similar outcomes to that of formal learnership programmes and the Contractor shall structure a Training and Skills Development Programme in a manner that permits continued access to further learning and qualifications within a defined programme.

The complete Training and Skills Development Programme shall be approved by the Employer and Engineer and signed off by the PLC before any training commences.

D1010.04 The Training Service Provider

While the Contractor's TE Construction Manager will manage the Training, Development and Support Programme and mentor Targeted Enterprise subcontractors from a practical point of view, the Contractor shall subcontract a Training Service Provider to implement the theoretical training components of the Programme by applying the Employer's Supply Chain Management Policy for second tier procurement.

a) Accreditation of the Training Service Provider

The Training Service Provider entity shall be accredited, and have in its employ Practitioners, Assessors and Moderators who are registered, with the Construction Education Training Authority (CETA). Proof of accreditation and registration shall be current, valid and list the NQF levels and Unit Standards for which the entity and its staff are accredited.

b) Qualifications and Experience of the Training Service Provider

The training and competency levels required of the Training Service Provider and his staff are outlined in the table below:

TABLE D1010/1: QUALIFICATIONS FOR TRAINING STAFF

Designation	Title and Unit Standard No.	NQF Level	Credit
Practitioner	Train the trainer; No 7384	4	16
Assessor	Conduct outcome base assessment; No 115753	5	15
Moderator	Conduct moderation of outcome-based assessment; No 115759	6	10

In addition to the above qualifications, and in keeping with current CETA practical experience requirements for registration as a Practitioner, NQF Level 4 Unit Standards shall only be presented by Practitioners with NQF Level 5 (one level up) credentials.

The Employer further requires that Assessors and Moderators shall have at least 5 years' experience as a Site Agent, managing construction processes in the fields of roads maintenance, new roads construction, roads rehabilitation and structures.

Elective Unit Standards are typically more vocational orientated and may require specialist input. It is thus not a requirement that individual Practitioners and Assessors shall have all the necessary skills for all the different categories of Unit Standards. The Training Service Provider may and shall therefore, when necessary, appoint Practitioners and Assessors on an ad hoc basis with the levels of experience which are required for the Unit Standards to be presented.

D1010.05 Training and Skills Development Programme: General Requirements

The Training and Skills Development Programme shall consist of Learnerships that include multiple, but related Unit Standards which are (1) relevant to the Works to be constructed, (2) aimed at achieving the skills development objectives of the Programme, and (3) lead towards a formal qualification in the Construction Industry.

Learnerships shall include both the theoretical and practical components of each Unit Standard and shall be in accordance with the various laws and regulations contained in the South African Qualification Authority (SAQA) statutes.

a) Training Programme: Requirements and Considerations

The Skills Audit and Analysis shall inform the Contractor of every employee's Recognised Prior Learning (RPL) skills and competencies, which shall be taken into consideration in the development of the Training and Skills Development Programme so that the RPL skills and competencies, together with the Training Programme Unit Standards offerings, will lead to a full Learnership outcome and hence a formal qualification.

It is recognised that the Training and Skills Development Programme may consist of several Unit Standards but totalling insufficient credits for a full Learnership qualification. Nevertheless, the competencies and credits achieved in the Programme shall contribute to a full Learnership by a later acquisition of the outstanding Unit Standards required for the full Learnership.

The Training and Skills Development Programme shall be structured in a manner to prioritise those Unit Standards that will equip Trainees with the minimum skills required to become economically involved in the execution of the Works as soon as possible.

The Training Service Provider shall apply the SAQA Learnership criteria of which the basic elements are listed below to demonstrate the Employer's requirements:

- i) Minimum credits for qualification;
- ii) Fundamental Unit Standards and credit values;
- iii) Core Unit Standards and credit values;
- iv) Elective Units Standards and credit values;
- v) Assumption that NQF Level 3 literacy, numeracy, and computer competencies exist;
- vi) RPL processes;
- vii) Exit level outcomes.

The above criteria are not exhaustive, and the Training Service Provider shall apply the systems and processes required by the relevant SAQA and other related legislation pertinent to training. The Training Service Provider shall regularly consult

the SAQA website (www.saqa.org.za) to ensure that the most current Unit Standards are presented. In the event of any conflict, the legislated requirements shall apply.

While structuring the Learnership offerings, the Training Service Provider shall distinguish between the levels of learning required. The bulk of the training shall focus on NQF Levels 4 and 3. NQF Level 5 training is not anticipated but may be suitable for qualifying staff of established small contractors. The qualification titles for the respective NQF Levels are:

- a. NQF Level 3 National Certificate: Construction Roadworks.
- b. NQF Level 4 National Certificate: Supervision of Construction Processes
- c. NQF Level 4 National Certificate: Business Management
- d. NQF Level 5 National Diploma: Management of Civil Engineering Construction Processes

It may be necessary to include additional Core Unit Standards, e.g. "Tendering" or "Entrepreneurship" as an additional Unit Standard for NQF Level 4, to achieve the Contract's development objectives. The identification of any additional Unit Standards shall be discussed with the Engineer and shall not be implemented without prior approval.

Before qualifying, Trainees will be expected to demonstrate competence in a practical situation that integrates the assessment of all specific outcomes, for all Unit Standards in the Learnership Programme.

All training shall take place within normal working hours, or as agreed with the trainees.

b) Selection of Trainees

To complete a Learnership successfully requires minimum literacy and numeracy competencies as defined by SAQA. The Training Service Provider shall utilise the skills audit and analysis and conduct additional skills analysis to benchmark the literacy and numeracy levels of employees and subcontractors. This information shall guide the Training Service Provider in formulating the Trainee selection methodology(ies) and process(es). The Training Service Provider shall make provision for:

- i) baseline assessments, e.g. conducting RPL enquiries and tests; and
- ii) a gap skills programme consisting of Fundamental Unit Standards, to facilitate the selection process.

Trainees identified as having already acquired some tertiary training, particularly in the field of Civil Engineering, may be suitable for a specialised Trainee programme or a higher NQF Level programme. The Training and Skills Development Programme shall, therefore, make provision for Trainees with a variety of competency levels and shall make provision for different levels of training.

It should be noted that where this section refers to the selection and training of Trainees, any person, employed by any national, provincial or local authority, being it full time or part time, is expressly excluded from being considered for this training.

c) Learning Material

Learning material is required for each Unit Standard. This learning material is the equivalent of prescribed textbooks for other qualifications. Each Trainee shall receive a copy of the learning material to learn the contents and to use it as a reference source after obtaining the qualification.

The SAQA Unit Standard curriculums define the contents of the learning material. The learning material shall not only comply with the SAQA and CETA guidelines but shall be technically and practically aligned to road construction and/or road maintenance. Any input from a subject matter expert required to ensure the

appropriateness of learning material contents shall be included in the Training Service Provider's costs.

The requirements to be addressed in learning material as outlined by the SAQA Unit Standard curriculums are, amongst others, the following:

- i) purpose of the Unit Standard;
- ii) specific outcomes (typically 4 per Unit Standard);
- iii) assessment criteria (typically 4 per specific outcome);
- iv) range as is defined for each specific outcome;
- v) critical cross-field outcomes for the Unit Standard;
- vi) Unit Standard essential embedded knowledge.

d) Student Experiential Training or Learnerships or Internships

The Employer may deploy students to the construction site to obtain experiential training. The Contractor shall provide experiential training to these students in accordance with the relevant academic institution's requirements, which is typically a university, a university of technology, or a TVET.

The Contractor shall also provide students with all the tools (including appropriate information technology hardware and software) and site office space necessary to carry out engineering work as if they were the Contractor's own permanent staff.

Reporting on training progress of each student shall be compiled according to the formats and intervals set by the relevant academic institution.

(e) Keeping of Records

The Training Service Provider shall keep comprehensive records of the training provided to each Trainee and shall ensure that Trainees' successful completion of successive Unit Standards are entered onto the national SAQA database. After the successful completion of generic skills courses, each Trainee shall be issued with a certificate indicating the course contents as proof of attendance and completion. The Contractor shall keep a register of certificates issued. Whenever required, the Contractor shall provide copies of such records to the Engineer.

(f) Skills Development Requirements

i) Contract Skills Development Goals (CSDG)

This section establishes a minimum CSDG which is to be achieved in the performance of a Contract (*as per the CIDB Standard for Developing Skills through Infrastructure Contracts August 2013*) in relation to the provision of different types of workplace opportunities linked to work associated with a Contract which culminates in or leads to:

- a. a part- or full occupational qualification registered on the National Qualification Framework;
- b. a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012);
- c. a national diploma registered on the National Qualification Framework; and
- d. registration in a professional category by one of the professional bodies listed in Table 1 of the Standard.

The Contractor shall achieve or exceed the CSDG in the performance of the Contract. The Contractor may, if need be, devolve their obligations onto subcontractors.

The CSDG shall not be less than the contract amount multiplied by 0.25 percent (%) for Civil Engineering work (CE). For this reason, the Contractor shall insert the CSDG amount in form C2.3 Summary of Pricing Schedule.

ii) Achieving Contract Skills Development Goal (CSDG)

The Contractor shall achieve the CSDG by providing employment opportunities to Trainees requiring structured workplace learning using one or a combination of any of the following methods in relation to work directly related to the Contract:

Method 1: Structured workplace learning opportunities for Trainees (LoL) towards the attainment of a part or a full occupational qualification.

This training method shall apply to Targeted Enterprises and Targeted Labour.

Method 2: Structured workplace learning opportunities for apprentices or other artisan Trainees (LoA) towards the attainment of a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012) subject to at least 60% of the artisan Trainees being holders of public FET college qualifications.

This training method shall apply to Targeted Enterprises and Targeted Labour.

Method 3: Work integrated learning opportunities for University of Technology or Comprehensive University students (LoUS) completing their national diplomas.

This training method shall apply to P1 and P2 Trainees, or Trainees with a 240 credits qualification. Both the permanently employed and temporary employed Trainees shall be considered under this training method.

Method 4: Structured workplace learning opportunities for candidates (LoC) toward registration in a professional category by a statutory council listed in Table 1 of the Standards.

This training method shall apply to Candidates with 480 credits qualification. Both the permanently employed and temporary employed Trainees shall be considered under this training method.

No single method shall contribute more than 75 percent of the CSDG. Permanently employed Trainees may not account for more than 33 percent (%) of the CSDG, and not more than one method may be applied to any individual concurrently in the calculation of the CSDG.

iii) CSDG Credits

The CSDG shall be calculated by multiplying the number of people employed by the Contractor and placed for continuous training opportunities in a three-month period by the notional values contained in Table 3 of the Standard, or as revised in a Gazette notice.

The Contractor may source beneficiaries of the CSDG from a Skills Development Agency (SDA) recognised by the CIDB.

All beneficiaries shall be registered with a construction Skills Development Agency (SDA) recognised by the CIDB.

iv) Denial of Credits

Credits towards the CSDG shall be denied should the Contractor not fulfil all the requirements listed in clause 3.4 (a) to (f) of the Standards.

v) Compliance with Requirements

The Contractor shall comply with the requirement as set out in clause 4 of the Standards.

vi) Records

The Contractor shall submit all the documentation required in terms of clause 4 of the Standards, in a timely manner and according to a prescribed format where applicable.

The Engineer shall certify the value of the credits counted towards the CSDG, if any, whenever a claim for payment is issued to the Employer and shall notify the Contractor of this amount.

The Contractor shall, upon termination of the opportunities provided to satisfy the CSDG, certify the quantum and nature of the opportunity and submit the certificate, counter-certified by the relevant individual, to the Engineer for record-keeping purposes.

vii) Sanctions

Failure to achieve the CSDG shall render the Contractor liable for a penalty as prescribed in clause 8.7 of the FIDIC Conditions of Contract. Penalties shall be as follows:

a. $\text{Penalty} = 0.5 \times \{[\text{LoAs} + \text{LoLs} + \text{LoUSs} + \text{LoCs}]\}$

Where:

LoLs = Monetary Value of the shortfall for structured workplace learning opportunities for Trainees towards the attainment of a part or a full occupational qualification;

LoAs = Monetary Value of the shortfall for structured workplace learning opportunities for apprentices or other artisan Trainees towards the attainment of a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012) subject to at least 60% of the artisan Trainees being holders of public FET college qualifications;

LoUSs = Monetary Value of the shortfall for work integrated learning opportunities for University of Technology or Comprehensive University students completing their national diplomas (LoUS);

LoCs = Monetary Value of the shortfall for structured workplace learning opportunities for candidates towards registration in a professional category by a statutory council listed in Table 1 of the Standards (LoC), and

b. Delay the issuing of the Performance Certificate until all the required records described in clause 5 of the Standards are received.

(g) Generic Skills Training

Generic skills shall be taught where the need has been identified and approved by the Employer and the Engineer.

The Contractor shall make representation to the Employer and the Engineer, who shall approve candidates that should attend such courses as they deem appropriate.

Those selected shall receive formal generic skills training in a programmed and progressive manner. The PLC may also identify a need for generic skills training.

Typical training programmes could comprise some or all of the following modules:

- i) Basic hygiene and HIV/AIDS awareness;
- ii) Road safety;
- iii) Basic management of the environment;
- iv) Tourism awareness and opportunities;
- v) Managing personal finance;
- vi) Adult Basic Education and Training (ABET);
- vii) Community based training programmes (e.g. knitting, computer skills, plant/machine operator, etc.).

All generic skills training shall be accredited by the relevant Sector Education and Training Authority (SETA) and shall be provided with accredited entities and/or individuals.

(h) Community Training

Community training shall be taught where the need has been identified.

Affected Communities may submit their training needs to the PLC for consideration and inclusion into the Training and Skills Development Programme. While considering the training needs of the affected Communities, the Engineer shall inform the PLC of the Contract's training limitations, as well as of the training that could be undertaken through the Contract. Trainees from the Community shall be identified through the Community structures, but under the auspices of the PLC. Trainees selected from the Community shall receive formal skills training in a programmed and progressive manner in compliance with subclause D1010.04. Priority shall be given to training that will equip Community members with skills that will enhance their employability.

All community skills training shall be accredited by the relevant Sector Education and Training Authority (SETA) and shall be provided with accredited entities and/or individuals.

(i) Training Facilities

The Contractor shall be responsible for providing everything necessary to offer the various training workshops and modules including:

- i) a suitable venue with sufficient furniture, lighting and power,
- ii) all necessary stationery consumables and study material,
- iii) transport for attendees.

D1011 LABOUR ENHANCED CONSTRUCTION

The Contractor's attention is drawn to the fact that it is an objective of the Contract to maximise the labour content of certain operations or portions thereof. In this regard, where the specified work allows for a choice between mechanical or labour-enhanced means, the former should generally be kept to the practical minimum.

Before commencing with any labour enhanced operations the Contractor shall discuss his intentions with the Engineer and shall submit to the Engineer on a monthly basis, daily labour returns indicating the numbers of temporary personnel employed on the Works and the activities on which they were engaged.

It should be noted that activities that are conventionally done by labour methods, e.g. gabions, shall not qualify under this section.

D1012 COMMUNITY DEVELOPMENT

D1012.01 Corporate Social Investment (CSI)

The Contractor shall demonstrate its willingness to actively participate in the social development initiatives for local Communities affected by the Contract. To this end, the Contractor shall provide details of CSI initiatives it will actively pursue under Form D9: Corporate Social Investment. The Employer will evaluate the CSI initiatives as part of the tender evaluation under “*other objective criteria*” of the Preferential Procurement Policy Framework Act, 2000.

D1012.02 Community Development Projects

The Employer will identify Community Development Projects to the benefit of the local Communities. These projects shall be undertaken primarily by Targeted Labour and Targeted Enterprises from these Communities and under supervision of the Contractor.

Although executed as a component of the main contract, the Employer shall register a separate project number for such Community Development Projects and the Contractor shall submit a separate invoice for the Community Development Project.

Community Development Projects shall not add towards the Contractor's CPG and shall be additional efforts towards the Employer's transformation and socio-economic development goals.

Community Development works are quantified in Section D10.07 in the Schedule of Quantities and its Scope of Work is yet to be confirmed.

D1013 MEASUREMENT AND PAYMENT

Item	Unit
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D10.01 Target Group Participation

(a)	Contract Participation Performance bonus	Prime Cost (PC) Sum
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The prime cost sum for item D10.01(a) shall cover any CPP bonus due as specified in clause D1003.05. The prime cost sum shall be expended in accordance with clause 13.5 of the FIDIC Conditions of Contract.

Note:

No separate payment shall be made for any costs incurred by the Contractor, whether direct or indirect, for his efforts in accomplishing the specified requirements, and which are not recoverable from the pay-items allowed. Such costs shall be deemed to have been included in the rate offered under pay sub-item C1.3.1.3 Time Related Obligations.

Item	Unit
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D10.02 Stakeholder and Community Liaison and Social Facilitation

(a)	Cost of liaison, social facilitation and PLC support	Prime Cost (PC) Sum
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(b)	Handling cost and profit in respect of sub-item D10.02(a)	Percentage (%)
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The prime cost sum for item D10.02(a) shall cover the direct costs incurred by attending members of the PLC. The rate of compensation shall be fair and agreed by the Engineer in accordance with clause 13.5 of the FIDIC Conditions of Contract. The tendered percentage for sub-item D10.02(b) shall include full compensation for all handling costs and profit of the Contractor associated with sub-item D10.02(a).

The liaison with, and assistance provided by the Contractor to the PLC to perform its duties shall not be paid from the prime cost sum. The Contractor's costs to liaise with the PLC and render such assistance shall be deemed to have been included in its rate offered for pay sub-item C1.3.1.3 Time Related Obligations.

Item	Unit
D10.03 Tender Process for Targeted Enterprises	
(a) Contractor's charge for the management and execution of the Targeted Enterprise procurement process:	
(i) Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise subcontractors of CIDB 1 and 2 contractor grading	Number (No)
(ii) Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise subcontractors of CIDB 3 and 4 contractor grading	Number (No)
(iii) Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise subcontractors of CIDB 5 and higher contractor grading	Number (No)
(iv) Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise suppliers	Number (No)
(b) Targeted Enterprise Procurement Coordinator	Month

The unit of measurement for item D10.03(a) shall be the number of individual subcontract agreements concluded with Targeted Enterprise sub-contractors and suppliers in accordance with the procurement process described in this Section D.

The tendered monthly rate for subitem D10.03(b) shall include full compensation for the provision of the relevant personnel on a full-time basis to carry out the requirements in terms of subitem D10.03(a) and the full contents of this Section D.

Each tendered rate shall be in full compensation for the management and execution of the Targeted Enterprise procurement process in the relevant CIDB contractor grading designation scheduled, including for the appointment of a TE Procurement Coordinator (if required), the pre-tender training of eligible Targeted Enterprises, the compilation, printing, binding and issue of the tender documents for each tender, for the advertising of each tender, for the provision of the venue and the conducting of each compulsory briefing session for tenderers, for the conducting of each tender opening process, for the adjudication of the tenders received for each tender, for the preparation of each tender adjudication report and the review thereof in conjunction with the Employer, Engineer and the PLC, for the award of each tender and for the conclusion of the subcontract agreement with each successful Targeted Enterprise tenderer, and any other relevant requirement described in this Section D.

Item	Unit
D10.04 Responsibilities of the Contractor towards Targeted Enterprises	
(a) Contractor's establishment, management, management support, assistance, coaching, guidance, mentoring and supervision of Targeted Enterprises	Month
(b) Targeted Enterprise Construction Manager	Person Month

(c)	Targeted Enterprise Site Supervisors	Person Month
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The tendered monthly rate for subitem D10.04(a) shall include full compensation for the registration of all the subcontract agreements and the management of all the Targeted Enterprise subcontracts, including for the provision of the necessary management, support, coaching, guidance, mentoring and supervision of the Targeted Enterprise subcontractors.

The tendered monthly rate for subitems D10.04(b) and (c) shall include full compensation for the provision of the relevant personnel on a full-time basis to carry out the requirements in terms of subitem D10.04(a) and the full contents of this Section D.

Item	Unit
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D10.05 Construction Works by Targeted Enterprises

(a)	Payments associated with the construction works carried out by Targeted Enterprise subcontractors of CIDB 1 and 2 contractor grading designation appointed in terms of Section D	Provisional (Prov) Sum
(b)	Handling costs and profit in respect of payment associated with sub-item D10.05(a)	Percentage (%)
(c)	Fluctuation between the main contractor's rates and that of the Targeted Enterprise subcontractors	Lump Sum (LS)
(d)	Preliminary and General Obligations of Targeted Enterprise sub-contractors appointed in terms of Section D	Lump Sum (LS)

Expenditure under subitems D10.05(a) shall be in accordance with clause 13.5 of the FIDIC Conditions of Contract.

The provisional sum for subitem D10.05(a) is provided to cover the cost of the construction works, including preliminary and general obligations carried out by the Targeted Enterprise subcontractors of CIDB 1 and 2 contractor grading designation as certified by the Engineer, in separate payments for each Targeted Enterprise in accordance with Section D. Expenditure under subitem D10.05(a) shall be limited to the provisional sum amount stated in the Pricing Schedule. Construction works by Targeted Enterprise subcontractors of CIDB 1 and 2 contractor grading designation exceeding the provisional sum amount shall be measured for payment from the applicable work items in the Contractor's pricing schedule.

The tendered percentage for subitem D10.05(b) is the percentage of the amount actually spent under subitem D10.05(a), and shall include full compensation for the Contractor's handling costs, profit or any other costs associated with the work conducted by the Targeted Enterprise subcontractors, which are not provided for in other pay items.

The Lump Sum tendered under item D10.05(c) is for fluctuation of the Targeted Enterprise subcontractor rates in excess of the contractor's tendered rates, for work not paid under items D10.05(a). Payment of the lump sum shall be on a prorata basis to provide compensation for the fluctuation between the tendered rates of the Main Contractor and that of the Targeted Enterprise subcontractors until the lump sum is depleted. Any costs incurred due to fluctuation in tendered rates in excess of that tendered for under item D10.05(c) will be for the Contractor's account. Item D10.05(c) is applicable where the Target Enterprise subcontractor's tender amount is higher than the Main Contractor's tender amount. The lump sum will cover the fluctuation for all the tendered rates of the subcontractors.

The Lump Sum tendered under item D10.05(d) is for the Preliminary and General Obligations of Targeted Enterprise sub-contractors (excluding CIDB 1 and 2 contractor grading designation) paid from the Provisional Sum. Payment of the lump sum shall be on a prorata

basis to provide compensation for the P&Gs of Targeted Enterprise sub-contractors until the lump sum is depleted. Any costs incurred for the P&Gs of Targeted Enterprise sub-contractors in excess of that tendered for under item D10.05(d) will be for the contractor's account.

Item	Unit
D10.06 Training, coaching, guidance, mentoring and assistance	
(a) Training Costs	
(i) Accredited generic skills training	Provisional (Prov) Sum
(ii) Community skills training	Provisional (Prov) Sum
(iii) Handling cost and profit in respect of subitems D10.06(a)(i), (ii) and (iii)	Percentage (%)
(b) Other costs during training	Provisional (Prov) Sum
(c) Training venue	Lump Sum (LS)

The provisional sums under sub-items D10.06(a) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract. The provisional sums shall include all charges for the provision and delivery of the service including an accredited Training Service Provider (if required), learning material and any other requirement as described in sub-clause D1010.

The rate tendered under sub-item D10.06(a)(iii) shall be deemed to cover all costs required to organise accredited trainers to provide training and shall include the Contractor's handling cost, profit, record keeping, reporting and all other costs associated with sub-items D10.06(a)(i) and (ii).

The provisional sum under pay item D10.06(b) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract. The provisional sum shall cover the Contractor's costs for payment of wages of employed trainees attending training courses during working hours, for the provision of meals to trainees, for provision of transport and for all other incidentals required for the trainees and approved by the Engineer. No mark-up is payable to the Contractor under this item.

The unit of measurement for pay item D10.06(c), shall be the lump sum. The sum tendered shall include full compensation for the provision of the training venue, for all necessary lighting, power, furniture, stationery, consumables and study material and all other costs necessary to maintain the venue for the duration of the contract. Payment of the lump sum shall be made in two instalments as follows:

- a) The first instalment, 75% of the lump sum, shall be paid after the Contractor has met all his obligations regarding the provision of the training venue as specified.
- b) The second and final instalment, 25% of the lump sum, shall be paid after the provision of all the accredited training as specified in the document.

No payment, nor prorata payment, shall be made for trainees that, once selected, do not attend or only partially complete structured training courses. The Contractor's own staff may attend the courses provided. However, such attendants from the Contractor's staff shall not be considered for measurement and payment purposes unless they also qualify as Targeted Labour.

D10.07 Community Development Works	
(a) Community Development Works	Provisional (Prov) Sum
(b) Handling cost and profit in respect of sub-item D10.07(a)	Percentage (%)

The provisional sums under sub-items D10.07(a) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract.

The tendered percentage for subitem D10.07(b) is the percentage of the amount actually spent under subitem D10.07(a), and shall include full compensation for the Contractor's handling costs, profit or any other costs associated with the work.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R335-010-2017/1

FOR THE IMPROVEMENT OF NATIONAL ROUTE R335 FROM MOTHERWELL (KM 5.16) TO
ADDO TOWN (KM 37.16)

PHASE 1: KM 5.16 TO KM 27.5

**SECTION E: REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND
REGULATIONS**

Note to tenderer:

Wherever reference is made in this section of the Scope of Works to contractor this is the equivalent of the *principal contractor* in the Occupational Health and Safety Act and Regulations. Similarly, reference to subcontractors is equivalent to *other contractors*.

SECTION E: REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS

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E1001 SCOPE

The Occupational Health and Safety Act, Act 85 of 1993 (OHS Act) and its Regulations together with SANS Codes set out minimum standards with regards to Occupational Health and Safety. The South African National Roads Agency SOC Limited (SANRAL), has developed this Occupational Health and Safety Specifications with these minimum standards in mind and in certain aspects the requirements of SANRAL exceeds the minimum legal requirements to follow best practices and to ensure a healthy and safe workplace for all.

SANRAL in no way assumes The Principal Contractors legal liabilities and responsibilities. The Principal Contractor is and remains accountable for the quality and execution of his health and safety program for his employees. This Health and Safety Specification reflects minimum legal and SANRAL requirements and should not be construed as all encompassing.

It is realized that The Principal Contractor have its own Health and Safety Management system and safe work practices. The intention of this Health and Safety Specification is not to change The Principal Contractors Health and Safety management system, but for The Principal Contractor to use its current Health and Safety management system to draw up a project specific Health and Safety plan according to these specifications as well as to legally comply with the any applicable Regulations under the OHS Act and incorporated Standards.

It is the responsibility of the Principal Contractor and other Contractors to make themselves conversant and comply with the requirements and conditions contained in the various legislation pertaining to their profession and scope of works at all times.

This specification is not exhaustive of all duties imposed by the OHS Act and its Regulations, governing the duties and obligations, of a Designer, Principal Contractor and Contractor performing duties in terms of an agreement with the client (SANRAL). These duties are fully described in the OHS Act and its Regulations and it is the duty of every Designer, Principal Contractor and Contractor to acquaint themselves therewith before commencing work.

This specification is compiled to ensure that the Principal Contractor and any other Contractors working for SANRAL directly or through a Principal Contractor, are aware of the Occupational Health and Safety requirements when working on a SANRAL contract, as well as to make them aware of their legal liabilities and responsibilities as per the Occupational Health & Safety Act, Act 85 of 1993, and its Regulations.

Words used herein in the singular shall be deemed to include the plural and male shall include female and vice versa unless the context otherwise requires.

E1002 DEFINITIONS AND ABBREVIATIONS

Assessment – An opinion or a judgment about someone or something that has been thought about very carefully.

At-risk behavior – Conduct that unnecessarily increases the likelihood of an injury or incident.

Audit – A systematic and documented review of the effectiveness of implementation of processes, programs and procedures, based on general process criteria.

Baseline risk assessment: This is the initial assessment of risk in a workplace. It is a broad assessment and includes all activities taking place on site but does not include risk control measures or safeguards.

Client – Any organization or person for whom construction work is performed. For the purpose of this document, the client is the South African National Roads Agency SOC Limited, also identified in the contract document as the Employer.

Competence – A combination of attributes such as knowledge, training, experience and qualifications to assure successful performance.

Competent Person – Means a person who has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No. 67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the Act and with the applicable regulations made under the Act.

Consequence – Outcome or impact of an event.

Continual Improvement – A recurring process of enhancing performance to achieve consistent improvements in overall performance.

Contractor – An employer as defined in section 1 of the OHS Act, who performs construction work and includes Principal Contractors and Sub-Contractors.

Construction Work – any work in connection with:

- The construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- The construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work.

Corrective Action – An action taken to eliminate the cause of a detected non-conformity or other undesirable situation.

Construction Regulations (CR) – Construction Regulations, GNR. 84 of 2014

Critical equipment – A piece of equipment or a structure whose failure to perform to design specification, has the potential to result in a major accident event.

Design – in relation to any structure, includes drawings, calculations, design details and specifications.

Designer –

- a) competent person who:
 - Prepares a design;
 - Checks and approves a design;
 - Arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or
 - Designs temporary work, including its components;
- b) an architect or engineer contributing to, or having overall responsibility for a design;
- c) a building services engineer designing details for fixed plant;
- d) a surveyor specifying articles or drawing up specifications;
- e) a contractor carrying out design work as part of a design and building project; or
- f) an interior designer, shop fitter or landscape architect.

DMR – Driven Machinery Regulations, GNR. 295 of 26 February 1988

Documents – Structured units of recorded information and its supporting medium (paper or electronic). Most records are documents, but not all documents are records. A document becomes a record when it is part of a business transaction, is kept as evidence of that transaction and is managed within a record-keeping system.

EIR – Electrical Installation Regulations, GNR. 242 of 6 March 2009

Emergency – An abnormal occurrence that pose a threat to the safety or health of employees, customers, or local communities, or which can cause damage to assets or the environment.

Employee – An individual who is employed by or works for an Employer and who receives or is entitled to receive any remuneration or who works under the direction or supervision of an employer or any other person.

Employer – Any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerates him but excludes a labour broker as defined in section 1(1) of the Labour Relations Act, 1956 (Act No. 28 of 1956). The South African National Roads Agency SOC Limited, also identified in the contract document as the Employer.

EMR – Electrical Machinery Regulations, GNR. 250 of 25 March 2011

Environment – The surroundings or conditions in which a person, animal or plant lives or operates, including air, water, land, natural resources and habitats.

Epidemic Disease - An *epidemic* disease is one affecting many persons at the same time and spreading from person to person in a locality where the disease is not permanently prevalent. The World Health Organization (WHO) further specifies *epidemic* as occurring at the level of a region or community.

Excavation work – The making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping

GAR – General Administrative Regulations, GNR. 929 of 25 June 2003

GMR – General Machinery Regulations, GNR. 1521 of 5 August 1988

GSR – General Safety Regulations, GNR. 1031 of 30 May 1986

Harm – A significant and or long-lasting adverse effect on people, the environment or the community.

Hazard – A source, situation or act with a potential for harm in terms of human injury or ill health.

Health and Safety File – Means a file, or other record in permanent form, containing the information in writing as required by the Construction Regulations, GNR. 84 of 7 February 2014, Section 7(1)(b).

Health and Safety Plan – Means a project specific documented plan in accordance with the client's health and safety specifications, as required by the Construction Regulations, GNR. 84 of 7 February 2014, Section 7(1)(a).

Health and Safety Specification – Means a project specific document prepared by the client pertaining to all health and safety requirements related to construction work, as required by the Construction Regulations, GNR. 84 of 7 February 2014, Section 5(1)(b).

HSE – Health, Safety and Environment. Commonly used in the format HSE.

Incident – Work-related events (including accidents which give rise to injury, ill health, fatality or emergencies) that have resulted in, or has the potential to result in adverse consequences to people, the environment, property, reputation or a combination of these.

Likelihood – A description of probability or frequency, in relation to the chance that something will occur.

Lost Time Injury (LTI) – When a person is injured during the execution of his/her duties and as a result of the injury is unable to perform his/her regular duties for one full shift or more on the day following the day on which the injury has incurred, whether a scheduled work day or not (weekend).

Management System – Management processes and documentation that collectively provide a systematic framework for ensuring that tasks are performed safely, correctly, consistently and effectively to achieve a specified outcome and to drive continual improvement in performance.

Mandatory – An agent, contractor or sub-contractor for work, but without derogating from his status in his own right as an employer or a user.

MSDS – Material Safety Data Sheet

Near Hit / Near Miss – Any occurrence or situation which had the potential for adverse consequences to people, the environment, property, reputation or a combination of these.

Non-conformance – Any deviation from work standards, practices, procedures, regulations that could either directly or indirectly lead to injury or illness, property damage, damage to the environment or a combination of these.

OHS Act – Occupational Health & Safety Act, 85 of 1993

Pandemic Disease - a *pandemic* disease is an *epidemic* disease that has spread over a large area, that is, it is prevalent throughout an entire country, continent, or the whole world.

Policy – Statement by an organization of its intentions and principles in relation to its overall performance which provides a framework for action and for the setting of its objectives and targets.

PPE – Personal Protective Equipment

Preventive Action – An action implemented to eliminate the cause of a potential non-conformity or other undesirable potential situation.

Principal Contractor – An employer appointed by the client to perform construction work and who is in overall control and management of a part of or the whole construction site.

Procedure – A specific documented way to carry out an activity or a process.

Records – Recorded information, in any form that is kept as evidence. Records include monitoring results, evidence of training, audits, inspections and calibration reports.

Risk Assessment – A process of evaluating the risk(s) arising from hazards taking into account the adequacy of any existing controls and deciding whether or not the risk(s) is acceptable.

Risk Management – The ongoing treatment of risks through the application of management policies, processes, procedures and risk control measures.

Risk – A combination of the likelihood of an occurrence of a hazardous event or exposure and the severity of injury or ill health that can be caused by the event or exposure.

Root Cause – The cause of the incident that, when rectified, will prevent the recurrence of not just incidents with those exact circumstances, but others with similar causes.

SACPCMP – South African Council for Project and Construction Management Professions

SANRAL - South African National Roads Agency SOC Limited

Supplier – A person or company that supplies material or equipment to a contractor on a construction site but does not physically carry out construction work on the construction site.

The Act – The Occupational Health and Safety Act No. 85 of 1993

The Site – The area where work is carried out for SANRAL as defined on the front page of this document.

WAH – Acronym for Working at Heights.

E1003 HEALTH AND SAFETY POLICY

Contractors are expected to have their own written Health and Safety Policy. The policy should declare their attitude and approach to the health, safety and welfare of their employees and others. The policy should include a description of the company and provision must be made to review the policy regularly and the CEO or Managing Director must sign and date the policy to indicate his commitment to ensuring the health and safety of his employees, as per Section 7 of the OHS Act.

E1004 ROLES AND RESPONSIBILITIES

Every Contractor is considered to be an employer in his own right and shall comply with all legal requirements pertaining to an employer, which include the responsibility to provide as far as reasonably practicable a safe and healthy working environment for his employees, as per Section 8 of the OHS Act.

In conjunction with Section 8 of the OHS Act, all employees on the project are responsible for their own health and safety as well as the safety of persons who may be affected by their acts, as per Section 14 of the OHS Act. It is the responsibility of each employee to ensure that he acts in a safe manner before and during work is carried out.

The Principal Contractor shall ensure that where required by the OHS Act and Regulations, competent employees are appointed in writing. These appointments must be project/contract specific and specific to the tasks that will be performed. Every appointment must display the duties of the person appointed and training certificates from a registered training provider must be attached to such appointment (where applicable). A list of possible appointments can be found in clause E1010 below.

E1005 HSE TRAINING AND COMPETENCE

Where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2000 (Act No. 67 of 2000), those qualifications and training must be regarded as the required qualifications and training and employees must have attended courses of the aforementioned nature to be considered competent in the task.

All employees that forms part of the construction work must be trained and competent. Employees formally appointed to perform a certain duty must be in possession of a training certificate (where applicable), received from a registered training provider. All employees must as a minimum have received site specific safety induction training and must receive daily safe task instruction training (DSTI) before any work commences and thereafter on a daily basis.

a) Training Needs

There shall be a system in place to determine the training requirements of each individual, based on the tasks that the employee will perform as well as to ensure the health and safety of fellow employees and the public. Special attention should be given to employees who are new hires, new to the task or have combined responsibilities.

b) Basic Safe Work Training (Induction Training)

Every contractor shall ensure that his employees are inducted into his own company Health and Safety System as well as basic safe work training (HSE Induction Training). The Principal Contractor shall ensure that his, all his Contractor's employees and visitors are inducted on the specific site safety procedures.

A Daily Safe Task Instruction (DSTI) must be conducted on site with all employees involved in the project. The DSTI must be carried out each day before work commences and proof thereof must be available on site. Each work crew may conduct their own specific DSTI to discuss the hazards, risks and control measures associated with their task for the day.

Where two or more contractors or work crews work in the same area, they should have a combined DSTI to ensure they know of the additional hazards the other contractor or work crew will introduce to their operations and what precautions to put in place.

The Principal Contractor shall have evidence that employees have been trained on the relevant procedures prior to and during the project duration. The evidence will be in a form of attendance register.

c) Formal Training

All qualifications for which there are SAQA registered training courses, must be regarded as the minimum required qualifications and training. To be deemed "competent" an employee must have received training at a registered training provider, the training course must be registered and if there is an assessment, the employee must have been found competent after the assessment. A person cannot be deemed competent after awareness training only.

The Principal Contractor shall ensure that his employees, as well as the employees of any contractors that may be used, have received appropriate training for the type of work that will be performed, e.g. First Aid, Flag Man, Mobile Plant Operator, Working at Heights, Risk Assessment training etc.

d) Records

Record of all training shall be kept by the employer and shall be readily available. Records shall make provision for refresher training where applicable. Where an employee is legally appointed with certain duties and responsibilities a copy of the training certificate must be attached to the appointment.

E1006 APPLICATION FOR CONSTRUCTION WORK PERMIT

Construction Regulation, 2014 Section 3 requires that the client apply for a construction work permit at least 30 days before construction work is started, if the intended construction work will:

- exceed 365 days AND will involve more than 3 600 person days of construction work; or
- if the tender value limit is a CIDB grade 7, 8 or 9.

If approved, the provincial director will issue a construction work permit in writing to perform construction work within 30 days of receiving the application and assign a site-specific number for the construction site. It is the intention of SANRAL to apply for a construction work permit as soon as The Principal Contractor is appointed and his Health and Safety Plan is received, in order to minimize construction delays.

The site-specific construction work permit number must be displayed at the main entrance to the site and a copy of the construction work permit must be kept in the principal contractor's health and safety file for inspection purposes.

E1007 DUTIES

Various duties are imposed on the client, designer, principal contractor and other contractors by the Construction Regulation, 2014, Sections 5, 6 & 7. SANRAL will comply and carry out the required duties as contemplated in Section 5 of the Construction Regulations, 2014 and it is expected from the designer and every contractor to make themselves conversant with the requirements and duties imposed on them and to ensure that they comply with the requirements of section 6 & 7 at all times.

E1008 MANAGEMENT AND SUPERVISION

The Principal Contractor shall ensure that the project is managed safely, and legal compliance is ensured at all times.

A full-time competent person must be appointed as a Construction Manager to manage all construction work, including health and safety compliance. The construction manager may not be appointed to manage more than one single construction site. An Alternate Construction Manager must be appointed, to carry out the duties in the absence of the Construction Manager.

The construction manager must appoint construction supervisors responsible for construction activities and ensuring occupation health and safety on the construction site.

The Principal Contractor must appoint a full-time construction health and safety officer, who is registered with the SACPCMP, to assist in the control of health and safety aspects on site.

E1009 RISK MANAGEMENT

The Principal Contractor must follow a formal risk-based approach to ensure hazard control measures are implemented to an acceptable reasonable practical level. The Principal Contractor and his employees shall be responsible to ensure all hazards pertaining to his scope of activity are proactively identified, the risks assessed and appropriately eliminated or minimized and managed on an ongoing basis. Risk assessments shall also identify possible and potential environmental, health and hygiene issues pertaining to each hazard with potential exposures and limits.

a) Risk Assessment

i) Hazard Identification and Risk Assessment (Construction Regulation 9)

The Principal Contractor shall, before the commencement of any construction work or work associated with the aforesaid construction work and during such work, conduct a risk assessment by a competent person, appointed in writing and the risk assessment so produced shall form part of the OH&S plan and be implemented and maintained as contemplated in Construction Regulation 9(1). Competence is a factor of training, knowledge, experience and/or appropriate qualifications.

The risk assessment shall include, as far as is reasonably practicable, at least:

- The task or task step
- the identification hazards to which persons may be exposed to during the task or task step;
- The analysis and evaluation of the risks associated to the hazards identified, inclusive of a residual risk rating methodology. The method to be used is not prescribed;
- a documented plan of safe work procedures, to mitigate, reduce or control those residual risks that have been identified as unacceptably high, by means of the rating system;
- a monitoring plan;
- a review plan, inclusive of dates to be adhered to; and
- Ergonomic related risks are to be analysed, evaluated and addressed as part of the process.

Based on the risk assessments, The Principal Contractor shall develop a set of site-specific OH&S rules that shall be applied to regulate the OH&S aspects of the construction. The risk assessments, together with the site-specific OH&S rules shall be submitted to the Employer before construction on site commences. SANRAL has conducted a Baseline Risk Assessment as per clause E1009 (b) below, which must be used by The Principal Contractor to develop task specific risk assessments before work commences. This does not mean that all possible Risk Assessments must be attended to before work commences, but that all relevant Risk Assessments receive the necessary attention as the contract progresses, and this is the responsibility of The Principal Contractor.

All variations to the scope of work shall similarly be subjected to a risk assessment process.

ii) Risk Assessment Monitoring

The Principal Contractor shall ensure that a monitoring plan for all risk assessments are in place. Risk assessments must be monitored to ensure effectiveness and employee understanding. The monitoring of risk assessments shall be formal, and records thereof shall be available for audit purposes.

iii) Review of Risk Assessment

The Principal Contractor shall review the hazard identification, risk assessments and standard safe working procedures:

- prior to any work activity commencement,
- where changes are affected to the design and construction that result in a change to the risk profile,
- when an incident has occurred, or
- at least quarterly.

The Principal Contractor shall provide the Employer, sub-contractors and all other concerned parties with copies of any changes, alterations or amendments as contemplated above.

Activities carried out without conducting a risk assessment or found to be non-compliant with the risk assessment, will be stopped until such time a risk assessment is compiled, and work is carried out according to the risk assessment.

Risk assessments must be fully communicated to all relevant personnel and must be considered when establishing training, awareness and competency requirements. Records of risk assessment communications must be kept for inspection purposes.

b) **Baseline Risk Assessment**

SANRAL prepared a Baseline Risk Assessment from which the Health and Safety Specifications for this project was prepared. The Baseline Risk Assessment highlights all work for which The Principal Contractor must prepare safe work procedures and or work method statements. It must be noted that the Baseline Risk Assessment is not exhaustive and Principal Contractors are required to identify risks and come up with control measures, this must be identified by Principal Contractor when preparing the Issue Based Risk Assessments.

The Baseline Risk Assessment for this Project can be found in clause E1018.

c) **Continuous Risk Assessment**

The Principal Contractor shall continuously assess the risks of the activities that are carried out. Risk assessments must be in writing, site specific and must be reviewed continuously as per E1009 a(iii) to ensure it is current and it address all the relevant hazards and risks associated with the specific activity at the specific site.

The Risk assessment must be discussed with the whole work crew before the activity starts and the work crew must acknowledge in writing having discussed the risk assessment and that they

understand it. This acknowledgement must be on site and must be available to the client for audit purposes.

E1010 LEGAL COMPLIANCE AND DOCUMENT CONTROL

The Principal Contractor is required to implement systems and procedures to ensure legal compliance through:

- Identification of all relevant HSE legislation, standards and codes applicable to its operations.
- Have available copies of all relevant HSE legislation, standards and codes for reference purposes.
- Update systems and procedures with changed / updated legislation, standards and codes.
- Communicate to all employees any changes that may affect their accountabilities and conformances
- Incorporate any legal requirements into their HSE management system
- Monitor and review their HSE management system for effectiveness.

The Principal Contractor shall, as a minimum, comply with:

- The Occupational Health and Safety Act and Regulations (Act 85 of 1993), an up-to-date copy of which shall be available on site at all times.
- The Compensation for Occupational Injuries and Diseases Act (Act 130 of 1993), an up-to-date copy of which shall be available on site at all times.
- Where work is being carried out on a quarry / borrow pit / "mine", The Principal Contractor shall comply with the Mines Health and Safety Act and Regulations (Act 29 of 1960) and any other OH&S requirements that the mine may specify. An up-to-date copy of the Mines Health and Safety Act and Regulations shall be available on site at all times.

Wherever in the Construction Regulations or this specification there is reference to other regulations (e.g. Construction Regulation 24: Electrical Installations and Machinery on Construction Sites) The Principal Contractor shall be conversant with and shall comply with these regulations.

All legal appointments of The Principal Contractor regarding the Health and Safety of his employees who are to work on the project are addressed and governed by the OHS Act and applicable Regulations. Legal appointments must be in place and must reflect in the project safety file before work commences.

a) Overall Supervision and Responsibility for OH&S

SANRAL will appoint the Principal Contractor in terms of Construction Regulation 5(1)(k). A Mandatory agreement as per Section 37.2 of the OHS Act, shall be signed between SANRAL and the Principal Contractor.

It is a requirement that the Principal Contractor, when he appoints other contractors in terms of Construction Regulations 7(1)(c), 7(1)(d), 7(1)(f) and 7(3) includes in his agreement with such Contractors the following:

- OH&S Act (85 of 1993), Section 37(2) agreement: "Agreement with Mandatory".
- OH&S Act (85 of 1993), Section 16(2) appointee(s) as detailed in his/her/their respective appointment forms. (Where applicable).

The signed Mandatory agreements shall be placed in the project file for reference and for audit trail purposes.

b) Specific Supervision Responsibilities for OH&S

The Principal Contractor shall appoint designated competent employees and/or other competent persons as required by the OHS Act and Regulations, as well as this specification. Appointments shall be in writing and the responsibilities clearly stated together with the period for which the appointment is made. This information shall be communicated to and agreed with the appointees. Where applicable, the training certificate must be attached to the appointment. Notice of appointments shall be submitted to the Employer. All changes shall also be communicated to the Employer.

Below is a list of possible appointments for the project, which is not an all-inclusive list, but for reference purposes only:

Appointment	Legal Reference
Assistant to CEO	OHS Act 16(2)
Health and Safety Representative	OHS Act 17(1)
Nominated Health and Safety Committee Member	OHS Act 19(3)
Contractor (Sub-contractor)	CR 7(1)(c)(v)
Construction Manager	CR 8(1)
Alternate Construction Manager	CR 8(1)
Assistant Construction Manager	CR 8(2)
Health and Safety Officer	CR 8(5)
Construction Supervisor	CR 8(7)
Assistant Construction Supervisor	CR 8(8)
Risk Assessor	CR 9(1)
Fall Protection Plan Developer	CR 10(1)(a)
Structure Inspector	CR 11(2)(a)
Temporary Works Designer	CR 12(1)
Temporary Works Supervisor	CR 12(2)
Excavation Supervisor	CR 13(1)(a)
Demolition Supervisor	CR 14(1)
Competent Person in the use of Explosives	CR 14(11)
Scaffold Supervisor	CR 16(1)
Suspended Platform Supervisor	CR 17(1)
Rope Access Supervisor	CR 18(1)(a)
Material Hoist Inspector	CR 19(8)(a)
Bulk Mixing Plant Supervisor	CR 20(1)
Explosive actuated fastening device Inspector	CR 21(2)(b)
Explosive actuated fastening device cartridge Controller	CR 21(2)(g)(i)
Construction Vehicle & Mobile Plant Operator Authorised	CR 23(1)(d)(i)
Temporary Electrical Installation Controller	CR 24(c)
Stacking and Storage Supervisor	CR 28(a)
Fire Equipment Inspector	CR 29(h)
Incident investigator	GAR 9(2)
Lifting tackle inspector	DMR 18(10)(e)
Ladder inspector	GSR 13(a)
Certified Explosives Manager	ER 12(1)
First Aider GSR	GSR 3(4)
Lifting machine Operator	DMR 18(11)

In addition to the above, the Employer requires that a Traffic Safety Officer be appointed.

It is a requirement that The Principal Contractor shall provide the Employer with an organogram of all sub-contractors that he/she has appointed or intends to appoint and keep this list updated and prominently displayed on site.

c) **Designation of OH&S Representatives (Section 17 of the OH&S Act)**

Where the Principal Contractor employs more than 20 persons (including the employees of sub-contractors) he has to appoint 1 (one) OH&S representative for every 50 employees or part thereof. This is a minimum (legal) requirement. The Principal Contractor may at his own discretion appoint more OH&S representatives according to site specific requirements. General Administrative Regulation 6 requires that the appointment or election of the OH&S representatives be conducted in consultation with employee representatives or employees (Section 17 of the Act and General Administrative Regulation 6 & 7). OH&S representatives shall be designated in writing and the designation shall include the area of responsibility of the person and term of the designation. OH&S representatives must be experienced, permanently employed by The Principal Contractor or his sub-contractors, trained and able to move freely within their designated area of responsibility.

d) **Duties and Functions of the OH&S Representatives (Section 18 of the OH&S Act)**

The Principal Contractor shall ensure that the designated OH&S representatives perform their functions in respect of the workplace or section of the workplace for which they have been appointed. These functions include to conduct continuous monitoring and monthly inspections of their respective areas of responsibility, focusing on unsafe acts and unsafe conditions and report thereon to The Principal Contractor and OH&S Committee. OH&S representatives shall participate in accident or incident investigations. OH&S representatives shall attend all OH&S committee meetings. The complete list of functions can be found in Section 18 of the OHS Act.

e) **Appointment of OH&S Committee (Sections 19 and 20 of the OH&S Act)**

The Principal Contractor shall establish an OH&S committee, which shall meet at least once a month, where two or more Health and Safety Representatives have been appointed. OH&S representatives must be appointed as OH&S committee members. The number of members nominated by management may not exceed the number of OH&S representatives on the committee and must be appointed in writing.

E1011 OPERATIONAL INTEGRITY

The operational integrity of plant, equipment, structures and protective systems must be monitored and assured on an ongoing basis throughout the project cycle. Hazards must be identified, risks assessed and as far as reasonably practicable, eliminated or the risks treated to as low as reasonably practicable (ALARP).

a) **Construction Plant & Equipment**

The Principal Contractor shall maintain all items of plant and equipment necessary to perform the work in a safe condition.

SANRAL reserves the right to inspect items of plant and equipment brought to site and used on site by The Principal Contractor. Should it be found that any item is inadequate, faulty, unsafe or in any other way unsuitable for the safe and satisfactory execution of the work for which it is intended, The Principal Contractor will be advised of such observation/inspection, and The Principal Contractor shall be required to repair, make safe or remove such item from operation and replace it with a safe and adequate substitute.

The Principal Contractor shall ensure that all plant, equipment, and power tools that are brought onto and used on site are:

- Appropriate for the type of work to be performed
- Placed on a register and inspected by a competent person and / or the authorized operator before use, daily or monthly dependent on Legislation.
- Record inspection findings on a register that must be kept on site.
- The inspection register shall reflect the serial number of the plant, equipment or power tool.
- Maintained and used in accordance with the manufacturers' recommendations
- Have adequate machine guarding fitted to all exposed rotating or moving parts, as reasonably practicable, that have the potential to cause harm

- All electrical power supply units are protected with operational earth leakage devices.
- Any defective, damaged or sub-standard equipment must be marked as unsafe for use and removed from operation as soon as possible

b) **Standards and Registers**

As standard project procedures, The Principal Contractor is expected to:

- Set up an initial set of registers as per the requirements of the OHS Act and Regulations.
- Complete the registers for each piece of plant, tool and equipment brought on and used on site
- Maintain a complete, continuous and comprehensive inspection and service history in these registers or checklists
- Ensure daily, weekly, monthly inspections are done and recorded for all plant, tools & equipment by a competent person and / or authorized operator as required by the OHS Act and Regulations.
- Have the inspection and maintenance records available for audit purposes.

E1012 OCCUPATIONAL HEALTH AND HYGIENE

a) **Medical Fitness for Duty**

All contractor employees shall undergo medical examinations and be certified fit for duty by an Occupational Health Practitioner before they are allowed to work on site.

The medical certificate must be in the form of Annexure 3 of the Construction Regulations and stipulate the possible exposures the employee might be exposed to during the execution of the project.

It is recommended and in the best interest of The Principal Contractor to implement pre-employment, periodic, as well as exit medical surveillance, especially with regards to Section 8 of the Noise Induced Hearing Loss Regulation.

b) **First Aid**

According to GSR 3(4), where more than 10 employees are employed at a workplace/worksites, The Principal Contractor shall ensure that there is at least one trained first aider for every group of 50 employees at the workplace/site. First Aid boxes must be provided where more than 5 employees are employed and must be readily available and accessible for the treatment of injured persons at the workplace.

To ensure immediate treatment of an injured person, it is recommended that all work crews have at least one trained first aider, with a fully stocked first aid box, irrespective of the number of people in the work crew. This is especially important when contractors work at great distances from the nearest emergency facility or town. These persons shall be appointed in writing as the first aiders with their certificates attached as proof of competency.

The minimum contents of the first aid box shall be as per the supplied list in the General Safety Regulations.

All treatments done must be recorded on a register and kept with the first aid box. A trained and appointed first aider must be responsible for the first aid box and its content. Used content must be replenished as soon as possible.

In order to ensure prompt response at the emergency facility it is recommended that the W.CI 2 forms be partially completed with the Employers' details.

c) **Hygiene Facilities**

The Principal Contractor and his contractors shall ensure compliance to Section 30 of the Construction Regulations with regards to facilities on the construction site as well as where accommodation is provided to employees on remote sites. The Principal Contractor shall ensure

that the facilities are kept clean at all times, either through a service provider or self-employed persons. The Principal Contractor shall provide employees with at least one sanitary facility for each sex and for every 30 workers, changing facilities for each sex and sheltered eating areas.

d) Health related Epidemics and Pandemics

The contractor shall, as far as reasonably practicable describe in his health and safety plan how health related epidemics and pandemics will be dealt with. The Employer is aware that this section in the health and safety plan will not speak to specifics, but generic procedures. The Contractor must ensure that the requirements stipulated in the Hazardous Biological Agents (HBA) Regulation are addressed in his health and safety plan, training and information given to staff and procedures implemented on site to prevent health risks on site.

Once the nature and scale of the epidemic or pandemic is known, the Contractor must update his health and safety plan with the relevant information and send the updated plan to the relevant appointed OHS Agent for approval. Once approved, the Contractor must implement the updated health and safety plan and maintain the updated plan on site.

E1013 WASTE MANAGEMENT

The Principal Contractor shall comply with all applicable and relevant Waste management legislation, as well as municipal bylaws applicable to waste management.

The Principal Contractor shall remove all waste generated at the construction site as soon as possible after generation to ensure good housekeeping at all times. The Principal Contractor shall have a waste management plan which must be implemented on the construction site and which will have the objective to ensure that waste is managed according to the Waste Management Hierarchy:

- Reduce what you can. If you cannot reduce then,
- Re-use what you can. If you cannot re-use then,
- Recycle what you can. What you cannot recycle,
- Convert into energy sources. If it cannot be converted to an energy source,
- Dispose of in a landfill – this is only to be done as a last resort and disposed without endangering human health and without using processes or methods which could harm the environment.

E1014 HAZARDOUS SUBSTANCE MANAGEMENT

The Principal Contractor shall ensure that hazardous substances brought onto site are easily identifiable and stored according to the requirements of the General Safety Regulations, GNR. 1031 of 1986, Section 4.

Where flammable liquids are being used or stored, this must be done in a manner which would not cause a fire or explosion hazard.

The Principal Contractor shall have Material Safety Data Sheets (MSDS) readily available for flammable, hazardous and toxic chemical substances and materials brought onto site and shall ensure that his employees are trained in these MSDS's.

Flammable, hazardous or toxic chemical substances may not be stored in empty food or drink containers. Empty flammable, hazardous and toxic containers must be disposed of in a safe manner, which will prevent further use of such a container.

A survey of the construction site must be done during site establishment, to locate any asbestos. Should asbestos be located, the conditions of the Asbestos Regulations, GNR. 155 of 2002 must be followed and complied with.

E1015 CONTRACTORS

a) Consultations, Communications and Liaison

OH&S liaison between the Employer, The Principal Contractor, The Contractors, the designer and other concerned parties will be through the OH&S committee. In addition to the above, communication may be directly to the Employer or his appointed agent, verbally or in writing, as and when the need arises.

Consultation with the workforce on OH&S matters will be through their construction managers and supervisors, OH&S representatives and the OH&S committee. The Principal Contractor shall be responsible for the dissemination of all relevant OH&S information to The Contractors e.g. design changes agreed with the Employer and the designer, instructions by the Employer and/or his/her agent, exchange of information between subcontractors, the reporting of hazardous/dangerous conditions/situations etc. The Principal Contractors' most senior manager on site shall be required to attend all OH&S meetings.

b) Operational Procedures

Each construction activity shall be assessed by The Principal Contractor so as to identify operational procedures that will mitigate against the occurrence of an incident during the execution of each activity. This specification requires The Principal Contractor:

- to be conversant with all relevant Regulations;
- to comply with their provisions;
- to include them in his OH&S plan where relevant

c) Checking, Reporting and Corrective Actions

i) Monthly Audit by Employer (Construction Regulation 5(1)(o))

The Employer will conduct monthly health and safety and document verification audits in compliance with Construction Regulation 5(1)(o) in order to ensure that The Principal Contractor has implemented and is maintaining the agreed and approved OH&S plan.

The Principal Contractor will be provided with a copy of the Health and Safety audit report within seven days after the audit. The Employer or his representative may stop any Principal Contractor from executing a construction activity which poses a threat to the health and safety of persons which is not in accordance with the client's health and safety specification and the Principal contractor's health and safety plan for the specific site.

ii) Other Audits and Inspections by the Employer

The Employer reserves the right to conduct other ad hoc audits and inspections as deemed necessary. This will include site safety walks.

iii) Principal Contractor's Audits and Inspections

The Principal Contractor must conduct his own regular internal audits to verify compliance with his own OH&S management system, as well as with this specification.

The Principal Contractor shall furthermore ensure that each contractor's health & safety plan is being implemented and maintained. The Principal Contractor will ensure that periodic health and safety audits and document verification are conducted at intervals mutually agreed upon between the Principal Contractor and any contractor, but at least once every 30 days.

iv) Inspections by OH&S Representatives and other Appointees

OH&S representatives shall conduct monthly inspections of their areas of responsibility and report thereon to their foreman or supervisor, as well as the OH&S Committee, whilst other appointees shall conduct inspections and report thereon as specified in their appointments e.g. vehicle, plant and machinery drivers, operators and users must conduct daily inspections before start-up.

v) Recording and Review of Inspection Results

All the results of the abovementioned inspections shall be in writing, reviewed at OH&S committee meetings, endorsed by the chairman of the meeting and placed on the OH&S File.

d) **Project Health and Safety Management Plan**

As per Section 5(1) (l) and Section 7(1) (a) of the Construction Regulations of 2014, The Principal Contractor shall develop, implement and administer a Health and Safety Management Plan. The plan shall be in writing and shall be negotiated between The Principal Contractor and SANRAL or designated OHS Agent and must be approved by SANRAL or the designated OHS Agent prior to the commencement of work on site. The plan shall demonstrate management's commitment to ensure employee health and safety as their primary objective during the contract. The H&S plan shall be site and project specific and must address all aspects of the project H&S specification.

e) **Project Health and Safety File**

The Principal Contractor shall compile a project specific Health and Safety File that consist of all the relevant project specific documentation. The Health and Safety file may consist of multiple files, which when combined should contain all the required documentation.

It is recommended that the project specific Health and Safety file contain at least the following:

- Scope and summary of the project as well as any scope changes.
- Notification of Construction Work to DoL / Copy of Work Permit
- Proof of COID registration (Letter of Good Standing)
- Contractor Health and Safety Policy statement signed by management
- Appointment of Principal Contractor
- Mandatory Agreement – OH&S Act 37.2 (Between Employer and Principal Contractor)
- Client Health and Safety specification
- Latest copy of the OHS Act and Regulations
- Company Organogram depicting Health and Safety Responsibilities, including sub-contractors
- Employee list including copy of IDs and medicals
- Project specific Health and Safety Management Plan agreed with the Employer – See E1015(d) above
- Relevant OH&S Legal appointments which includes duties and responsibilities as well as competencies (training certificate)
- Copies of minutes of meetings – OH&S committee and other relevant OH&S meeting minutes
- Site specific Fall Protection Plan (if applicable)
- Risk Assessments
- Contractor Induction material
- Waste management Plan
- Emergency preparedness (first aid, firefighting, emergency plan, etc.)
- Emergency Contact Telephone numbers
- List of hazardous chemical substances used on site
- Material Safety Data Sheets of hazardous chemicals on site
- List of plant & equipment to be used on site
- Inspection Checklists/Registers of plant & equipment and emergency equipment
- List of Sub-contractors including type of work
- Sub-contractor 37.2 Mandatory Agreements
- Sub-contractor appointments which shall include the type of work The Principal Contractor is appointed for.

f) **Contracting Philosophy**

Any site-specific hazards and safety management expectations will be made known to the Principal Contractor prior to the work commencing on site. This will be done through the OH&S Specification for the project. SANRAL as the Employer / Client may specify requirements that are stricter than Legislative requirements in this OH&S Specification. Legal OHS requirements contained in the OHS Act and Regulations, SANS Codes and the project OH&S Specifications are the minimum requirements the Principal Contractor must apply during this contract with regards to Occupational Health and Safety. The Principal Contractor shall implement the minimum OH&S requirements and ensure conformance to these at all times.

g) **Workers Compensation Registration**

The Principal Contractor shall ensure that his employees are covered for any occupational injuries and illnesses in terms of the Occupational Injuries and Diseases Act 130 of 1993, which cover shall remain in place and up to date for the duration of the project.

The Principal Contractor shall ensure that his sub-contractor employees are covered for any occupational injuries and illnesses in terms of the Occupational Injuries and Diseases Act 130 of 1993, which cover shall remain in place and up to date for the duration of the project.

h) **HSE Non-Compliance**

It is a legal duty of the client according to the Construction Regulation 5(1)(q) that a Principal Contractor is stopped from executing any activity which poses a threat to the health and safety of persons. Depending on the seriousness of the non-compliance only the specific activity may be stopped until the non-compliance is rectified or the whole operation may be stopped.

It is also the duty of every employee to take reasonable care of his own health and safety and of other persons who may be affected by his acts as per OHS Act, Section 14(a). Keeping this in mind, it is required of The Principal Contractor to ensure his employees has the right to remove themselves from any unsafe situation or work activity, without any negative consequence to them until such time as The Principal Contractor has made the unsafe situation or activity as safe as practicable possible.

i) **Indemnity by Contractor**

The Principal Contractor shall indemnify the Employer against and from all damages, losses and expenses (including legal fees and expenses) resulting from:

- i) the loss of output and delay caused by the slowing down or partial or total stoppage of work caused by:
 - all or any of The Principal Contractor's workforce as a result of a dispute between all or any of the Principal Contractor's workforce and The Principal Contractor; or
 - all or any of the Principal Contractor's suppliers' difficulty or impossibility to deliver goods or materials needed to perform the Works;
- ii) Any unlawful, riotous or disorderly conduct by or amongst the Principal Contractor's personnel."

j) **The Principal Contractor Conduct**

Guidelines to the most important rules that shall be implemented and maintained by the Principal Contractor:

- Complete compliance to the OH&S Act 85 of 1993 and Regulations,
- Hazard identification and Risk Assessments for all activities,
- Daily communication of DSTI's before work commences, even if it is a repetitive task,
- Safe access and egress to and from work areas,
- Compulsory use of lifelines, Safety Harnesses and Fall Arrestors (Lanyards to be attached at all times), when working in elevated positions,
- Scaffold shall comply with Legal and SANS standards at all times,
- Good housekeeping and stacking practices,
- Safe lifting, rigging and slinging practices,
- Complying to Legal standards for lifting machinery & equipment,

- No lifting in wind conditions exceeding 30km/h (This is a guide and is dependent on risk assessments),
- Securing of tools, equipment and material at heights,
- Wearing of appropriate personal protective equipment as identified in the risk assessment.

Supervisors in charge are responsible for ensuring that the employees are aware of the hazards / risks involved in the work they will be doing/are doing and shall ensure the safety rules are obeyed.

No person shall act in a manner that endangers or is likely to endanger, the safety of any other person, or cause harm to any other person.

An employee who observes any dangerous situation, shall as soon as possible inform the person who is responsible for that section of the site.

Any employee who becomes aware of any person disregarding any safety rules, shall remind that person of the rules. If he persists in disregarding the rules, the matter must be reported to his supervisor.

No person shall damage, alter, remove, render ineffective or interfere with anything that has been provided for the protection of the site, or for the health and safety of persons.

No person shall interfere with or use firefighting equipment without authority and training.

No person in a state of intoxication or condition that render him incapable of controlling himself shall enter or be allowed to enter the site.

No alcohol or illegal drugs shall be taken onto the site.

All safety and warning signs shall be obeyed.

Always be alert of construction vehicles as well as traffic. Never turn your back to oncoming traffic, always have a line of sight.

k) Principal Contractor and Contractor Management

The Principal Contractor shall establish, maintain and ensure that all his contractors establish and maintain OH&S standards and systems as necessary and to comply with the Legal requirements as well as these OH&S specifications.

The Principal Contractor shall be solely responsible for carrying out work on the project, having the highest regard for the health and safety of his employees and people in the vicinity of his work area.

l) Public Health and Safety

The Principal Contractor shall, as far as is reasonably practicable, be responsible for ensuring that non-employees affected by the construction work are made aware of the dangers likely to arise from said construction work as well as the precautionary measures to be observed to avoid or minimise those dangers.

This includes:

- Non- employees entering the site for whatever reason
- The surrounding community
- Passers-by to the site.

E1016 DESIGNING FOR HEALTH, SAFETY AND THE ENVIRONMENT

Designing for safety is a process aimed at minimizing injury, death, property damage or destruction and harm to the environment, by utilizing an approach to identify and eliminate or control hazardous conditions and material during the design process. The Principal Contractor is responsible for appointing

the temporary works Designer and shall ensure that the temporary works Designer implement a process and designs the temporary works in such a way that ensure the safety of employees during the erection, use and dismantling of the temporary works. The temporary work designer shall comply with the duties of the Temporary Work Designer as per the Construction Regulations, 2014 Section 6(2).

The Principal Contractor must communicate the anticipated risks and hazards resulting from the design to his employees and establish safe work procedures for the temporary works.

E1017 INCIDENT MANAGEMENT

The Principal Contractor shall ensure that a culture exists within his company that promotes the recognition, response, reporting and investigation of incidents, including near misses (near hits). The Principal Contractor must implement a procedure for reporting and investigating accidents, incidents and near misses. The Principal Contractor should have a clear objective and target to obtain zero injuries for the duration of the project and such an objective must be communicated to all employees.

Appropriate corrective actions must be implemented, and the applicable learnings must be shared within The Principal Contractors business to prevent a recurrence of the incident or to prevent the near miss from becoming an incident in future.

(a) Incidents and Accidents

The Principal Contractor and his contractors shall coordinate their investigation of all accidents/incidents where employees and non-employees were injured to the extent that he had to be referred for medical treatment by a doctor, hospital or clinic. The results of the investigation shall be entered into an accident/incident register, which must be updated with each accident/incident.

The Principal Contractor shall notify the relevant SANRAL Project Manager and or SANRAL OHS Specialist of any incident/accident within the Principal Contractors or his Contractors area of responsibility in writing as soon as possible.

Although the accident/incident is reported to the client, the Principal Contractor has a responsibility and is required by law to report any Section 24 accidents and incidents to the Department of Labour. Any road traffic accident must be reported to the relevant authorities.

It is essential that the Principal Contractor demonstrate that corrective and preventative action has been taken to prevent a similar incident in future and that it is communicated to all the Principal Contractors affected staff. A copy of the investigation, corrective and preventative action taken as well as the attendance register of the employees who attended the discussion of the incident and the action implemented to prevent a similar incident, must be forwarded to the SANRAL Project Manager and or the SANRAL OHS Specialist.

Investigations must be completed for:

- Near Miss Incidents (To prevent it from becoming an incident)
- First Aid case Incidents
- Medical treatment case Incidents
- Fatalities

(b) Incident Reporting

The Principal Contractor shall provide the Employer with copies of all statutory reports required in terms of the Act within 7 days of the incident occurring. In addition, The Principal Contractor shall update monthly the Disabling Injury Frequency Ratio (DIFR) and display this information on a signboard at the site office.

The Principal Contractor is responsible for collecting, recording, calculating and reporting his and his sub-contractors Health & Safety statistics to the SANRAL OHS Specialist.

The statistics should contain at least the following for all employees of all contractors working on the project:

- Total Number of workers

- Total Number of hours worked (on the SANRAL project)
- Total Number of Near Miss Incidents
- Total Number of First Aid case Incidents
- Total Number of Medical Treatment case Incidents (Excluding Section 24 type incidents)
- Total Number of Section 24 type Incidents
- Preventative actions taken on incidents that have occurred
- Communication to employees and contractors of incidents and preventative actions.

E1018 PROJECT SPECIFIC CONSTRUCTION REQUIREMENTS

The clause contains specific requirements for Contract SANRAL R335-010-2017/1, which must be adhered to in addition to minimum legislative requirements.

a) Baseline Risk Assessment

The following is a list of activities, hazards and risks identified which forms the Baseline Risk Assessment for the project prepared by the Client in terms of Construction Regulation 5(1) (a):

Risks associated for identified activities and hazards:

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	<u>Risk Rating</u> High Medium Low
Site establishment	Extreme temperatures; Pesticides, herbicides, dust. Snakes, bees, spiders, vermin (rats & mice); Portable electrical equipment; Electrical hand tools; Lifting equipment; Aggrieved members of the public.	Heat exhaustion; Dehydration; Poisoning; Fatality / Serious health effect; Silicosis; Electrical shock; Personal Injuries; Falling objects; Strikes / riots	M
Security	Aggrieved members of the public; Uncontrolled people	Protest Riots Theft	M
Loading / Unloading of materials / plant & equipment from trucks	Lifting equipment; Inexperience operators; Inexperienced workers;	Material / plant falling from height; Operator losing control; Employees under / close to suspended loads.	M
Transportation of personnel / materials	Overloaded vehicles; Transportation of workers in vehicles not designed to transport people; Transporting vehicle defective / not roadworthy	Operator losing control of vehicle; Vehicle overturning; Vehicle accidents; Fatality; Serious injuries	H
Erection of temporary site offices / Laboratory	Extreme temperatures; Pesticides, herbicides, dust, cement; Snakes, bees, spiders, vermin (rats & mice); Portable electrical equipment; Electrical hand tools; Lifting equipment; Temporary works;	Heat exhaustion; Poisoning; Fatality / Serious health effect; Silicosis; Electrical shock; Personal Injuries; Falling objects; Strikes / riots	M

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	Risk Rating High Medium Low
	Aggrieved members of the public.		
Working with and handling of hazardous / flammable / toxic materials	Hazardous, flammable and toxic substances	Chemical burns; Fire; Serious injuries; Fatalities	M
Disposal of waste materials	Hazardous waste	Environmental pollution Re-use of containers can have serious health effect on people or fatal.	H
Traffic accommodation / calming	Public vehicles; Extreme temperatures Stop & Go	Employees run over by public vehicles – serious injuries /fatalities Heat exhaustion Public not adhering to stop & go signals / try to bypass stop & go – fatality / serious injuries / vehicle accidents.	H
Working in elevated positions - Working at heights, on slopes, next to excavations, on trucks.	Defective / Inadequate equipment; Improper use or non-use of fall protection equipment; Environmental conditions – rain / strong wind, lighting; Live electrical power lines; Suspension trauma.	Inadequate protection of employees against falls; Electrical Shock; Electrical arching; Slippery work surfaces; Fatality / serious injuries;	H
Stockpiling	Material falling from stockpile	Serious personal injuries; Material damage	M
Operations involving Noise	Noise	Noise induced hearing loss	M
Operations involving Vibration	Vibration	Damage to joints, muscles, circulation and sensory nerves.	M
Working above / near water environments	Working at heights Water environment	Drowning	M
Working near existing services – overhead/underground power cables; telecommunication cables	Electricity	Electrical Shock; Electrical arching; Fire; Burns Fatality Serious injury	H
Working with portable electrical equipment – grinders, circular saws, generators	Electricity Electrical tools Portable electrical equipment	Electrical shock Cuts Personal injuries	M
Lifting / Lowering operations	Elevated objects Lifting machines	Lifting machine / crane overturning;	H

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	Risk Rating High Medium Low
	Improper rigging Electrical cables	Falling objects Dropped loads Strong winds Loads striking personnel, vehicles or equipment. People working underneath High voltage power lines may arch onto crane boom.	
Driving and operation of construction vehicles and mobile plant	Distracted drivers; Recklessness; Impaired driving; Poor visibility; Poor road conditions; Unsecured loads; Uncontrolled vehicle entry; Equipment failure; Public vehicles; Uneven ground surfaces	Fatalities; Serious injuries; Crashes; Vehicles, plant and equipment damage; Workers not seen by operators; Workers working too close to mobile plant and vehicles; Construction vehicles & mobile plant not road worthy / defective; Roll over of construction vehicles / plant.	H
Excavation work	Unstable ground Underground electrical cables; Underground pipelines; Excavation equipment, construction vehicles & plant.	Cave-ins; People falling into excavation; Workers buried in excavation due to cave-ins; Construction vehicles / plant falling into excavation; Fatalities; Serious injuries	H
Use of explosives	Explosives; Flying debris	Fatality; Serious Injuries	M
Gabion work	Manual handling Slopes Slippery Rocks	Personal injuries Trips, Slips & Falls	M
Work adjacent or in proximity of railway lines	Trains	Working too close to railway track can cause train draft to suck workers under trains. People falling onto or in front of trains while working above railway track.	H
Work adjacent or near traffic	Public vehicles	Workers not attentive to approaching vehicles. Drivers not slowing down to indicated speed limit. Drivers losing control of their vehicles.	H
Temporary works – Form work & support work	Temporary works	Falls from height; Collapse of temporary work overloading	H
Demolition work	Demolition equipment Flying debris	Fatality; Serious Injuries;	H

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	Risk Rating <div>High</div> <div>Medium</div> <div>Low</div>
	Explosives;	Damage to equipment; Damage to public assets	
Work adjacent to public property	Construction plant and equipment; Excavation activities; Demolition activities;	Injury to public persons; Damage to public property and assets;	H
Protection of public H&S	Unprotected temporary works; Stockpiles; Incomplete structures.	Public persons accessing construction area, stockpiles and incomplete structures. Fatality / Serious injury to public persons	H
Welfare facilities – drinking water; eating facilities; sanitary facilities	Water not suitable for human consumption; Shortage of water; Hazardous substances; Environmental impact.	Serious health effects; Dehydration Environmental pollution	M
Working in the environment	Bees Snakes Spiders Lighting Strong winds Heavy rain Hot/cold conditions	Poisoning; Fatality / Serious health effect; Electrical shock / burns; Personal Injuries; Slips; Drowning; Heat exhaustion; Dehydration;	M
	Hazardous biological agents	Serious health effects; Fatality; Pandemic; Epidemic	H

b) **Daily Site Attendance Register**

The Principal Contractor shall keep a daily site register so as to be able to identify the entire Contractors personnel on site in case of an emergency or evacuation situation. The attendance register must include permanent as well as temporary workers working on the site.

All contractors shall report to security/reception upon arrival at site. The Principal Contractor will only grant first time access to work on the site if all required documentation has been provided by the contractor and has been approved by the Principal Contractor.

All site visitors, suppliers and any new contractors shall report to security/reception upon arrival at site. All visitors need to sign an attendance register when visiting the site. Visitors include all persons which are not permanently working on the site but excludes temporary site workers. Visitors must undergo site induction training before they are allowed on site to make them aware of the site dangers.

c) **Emergency Numbers / Emergency Evacuation**

A list with emergency numbers must be readily available to first aiders and supervisors. Emergency numbers must be site specific and must display the nearest emergency facilities.

The Principal Contractor shall identify and formulate emergency procedures in the event an incident does occur. The emergency procedures thus identified shall also be included in The Principal Contractor's OH&S plan and communicated as part of induction training. It is the

responsibility of the first aid worker, together with the construction supervisor, to make an assessment regarding the severity of injuries and which actions are appropriate. For example: transfer to a medical facility by ambulance or helicopter.

The Principal Contractor must implement an emergency evacuation procedure on site to ensure that in case of an emergency, all staff will leave their place of work when the emergency siren is sound and proceed to the designated emergency assembly point. The emergency assembly point at the site office must display the sign "Emergency Assembly Point".

An evacuation route diagram must be displayed and visible at strategic points in the site office buildings and on notice boards.

All staff working on site must be given awareness training on the emergency evacuation procedure and evacuation drills must be exercised to ensure all staff know the correct procedure to follow in case of an emergency.

d) **Site Security**

Certain areas where work must be carried out, is recognized unsafe areas and certain other areas may from time to time become unsafe, due to 3rd party actions. The Principal Contractor must, as far as reasonably possible, anticipate unsafe areas and must ensure that his site staff is safe from 3rd party actions, which include but is not limited to:

- Unrests,
- Violent Demonstrations,
- Theft,
- Injury to staff due to 3rd party actions.

The Principal Contractor must, when work is to be carried out in the above-mentioned areas, make provision for security services to accompany site staff during the execution of their work, as The Principal Contractor is responsible for the Health, Safety and Security of his own staff. The provision for security services must form part of The Principal Contractors tender.

e) **Personal Protective Equipment**

Comply with General Safety Regulations, Section 2

The Principal Contractor shall identify the hazards in the workplace and follow the hierarchy of controls to prevent incidents. Where possible, hazards must be eliminated or, where impracticable, mitigate the hazards through implementing control measures. Where mitigated hazards still pose a risk to the health and safety of workers, take steps to protect workers and make it possible for them to work safely and without risk to their health under the hazardous conditions, by wearing personal protective equipment and clothing.

Personal protective equipment (PPE) should, however, be the last resort and there should always first be an attempt to apply engineering and other solutions to mitigate hazardous situations before the wearing of PPE is considered. The hierarchy of hazard control must be followed before the option of personal protective equipment is considered. The following hierarchy of controls must be followed:

- Elimination
- Passive Controls
 - Substitution – Using a cherry picker or man-lift instead of a ladder.
 - Engineering Controls – Installing barrier railings; Installing stairs instead of using vertical ladders.
- Active Controls
 - Administrative policies and procedures
 - Personal protective equipment

Where it is not possible to create an absolutely safe and healthy workplace, the Principal Contractor shall inform employees regarding this and issue, free of charge, suitable equipment to protect them from any hazards being present and that allows them to work safely and without risk to health in the hazardous environment.

It is a further requirement that the Principal Contractor maintain the said equipment, that he instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

Employees do not have the right to refuse to use/wear the equipment prescribed by the Employer and, if it is impossible for an employee to use or wear prescribed protective equipment through health or any other reason, the employee cannot be allowed to continue working under the hazardous condition/s for which the equipment was prescribed but an alternative solution has to be found that may include relocating the employee.

The Principal Contractor shall include in his OH&S plan the PPE he intends issuing to his employees for use during construction and the sanctions he intends to apply in cases of non-conformance by his employees. Conformance to the wearing of PPE shall be discussed at the DSTI and Toolbox Talk meetings.

The Principal Contractor shall ensure that all his personnel, excluding those who are permanently office bound, are equipped with reflective safety jackets and that these are worn at all times when working on site. Any person found not wearing a reflective jacket on site must be removed from the site until such time as he is in possession of and wearing a reflective jacket. Reflective safety jackets shall be kept in good condition and any jackets that are ineffective must immediately be replaced by The Principal Contractor.

f) **Site Supervision**

Comply with Construction Regulation, Section 8

The Principal Contractor shall appoint a competent Construction Manager who shall be responsible for the construction activities and for ensuring occupational health and safety compliance on the construction site.

g) **Working in Elevated Positions**

Comply with Construction Regulation, Section 10

The Principal Contractor shall ensure that a fall protection plan, developed by a competent person who is designated as the Fall Protection Plan Developer, is available on site and understood by all employees who will be working in elevated positions.

All employees working in elevated positions shall protect themselves from falls by wearing a full body harness and the lanyard shall be attached as far as possible above the head of the worker to a life-line or other approved and anchor point indicated in the fall protection plan.

In addition to obvious elevated work activities, work activities which include:

- Working on the edge of an excavation where there is a risk of falling into the excavation; or
- Work on the edge of a vertical drop where there is a risk of falling;

shall be considered work in elevated positions and Section 10 of the Construction Regulations must be adhered to at all times. The hierarchy of controls must be implemented when such activities are carried out. As a minimum the employee must wear PPE as identified in the risk assessment, which shall include a full body harness.

h) **Structures**

Comply with Construction Regulations, Section 11.

The Principal Contractor shall ensure that all practicable measures are taken to prevent the uncontrolled collapse of new or existing structures or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work. No structure may be loaded in a manner which would render it unsafe.

When a structure is of temporary nature, all conditions as required by the Construction Regulations Section 12 - Temporary Works, must also be complied with.

i) **Excavations**

Comply with Construction Regulations, Section 13

The Principal Contractor shall ensure that all excavations are carried out under the supervision of a competent person who has been appointed in writing as Excavation Supervisor.

The Principal Contractor must evaluate the stability of the ground before excavation work begins as well as during excavation work.

Excavations must be barricaded to prevent unauthorized access.

Material removed from excavations, as well as heavy machinery and construction vehicles, must not be closer than 1 meter to the edge of the excavation, to prevent additional loads on the excavation edge, which could cause cave-ins, to prevent construction vehicles from falling into the excavation and to prevent the accumulation of carbon monoxide gas inside the excavation.

The principal contractor and its contractors must cause every excavation which is accessible to the public or which is adjacent to the public roads or thoroughfares, or whereby the safety of persons may be endangered, to be –

- Adequately protected by a barrier or fence and as close to the excavation as is practicable; and
- Provided with warning illuminants or any other boundary indicators that are clearly visible at night or when visibility is poor.

People working in the excavation must be adequately protected from cave-ins, by means of protection systems such as trench boxed and shielding and must have a safe means of access into the excavation and egress from the excavation.

j) **Scaffolding**

Comply with Construction Regulations, Section 16, General Safety Regulations, Section 6 and SANS 10085 – The Design, erection, use and inspection of access scaffolding

The Principal Contractor shall appoint a competent person in writing as scaffolding Supervisor. Scaffolding Inspectors and Scaffolding Erectors must be trained and found competent to carry out scaffolding work. It is important to note that only competent scaffold erectors are allowed to build the scaffolding. The scaffold inspector is not allowed to build the scaffold with the scaffold erector team.

Scaffolding shall be erected according to SANS 10085 and shall be tagged “Unsafe for use” while it is being build and “Safe for Use” after inspection indicated that the scaffold is safe to use. The inspection of the scaffold shall be in writing and proof thereof shall be available for any user of the scaffold as well as for audit purposes.

Scaffold left erected while The Principal Contractor is not in attendance, must be tagged with a “Not Safe for Use” tag and all reasonably practicable measures must be taken to prevent unauthorised access to the scaffold.

Scaffold must be inspected by the competent scaffold inspector on completion of the scaffold build, weekly thereafter or following severe weather conditions.

Hazards such as overhead power lines must be identified before the scaffold is build and must be reflected in the risk assessment.

When using mobile scaffold, employees and materials must be removed from scaffold before moving the mobile scaffold. Hazards such as overhead power lines must be identified before moving mobile scaffold and must reflect in the risk assessment.

k) **Suspended Platforms**

Comply with Construction Regulation, Section 17, SANS 10295-2 - Suspended access equipment Part 2: Temporary suspended platforms (TSPs)

All suspended platform work must be carried out under the supervision of a competent appointed Suspended Platform Supervisor. Suspended platform erectors, operators and inspectors must be competent.

The Principal Contractor must be in possession of a certificate of design for the use of the suspended platform system.

l) **Cranes**

Comply with Construction Regulation, Section 22, Driven Machinery Regulation, Section 18.

Crane operators must be trained and found competent to operate the particular type of lifting machine and have a valid operators card. The crane operator must be in possession of a valid medical certificate of fitness, issued by an occupational health practitioner.

The wind factor should always be taken into consideration when operating cranes and a wind speed device must be fitted so that it provides the operator with an audible warning when the speed exceeds the safe lifting speed. Upon noticing that the wind speed is equal or more than the specified speed limit, the operator should stop immediately.

m) **Construction Vehicles & Mobile Equipment**

Comply with Construction Regulation, Section 23, National Road Traffic Act, 1996

Construction vehicle operators must have received training to operate the class of construction vehicle or mobile equipment and must be in possession of an operator's card as proof of competency. Construction vehicle operators must be authorised in writing and have a medical certificate of fitness issued by an occupational health practitioner to operate the construction vehicle and/or mobile equipment.

All construction vehicles operating on a public road, must be roadworthy, licenced and when operated on a public road, comply with the National Road traffic Act.

n) **Electrical Equipment**

Comply with Construction Regulations, Section 24.

The Principal Contractor shall take adequate steps to ascertain the presence of and guard against danger to workers from electrical cables or apparatus which is under, over or on the site.

The exact location of underground electric power cables must be determined before any excavators are used for excavation purposes.

The location of overhead electrical cables must be assessed when working with cranes and lifting equipment. Injury may be possible from touching the electrical cables with the crane boom, or from arching when the crane boom comes too close to the electrical cable.

All temporary electrical installations must be inspected at least once a week by a competent person and the records of the inspections must be recorded in a register which must be kept on site.

Electrical machinery and extension cords must be in a serviceable condition and must be inspected on a daily basis before use on a construction site by the authorised operator and the inspection checklist must be kept on the construction site.

Comply with Electrical Installation Regulations.

All electrical installations shall be inspected and approved by an accredited electrical inspector and a valid Certificate of Compliance must be issued for the installation.

All electrical installations carried out on site (permanent and temporary) must be in accordance and comply with the Electrical Installation Regulations.

All power supplies and generating units must be fitted with a functional earth leakage device.

o) Temporary Storage of Flammable Liquids

Comply with Construction Regulation, Section 25 and General Safety Regulations, Section 4

The Principal Contractor must ensure storage areas of flammable liquids are well ventilated and “No Smoking” signs are placed at the entrances and ventilation ducts of the storage areas. Firefighting equipment must be available in suitable positions around the storage areas.

The Principal Contractor must ensure that good housekeeping is practiced in and around the flammable storage areas.

p) Water Environments

Comply with Construction Regulation, Section 26.

The Principal Contractor must ensure that a lifejacket forms part of the employees PPE and is worn when the employee is exposed to the risk of drowning, by falling into water.

The risk assessment must make provision for the rescuing of persons in danger of drowning and for preventing employees from falling into the water.

When working next to a river, the Principal Contractor shall put a system in place to monitor the river water level in order to evacuate employee in case of a flood.

When working over water environments, Section 10 of the Construction Regulations – Fall Protection will also apply.

q) Housekeeping

Comply with Construction Regulation, Section 27, Environmental Regulations for Workplaces, Section 6(3).

The Principal Contractor shall ensure that suitable and acceptable housekeeping is continuously implemented and maintained on the construction site. Off-cuts and waste must be removed as soon as practicable.

r) Stacking & Storage of Material, Plant & Equipment

Comply with Construction Regulations, Section 28 and General Safety Regulations, Section 8.

The Principal Contractor shall appoint a competent person in writing with the duty of supervising all stacking and storage operations on site.

Stacking shall only take place in areas specifically demarcated for this purpose. Circular items must be secured with wedges or chocks.

Items removed from a stack shall only take place from the topmost layer of the stack.

Stacks shall not obstruct any fire extinguishing equipment, first aid equipment, electrical switchgear (DB Boxes) and ventilation or lighting installations.

Unstable stacks must be broken down immediately.

s) Fire Precautions

Comply with Construction Regulation, Section 29.

The Principal Contractor must provide his own firefighting equipment that is within the service date and safe for use. Firefighting equipment must be on a register and inspected by a competent person who has been appointed in writing.

Suitable and sufficient fire extinguishing equipment must be placed at strategic locations and a sufficient number of firefighters must be available, which must be trained in the use of it.

t) **Intoxicating Liquor and Drugs**

Comply with General Safety Regulations, Section 2A.

The principal Contractor must compile a Substance Abuse Policy, which must be communicated to all employees. This policy should form part of the induction material for employees as well as visitors.

The Substance Abuse Policy should set the limit for intoxication to zero in order to complement a vision of zero tolerance.

Any person found to be intoxicated, or consuming intoxicating liquor or illegal drugs, shall not be allowed onto the premises and/or must be removed from the premises.

The Principal Contractor has the right to test any person entering the premises for intoxicating liquor or illegal drugs and may refuse entrance on the basis of the outcome of the test.

The Principal Contractor shall ensure that employees taking prescription medicine informs the Principal Contractor of such and shall ensure that the side effect of such medicine does not constitute a hazard to the employee himself or people working with, or in close proximity to the employee.

u) **Confined Space Work & Tunnelling**

Comply with Construction Regulation, Section 15 and General Safety Regulations, Section 5.

The Principal Contractor shall ensure that only authorized persons enter confined spaces.

An entrance log must be kept to ensure people are not left inside the confined space. Adequate air monitoring must be carried out before entering the confined space. When air monitoring indicated the oxygen to be less than 20% by volume, the confined space must be purged and ventilated to obtain a safe atmosphere or self-contained breathing apparatus must be used.

v) **Site Services**

The Principal Contractor shall provide and maintain on the site adequate facilities for employees to use, which must be serviced and kept sanitary and hygienic at all. The following site services should be taken not of:

i) Drinking Water

The Principal Contractor must ensure that an adequate supply of potable drinking water is available for all persons engaged in managing and working on the construction site and, if necessary, similar facilities elsewhere for such personnel off the site. Employees working in hot conditions must consume enough water per hour to prevent dehydration.

Where water is unsafe for human consumption, it must be so indicated by means of adequate signage.

ii) Accommodation

The Principal Contractor shall comply with the requirements of Construction Regulation 30 with regards to employee's accommodation. Reasonable and suitable living accommodation must be provided to employees who are far removed from their homes.

iii) Sanitary Facilities

The Principal Contractor shall comply with the requirements of Construction Regulation 30 with regards to employee's sanitary facilities. Sanitary facilities must be positioned in close

proximity of the work area. Sanitary facilities must be serviced regularly and kept in a clean and hygienic condition.

w) Traffic Accommodation

The Principal Contractor must develop a clear Traffic Management Plan, which must be approved by the Engineer. Traffic must be organized and controlled in accordance to the Traffic Management Plan and any work area must have adequate signage, signaling or other control arrangements to guard against the dangers relating to the movement of vehicles. Where reasonably practicable, solid barriers must be placed between workers and traffic passing by.

When the Principal Contractor is executing night work, permission should be obtained from the Engineer. The Principal Contractor must put in place visible or reflective signs that can be seen by motorist at a distance. If a stop and go method is used flag persons must be properly trained on how to control the traffic.

The contractor shall however remain responsible to identify, assess, implement the controls and the mitigation of all risk associated with the traffic accommodation plan should he choose to accept the proposed traffic accommodation plan as his own.

Traffic accommodation must be done strictly in accordance with the South African Road Safety Manual and Road Traffic Signs Manual Volume 2, Chapter 13

Special attention must be afforded to amongst others, the following:

- Ensure safe access to/egress from the works during hauling activities
- Enforcing traffic control and access restrictions on construction vehicles

x) Blasting

Blasting operations must be adequately managed and comply with all legal requirements to include amongst, the following:

- Ensure the operations are under the immediate supervision and control of a person in possession of a valid permit
- Ensure to obtain the necessary possession and transport permits
- Ensure to cooperate with the PC (Principal Contractor)
- Ensure the site safety and security before, during and after blasting
- Ensure to prepare blast plans and keep records
- Ensure to provide PPE
- Ensure to manage misfires

y) Temporary Works

The Contractor shall appoint a competent Temporary works designer as contemplated in CR 12(1) to ensure the following:

- Detailed activity-specific drawings pertaining to the design are available on site
- Ensure to appoint a competent person to supervise temporary works
- Ensure that the temporary structures are done with close reference to the drawings
- Ensure that the temporary work structures are adequately erected, supported, braced and maintained by a competent person to support anticipated loads.
- Ensure that the foundation conditions are suitable to withstand the structure and the anticipated loads
- Ensure that the temporary work structures are not overloaded
- Ensure that adequate safe access is provided

- Ensure all persons required to erect, move and dismantle temporary works structures receive adequate training and instruction
- Ensure that all equipment is carefully examined by a competent person before use
- Ensure that temporary works structures are inspected by a competent person and the results recorded in a register:
 - Before, during and after the placement of concrete
 - Inclement weather or any other imposed load
 - At least on a daily basis
- Ensure that temporary works structures that are found to be weakened and its integrity compromised, it is safely removed or reinforced immediately
- Ensure that no concrete is placed until authorized in writing by the competent person
- Ensure that curing times are adhered to and temporary works structures are only removed until authorized in writing by the competent person

z) Special Instructions

Construction activities must be adequately segregated from the general public with the development and implementations of the following:

- Site establishment plan
- Hoarding plan
- Traffic accommodation plan
- Road traffic management plan
- The Principal Contractor shall keep a daily site register so as to be able to identify the entire Contractors personnel on-site in case of an emergency or evacuation situation. The attendance register must include permanent as well as temporary workers working on the site.
- All site visitors and any new contractors shall report to security/reception upon arrival at the site. The Principal Contractor will only be granted first-time access to work on the site if all required documentation has been provided and approved.
- All visitors need to sign an attendance register when visiting the site. Visitors include all persons who are not permanently working on the site, but excludes temporary site workers. Visitors must undergo site induction training before they are allowed on site to make them aware of the site dangers
- The transportation of workers in open vehicles is prohibited and the Principal Contractor must make provision for the cost to transport workers in a safe manner to and from the site. This applies to contractors and SMME's.
- An adequate Emergency Preparedness and Response Procedure must be developed and maintained.
- In mitigation of immediate emergency response and irrespective of minimum legal requirements, a competent first aider and box must be deployed with each team. Additionally, adequate emergency routes must be maintained and communicated to all IAP's
- Adequate provision must also be made to engage the services of a security services provider to protect persons and equipment in the eventuality of criminality
- Adequate welfare facilities must be introduced and maintained to include the availability of potable water.
- An adequate process must be implemented to identify all potentially affected services with the introduction of controls measures to protect and safely conduct the construction work.

- Additionally, a communication plan to include all services owner must be developed and implemented
- Adequate provision must be made for PPE in mitigation of the exposure to environmental conditions

aa) Demolition work

Demolition work must be adequately managed and comply with all legal requirements to include amongst, the following:

- Ensure that a competent person conduct a detailed structural engineering survey and develop a procedure to be followed in demolishing the structure
- Ensure that a competent person conduct a detailed survey of all services and hazards that may be present
- Ensure to appoint a competent person in writing to supervise demolition work
- Ensure that a Demolition Plan is developed to include amongst others, the following:
 - Identification of services/hazards and the method of making them safe
 - Method to protect adjacent structures and services
 - Safe access
 - Sequence and method of demolition
 - Support, shoring and bracing requirements
 - The requirement of catch platforms and hoarding to control debris
 - The requirement of chutes to move demolished material from heights
- Ensure that the structural integrity is checked at intervals as contemplated in the method statement by the competent person

bb) Occupational hygiene stressors

Exposure as detailed below will be experienced during the cause of this project:

Type	Exposure
Chemical	Dust, smoke, fumes, mists, gasses
Physical	Illumination, noise, vibration, radiation, temperature
Ergonomic	Heavy lifting, unnatural posture, repetitive motion
Psychological	Shift work, working away from home, phobia
Biological	Poor hygiene, insect and snake bites

Occupational Hygiene Stressors must be adequately managed and comply with all legal requirements.

Control measures must be developed and maintained if elimination is impracticable to include amongst others, the following:

- Suppression, extraction and venting techniques must be implemented and maintained where practicable
- Selection and placement through medical and psychological examination
- Adequate provision and maintenance of manual handling devices and aids

- Adequate provision for the selection and procurement of plant and equipment with occupational hygiene dampeners
- Adequate management of OEL (Operating Exposure Limit) and duty rosters
- Adequate provision of hygiene facilities
- Adequate provision for awareness communication of wellness and personal hygiene
- Adequate provision of PPE
- Adequate provision for medical surveillance and remedial action
- Ordinary construction work
- Ordinary construction activities and processes must be adequately managed and comply with all legal requirements.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R335-010-2017/1
FOR THE IMPROVEMENT OF NATIONAL ROUTE R335 FROM MOTHERWELL (KM 5.16) TO
ADDO TOWN (KM 37.16)
PHASE 1: KM 5.16 TO KM 27.5

SECTION F: STREET LIGHTING

SECTION F: STREET LIGHTING

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F1 SCOPE

The work covered by this contract comprises the supply, delivery, installation, testing, commissioning, handing over in working order and maintaining for the Defects Liability Period of the MV, LV and Street lighting reticulation network as fully detailed in the documentation and on the accompanying drawings.

The work involved and for which the Contractor must allow is briefly as follows:

- All equipment supplied to be Nelson Mandela Bay Municipality and Eskom approved
- Connect to Municipal points of supply (underground and overhead)
- Cabling (MV & LV)
- Miniature Substations
- Pole mounted transformers
- Distribution kiosks
- Street lighting
- Excavation and backfill
- Earthing
- Cable Terminations
- All excavation, reinstatement and removal of excess spoil from site necessary to complete the above, including provision of imported backfill and the shoring of trench walls where necessary.
- Provision of the requested information as stated elsewhere herein.
- Testing and commissioning.
- Provision of as-built drawings, operating and maintenance instructions and manuals.
- Guarantee of equipment and installation against all defects for a period of 12 months after handover.

F2 SITE LOCATION AND DESCRIPTION

F2.1 Site location

The site is situated on the R335 road at Motherwell in Nelson Mandela Bay Municipality.

The full extent of the site is indicated on the tender drawings.

F3 SUPPLY AUTHORITY

The Electricity Supply Authority is Nelson Mandela Bay Municipality.

F4 GENERAL PARTICULARS OF ELECTRICITY SUPPLY SYSTEM

The electricity system is an 11 kV: 400V/230V 3 phase, 50 Hz 4 wire system with neutrals solidly earthed at the transformers.

The phase rotation is standard anticlockwise and shall be maintained on all cables transformers, switchgear and distribution equipment.

F5 CONTRACTORS RESPONSIBILITY

F5.1 The works

The Contractor shall be responsible for the supply, factory testing, delivery to site, offloading, storage until required, installation, erection, site testing, commissioning and handing over in working order the electrical reticulation system detailed by this Specification and the accompanying drawings. The Contractor shall provide all materials, equipment and services necessary for the complete, safe and efficient progress and completion of the Contract.

F5.2 Isolation of electrical services

The Contractor shall arrange timeously with the Supply Authority for the isolation and earthing of the existing electrical services as and when required.

The Contractor shall ensure that the unnecessary interrupting of electrical services is avoided and shall schedule the work to minimise power outages.

The Contractor shall draw up and submit to the Main Contractor a programme of works. Where applicable the programme of works shall be drawn up in close collaboration with the Main Contractor. Liaison with the Main Contractor shall be the responsibility of the Electrical Contractor.

Should the programme be altered for any reason prior to completion of the Contract then the Contractor shall submit the revised programme to the Main Contractor.

F6 WORK BY OTHERS

None.

F7 DELIVERY AND STORAGE

The Contractor shall make his own arrangements for the provision, transport, offloading and storage of materials and shall provide his own handling plant. Under no circumstances shall he expect or request the Supply Authority or the Employer to provide, take delivery of or to store materials on his behalf.

F8 INSPECTION AND TESTS

The Engineer reserves the right to inspect any equipment being manufactured in terms of the Contract, and to require that up to 5% of such equipment be subjected to such tests as may be defined in writing by the Engineer prior to delivery to site of the said equipment. All such tests shall be carried out in the presence of the Engineer.

Any waiving of this right does not relieve the Contractor of supplying and installing equipment in full accordance with the Contract and to the approval of the Engineer. In the event of inspection and testing being required the detail of this requirement will be conveyed in writing.

F9 EARTHING

F9.1 General

All accessible conductors, portions of electrical plant or apparatus which do not form part of an electrical circuit and which become alive accidentally, shall be bonded to earth.

The LV distribution system shall be earthed in accordance with the TN-C-S earthing system.

F10 MINIATURE SUBSTATION

F10.1 General

The miniature substation shall be installed in the position as indicated on the drawings. These positions are indicated on the tender drawings. This section comprises the supply, delivery and installation of Type B miniature substations (mini-sub) as subsequently specified in accordance with NRS 004.

F10.2 Ratings

Transformer power rating	200 kVA
Nominal voltage of system	11 kV
System frequency	50 Hz
Number of phases	Three (3)
Rated no-load secondary voltage	415 Vrms
Rated power frequency voltage	12 kVrms
Rated lightning impulse withstand voltage	95 kV peak
Rated short-duration power frequency withstand voltage (50Hz : 1 min)	28 kVrms
Induced voltage withstand level	22 kVrms

F10.3 Construction Design

Layout : Type B

Construction : Modular

Require removable base sections adjacent to MV compartment (sections to lap bolted with nuts on the inside of the channel and housing).

Require concealed door and roof hinges.

Overall length : 2.8 m

Overall width : 1.124 m

Base width : 0.8 m

Provision shall be made for lifting of complete miniature substation on a concrete plinth without need for dismantling.

Provision shall be made for lifting lugs on roof for ease of removal.

In terms of NRS 004 the MV switchgear, LV panel and transformer shall be confined to separate compartments.

All miniature substation housing sections/doors to be electrically bonded.

F10.4 Transformer Unit

Electrical requirements	As per SABS 780
Vector group	Dyn 11
Oil indication	is required
LV transformer neutral earthing	Solid earthing
MV system fault level	25 kA
Temperature rise limits	As per SANS 780 : Table 6
Secondary voltage regulation (%)	± 6.0, + 3.0, 0, - 3.0, - 6.0
The transformer unit to be sealed (Welded cover)	
The transformer MV bushings internal screen to be earthed and to comply with BS7215, Type C with M16X2 thread	
Clearances:	
MV bushing-centre clearances	105mm (minimum)
Outer bushing-centres and minisub metal enclosure	90mm (minimum)
The winding material (MV and LV) to be Copper	

F10.5 MV Compartment

The MV compartment shall be equipped with a SF6 ABB Safering type CCV 3-way non extensible ring main unit complete or equivalent with cable end-boxes suitable for terminating the 11 kV cable specified elsewhere herein.

The MV compartment shall have a front door only.

Incoming MV cable requirements:

- a) Two x 3-core cables
- b) Cable material : Copper
- c) Maximum size of core cross section : 185 mm²
- d) Type of cable : PILEGDSTA
- e) Cable support (clamping) is required
- f) Cable identification tags

Allow for Type A earth fault indicator (SCSSCABA9)

F10.6 LV Compartment

A main 300A LV isolating switch shall be provided in the LV compartment to isolate the LV busbar from the transformer.

The switch disconnecter shall comply with the requirements of IEC 60947-3.

Busbar rating to be 400A.

In terms of NRS 004 the current density of the busbars shall be 1.8 A/mm² maximum.

The rated withstand current shall be 25 kA for 1 second.

The minimum clearance to earth and between phases shall be 20 mm.

An LV neutral surge arrester as per D-DT-3088 shall be fitted between the mini substation earth bar and LV neutral earth busbar.

The LV neutral earth busbar shall be earthed (via an electrical bridge to the minisub earth bar).

Provision shall be made for six(6) number of outgoing LV feeder bays (drill busbar Ø 14 mm holes, 110 mm spacing between holes).

The LV panel shall be designed for LV large frame circuit breakers..

Spacing (vertical):

- a. Between phase busbars : 185 mm
- b. Between lowest LV busbar and LV neutral : 300 mm
- c. Between LV neutral and gland plates : 200 mm
- d. LV maximum demand Ammeters are required on all three phases.

A Thermal integrating over 15-min-period Ammeter shall be provided.

An LV indicating voltmeter (with a selector switch) shall be provided.

The Ammeter and voltmeter shall be positioned on the top right hand side in LV compartment and have the following size and display : 96 x 96 mm, 90°.

A non-flammable removable barrier shall be provided to separate the LV end compartment and front LV compartment.

F10.7 LV Outgoing Feeder Bay Gland Plates

The following shall be provided:

- a) One gland plate per LV feeder bay
- b) Two gland holes per LV feeder bays
- c) The hole sizes: 1 x M63
1 x M32
- d) The distance between gland plate centre lines to be 110 mm

F10.8 LV Auxiliaries

The following shall be provided for:

Main circuit breaker : 3 Pole 300 Amp moulded case circuit breaker with thermal overloading and magnetic instant fault protection. The fault current capacity shall be 25 kA.

Street lighting : 1 x 25 kA, tripple pole moulded case circuit breaker with thermal over current and instant magnetic fault protection.

One three phase, electronic kWh energy meter suitable for 400 Volt and 0 - 80 Amp. Or three single phase units.

One control contactor with coil, suitable for 242 Volt continuous operations and with 3 contacts suitable for the switching of 80 Amp per phase.

One HRC fuse holder, complete with base and 80 Amp HRC fuses (80 ka) for 242 Volts.

One photocell with a single pole by-pass switch.

Feeder circuit breakers	: 3 x 60 Amp, 5 kA, single pole circuit breaker with thermal over current and instant magnetic fault protection.
Low tension distribution	: Extra positions for nine non-adjustable moulded case distribution circuit breakers (mixed load) feeder circuit breakers. Minimum 25kA.
Measuring	: 1 x A1700 ELSTER meter with 3 x 1000/5 current transformers on load side of main circuit breaker for total consumption purposes meters to be protected by a 1 x 5 Amp 5 kA C2 T/P circuit breaker (4 mm ² wiring)
Light	1 x 15W energy efficient lamp (bulk head) with switch protected by a 1 Amp fuse (2,5 mm ² wiring)
Earth fault indicator	1 x earth fault indicator with supply point protected by a 2 Amp fuse (1,5 mm ² wiring) Earth fault indicator unit to be installed in the HV compartment
Plug	1 x 3 point (15 Amp) plug point, protected by a 20 Amp fuse (2.5 mm ² wiring) with double pole C/B / E/L unit.

F10.9 Materials and Corrosion Protection

The miniature substations shall be manufactured from plate metal. All sides shall be welded so as to prevent entry by rodents.

The finishing shall be as follows:

- Subsequent to manufacture, the entire box, the base, roof, as well as the radiator, shall undergo a hot dipped galvanising process according to BSS 729 of 1961.
- Subsequent to galvanising, an approved etch primer shall be applied and thereafter a layer of red oxide/zinc chromate priming coat before submerging it in one layer alkaline based synthetic enamel outdoor paint.
- 3CR12 steel will also be acceptable, on condition that it is handled and treated correctly.
- The final finish shall be of high quality enamel paint to resemble the colour "LIGHT PASTEL GREY" according to SANS 1091-1975 Code G69.
- All doors will be equipped with a New Risi locking mechanism and the necessary danger signs. Doors will also have a device to support door when opened.
- A pre-drilled cable gland mounting plate with the following holes must be provided: 6 x 75mm, 6 x 63mm, 6 x 50mm, 6 x 32mm and 6 x 25mm or rail for K-clamps or lead-in tubes.

F10.10 Concrete Plinth

The mini-substation plinth shall be cast in accordance with Eskom Drawing D-DT-0859, Sheet 7 of 7 or equivalent approved. The design shall be that of the tenderer and approved by the Engineer.

A 20mm thick wax-impregnated polyurethane foam strip ("Sondorband" or similar approved) shall be placed between the minisub base frame and the plinth. The inside of the plinth shall be filled with sifted sand to a level of 30mm below the top surface of the plinth. The remaining 30mm to the top of the plinth shall be filled with a 6:1 sand/cement screed that is neatly levelled and compacted.

F10.11 Notices, Signs and Labels

Transformer rating plate information

In addition to the relevant requirements of SANS 780, the following information shall be clearly shown on the transformer rating plate:

- (a) The manufacturer's name and year of manufacture.
- (b) The serial number
- (c) Order number.
- (d) The statement: "Corrosion protected in accordance with relevant specification".
- (e) The total mass of the mini-sub.
- (f) The rating plate shall be permanently affixed in a prominent position at the LV transformer terminals so that it is clearly visible when the door to the LV compartment is open.

Signs

A sign depicting "Treatment and Full First Aid Instructions" shall be permanently attached to the inside of the MV and LV compartment doors.

External aluminium or 'Chromadek' electrical symbolic MV warning signs (warning-flash, see **D-DT-3202**, sheet 6 of 7) and LV warning signs (warning-flash, see **D-DT-3202** sheet 4 of 7) shall be permanently attached to all the doors. If pop-rivets are used to attach the signs to the mini-sub doors, only aircraft or blind pop-rivets will be acceptable. Normal pop-rivets are not acceptable.

The barrier used to barricade the air insulated cable junction box of the 11 kV Type A mini-sub shall have a sticker applied to it depicting an electrical symbolic warning sign (warning against "Unauthorized entry").

The barrier used to barricade the LV bushings of the transformer shall have a sticker applied to it depicting an electrical symbolic warning sign (warning against "Unauthorized entry").

Labels

Labels with black engraved "Trafalite" with white letters shall be provided and mounted with a suitable slide-in frame.

<u>ITEM</u>	<u>APPARATUS</u>	<u>HEADING</u>	<u>LETTER TYPE</u>
(i)	900 Amp Circuit breaker	MAIN CIRCUIT BREAKER	12mm
(ii)	1 X ELSTER Meter	BULK METER	12mm
(iii)	1 x 80 Amp triple pole circuit breakers	MAIN SUPPLY STREET LIGHTING	12mm
	Electronic kWh meter	STREETLIGHT METER	6mm
	2 Amp HRC fuses	CONTROL SUPPLY	6mm

	Test switch	TEST	6mm
	3 x 60 Amp single pole circuit breakers	STREETLIGHTS 1, 2 AND 3	6mm
(iv)	Light	LIGHT	6mm
(v)	Earth Fault indicator	EARTH FAULT INDICATOR	6mm
(vi)	Plug	PLUG	6mm

Labels shall be painted in the middle of the transformer section of the miniature substation against the vertical side, as well as on the inside of the LV door of the miniature substation. Labels must be mounted not more than 100mm from the roof of the miniature substation under the overhang.

All LV auxilliary and additional equipment provided in the LV compartment shall be labelled and securely fixed by means of pop-rivets.

A label shall be provided in the LV compartment adjacent to the control relay of the temperature sensing element that indicates the relay setting temperature (ie "Temp. setting = 90°C").

Phase labels shall be provided below all the bushings (primary and secondary) of the transformer.

The LV busbars shall be colour-coded in the preferred colours of red, white, blue and black by a clearly visible painted-on spot at least 20 mm diameter.

The primary voltage, secondary voltage and 'kVA' rating shall be neatly and uniformly stencilled on the front, centre (100 mm below the roof) of the miniature substation housing, e.g. "11 kV / 415V 100 kVA". The markings shall be white and in characters larger than 50 mm high.

The labels "MV" and "LV" shall be neatly and uniformly stencilled onto the inside of the mini-sub MV and LV doors, respectively. Only the doors that open first shall be labelled. The markings shall be white and in characters larger than 50mm high.

Main circuit designation labels that can be removed for engraving purposes shall be provided for each of the incoming cables in the MV compartment. The labels shall be at least 150 mm wide, 35 mm high and shall be blank sandwich-board or equivalent (orange-black-orange). For Type A mini-sub, the labels shall be located in fixed positions adjacent to the cable support clamps provided. A label need not be provided for the tee-off to the transformer. A label shall be provided in the LV compartment adjacent to the top-oil temperature sensing element pocket that states "CHECK THERMOMETER POCKET FILLED WITH OIL BEFORE COMMISSIONING".

ID markings linking roof to body per batch.

F10.12 Earthing

Minisub earthing to be to ESKOM - MV distribution standard and the Nelson Mandela Bay Municipality standard.

Earth terminals, (M12 x 50 mm minimum) shall be welded to the transformer tank and shall be accessible from the MV and LV compartments.

The ring main unit and miniature substation base shall be securely bonded to these earth terminals in the MV compartment.

Copper bonding conductors shall have a minimum cross sectional area of 70 mm².

Two stainless steel nuts and washers shall be provided on each earth terminal.

Each compartment shall be provided with an earthing terminal that complies with the relevant requirements of SANS 1029.

All earthing conductors shall be painted to assist with the prevention of vandalism.

F10.13 Documentation

The following shall be provided:

One set of Type Test Certificate (provide reference numbers of reports).

One set of Routine Test Certificate

Two sets of drawings

Two sets of Circuit Diagrams (HV Auxiliary wiring and equipment)

F11 MV SWITCHGEAR

The Switchgear shall be Nelson Mandela Bay Municipality approved.

F11.1 Type:

ABB, Safe Ring compact switchgear (RMCCV12ESK-AC) or equivalent approved complete with ARC barrier. It shall consist of:

- 1 x circuit breakers
- 2 x isolators

F11.2 Location:

Outdoor : Shall be installed into a painted 3CR12 enclosure suitable for outdoor activities.

Continuous current rating : 630 A

F11.3 Fault Level:

Must be adequate for fault level of 350 MVA at 11.5 kV/400V and rated for 630 A and T-off 400 A.

T-off switch circuit breaker rating : 400 A at 11 kV

F11.4 Cable Terminations:

Indoor heatshrink terminations

Cable boxes:

Air insulated steel cable box without glands

F11.5 Enclosure:

The enclosure for the whole ring main unit to be 2 mm thick 3CR12 hot-dip galvanised after manufacture. The enclosure shall be complete with all statutory signage requirements. The enclosure shall further be complete with arc duct, and blow-out plate, specified by Eskom. The enclosure shall be earthed and bonded. The contractor shall submit details of the proposed enclosure for approval prior to manufacture. All MV switchgear shall comply with Eskom specification **34-210**.

F11.6 Colour:

The final colour of the enclosure shall be in accordance with the Eskom specification DSP-34-1621. The paint system used shall have a life expectancy of 15 to 20 years for a coastal environment. Details of the proposed paint system shall be forwarded to the Engineer for approval prior to manufacture.

F11.7 Labeling:

A unique label shall be assigned to the RMU and shall have white lettering on a red background. The background circle shall have a diameter of +/- 300mm.

The white colour shall be Cloud White G80 and the red colour shall be Signal Red A11 as in National Colour Standard for paint SABS 1091/1975.

All characters shall be in white and shall be +/- 50mm high. Lettering shall be uppercase.

Labels shall be painted on the road access side of the equipment.

F11.8 Alternative RMU:

The contractor shall include a cost (Rate Only) for the provision of an oil filled TIGER or GEC ring main unit as follows:

The switchgear shall consist of an Oil filled TIGER or GEC ring main unit with fuses to protect the transformer, as per NRS 006. The ring main unit's capacity shall be 350 MVA, 400 Amp, at defect/loading-tripping-conditions and the fuse switch's capacity shall be 350 MVA at 11kV with a constant loading capability of 85 Amperage.

The operation of the three panels shall be identical, except that the fuse panel shall be provided with emergency trip facilities. The connection between the transformer and the fused-switch must be at least 35mm² copper cable.

Two cable termination boxes with isolators for dry terminations in air, according to NRS 008 and cable clamps for 95mm² 3-core paper isolated ring cable shall be provided. Cover plate on termination box must be slide over and secured by one 10 mm bolt and nut at base.

F12 MV CABLING

The Contractor shall supply and install cabling in accordance with the requirements depicted on the drawings and as specified elsewhere herein.

The MV cable shall be plain soft copper, three core, screened, PILC, 6.35/11 kV, PVC sheathed cable to Table 19 of SANS 97 : 1991.

The sizes required for the project is: 25mm² and 95mm².

Details of the type of joints and terminations proposed by the contractor shall be submitted to the Engineer for approval before work commences and shall conform to the Buffalo City Municipality specification. All cable through joints and terminations shall be made in accordance with the cable manufacturer's recommendations and shall be carried out by a qualified cable jointer.

Joints shall only be made at full drum length intervals and shall be compound filled or heat shrink type joints: Medium Voltage accessories for power cables with rated voltages from 11 kV to 33 kV.

Cable joint ID tags shall be provided with all joints, including the following:

- Manufacturer's name
- Manufacturer's part number
- Jointer's name

- Date of installation

Cable terminations shall be terminations supplied by approved supplier such as Raychem or Tank. "RICS" boots 3133 series to be used for unscreened separable connectors (USC).

Cable terminations labels, manufactured from an A1 plate or Plastic/Engraved Celeron, complete with 7mm black letters on an orange background shall be used, containing the following:

- Cable destination
- Cable voltage
- Cable size
- Conductor material
- Cable type (PILC, XLPE)

Termination ID tags shall be provided, excluding the following:

- Manufacturer's name
- Manufacturer's part number
- Joiner's name
- Date of installation

(The ID tag shall be attached to the termination crutch).

The Contractor shall supply test certificates for the insulation of the installed cable, ie HV pressure test of all 11 kV cables

F13 MV OVERHEAD MATERIAL AND COMPONENTS

F13.1 A-Frame/Steel Cross-Arm

Standard Hare conductor design, steel A-frame can be used. (The new material shall match existing equipment)

F13.2 Surge Arresters

Description

Distribution class gapless metal oxide surge arrester for application on non-effectively earthed 11kV systems in corrosive environments.

- Polymer housed.S/Am Dist
- kV MCOV 11 kV
- Minimum MCOV: 19.5 kV
- Maximum residual voltage : 50 kV
- Discharge current: 10 kA IEC line discharge : Class 1
- Creepage: 20 mm/kV
- BIL 150 kV

F13.3 Earthing

- Earthing to be done in accordance to Eskom drawing D-DT-0624
- MV earth electrode (Three point star)
- LV earth electrode (Three point star)

- Neutral surge arrester: Distribution class gapless surge arrester.
- Class 1, discharge current: 10 kA
- MCOV 5kV, min. Residual voltage 19.5 kV
- Surge arrester to Eskom drawing no. D-DT-3088
- Refer to schedule of drawings attached.

F13.4 Fuse Cut/Out

- Description: Fuse cut/out base 11 kV
- Distribution cut-out (Link) base: For inland, light polluted environments. Pole mounted; nominal voltage 22 kV, rated current: 15 A
Rated current: Type K as per SANS (IEC) 60282-2
Creepage distance (min.): 20 mm/kV for porcelain
- Base comprises: Insulator, 1 x set of upper and lower contacts to Eskom drawing D-DT-3086
- Fuse holder: 11V; 100A fuse cut/out D3086 to Eskom drawing D-DT-3086.
- Bracket, L fuse cut/out 11kV standard cross-arm, to suspend distribution cut-out assembly from steel cross-arm. Steel hot-dip galvanised, to Eskom drawing D-DT-3086

F13.5 Insulators

Strain Structures

- Strain insulators 33kV 40kN silicone rubber tongue and clevis.
- Creepage : 31mm/KV.

Insulator/Conductor Assembly

- Pistol grip for 33kV long rod insulator.
- Preformed dead end to be used where conductor is terminated into clamp.

F13.6 Labelling

Exterior label inner diameter to be 300mm minimum, with white 50mm high lettering with red background.

F13.7 Poles

All wooden poles shall be 7 or 11 m in length with a 180 mm to 200 mm top diameter, to Eskom specification SCSSCAA07. Poles shall be "Eucalyptus" with low spirality (< 120 degrees) and "Kilen" dry with a moisture content of 250g/kg.

F13.8 Conductor

G13.8.1 Type

ACSR "HARE" (6/1/4, 72) shall be used throughout.

F13.8.2 Sag and Tension

The wire shall be tensioned to the "stringing tension" of the manufacturer's tables and not the "final tension" table as provided. All stringing valves shall be logged during construction.

F13.8.3 Joints and Connections

Both non-tension and full tension conductor joints shall be accepted, with the following constraints applicable:

- Only one joint per any one span
- In accessible crossings shall contain no mid span joints
- Joints shall be made in the "mid third" position of the span, not more than 20 m from any structure
- Non tension joints shall be a "4 point shallow indentation" compression crimping system

- Mid-span full tension joints shall be approved by the Engineer, and shall as a minimum requirement be a two part tubular system, with a compression indent crimp.

F13.9MV Fusing

All fusing points to be fused as follows:

- 200 kVA: 7.5 Amp Type K

F14 EXCAVATION AND TRENCHING

All power cable trench detail shall conform to the details pertained in the tender drawings.

The Electrical Contractor's rates for excavation shall include for the following:

- Any shoring which may be required to prevent the collapse of trench walls before cable and conductor laying and danger tape laying are completed.
- Any pumping which may be required to remove water from the trenches before cable and conductor laying and marker tape laying are complete.
- Extra over cost for excavations in intermediate soil, that is deemed to be non-pickable. The Engineer in conjunction with the successful contractor shall agree the soil classification.

Topsoil shall be saved on excavation and replaced as topsoil after backfilling.

The Electrical Contractor shall exercise care so as not to damage existing underground services. The Contractor will be required to liaise with the supply Authority and other relevant role players to obtain positions of existing underground services. Any damage caused to existing underground services by the Contractor shall be repaired by the Contractor at his own cost.

F15 LAYING CABLES IN PREPARED TRENCHES

Before the cables are laid, the bottom of the trench shall be covered with a 75 mm layer of earth which shall have been passed through a sieve with a maximum mesh of 12 mm. The Electrical Contractor shall lay the cables on the prepared bed carefully to avoid cuts and damage. Cable rollers shall be used.

The trench shall be back-filled with clean builder's sand to provide 150 mm of cover as soon as possible after the cable has been laid. To prevent theft and possible damage, long lengths of cable shall not be left exposed in an open trench overnight. The trench shall be back-filled and compacted in layers to achieve the required compaction.

Water shall not be allowed to accumulate at any part of any works. The Electrical Contractor will therefore ensure that no cable laying is carried out until the trenches are free from water.

The minimum cover over the cables shall be 600 mm for LV and 1 000 mm for MV cables. All side channels, sumps or temporary excavations for dewatering purposes shall be filled in after use.

F16 DUCTS

- 110 mm inner diameter to SABS 1601 : Class 400 CORFLO
- 160 mm inner diameter to SABS 1601 : Class 400 CORFLO
- 100 mm sand bedding around pipes
- Depth for LV cables – 800 mm to top of pipe

Only one MV and two LV cables are allowed per single duct and a maximum of four streetlighting cables are allowed in a single duct. A spare duct should be laid at each crossing position of MV- & LV feeder cables

Ends must be sealed with polyurethane plugs or double layer of warning tape bound with wire at each end to prevent backfill entering the pipe prior to and after installation. Also a galvanised draw-wire of 2.5mm in diameter should be left in the spare ducts. Provision of spare ducts at crossing positions of only service and/or street-lighting cables cross is unnecessary.

The spacing of parallel pipes shall be at least that of the spacing of the cables in the ground (300mm).

Cable sleeves shall be installed at a depth of 750 mm for 110 mm Ø and 1 000 mm for 160 mm Ø sleeves with 100 mm sand bedding around ducts. All sleeves shall extend 1 m beyond the road kerb.

The pipes must be plugged Pre-cleaning of pipes, use of bellmouths, rubber grommets, lubricants and well positioned rollers may be required to prevent the cable from being damaged during installation.

F17 RELOCATION OF EXISTING STREET LIGHT POLES

Where the tender drawings show luminaires to be “relocated”, tenders shall allow for at least the following:

- Excavation around the existing pole to loosen it.
- Mechanical means to secure the pole.
- Disconnection of the electrical supply.
- Excavation of new hole for the pole.
- Mechanical means to remove- and re-plant existing poles (13.5 m long pole).
- Reconnection/termination of the supply cable.
- Compaction of soil around the pole, to fully secure it after planting.
- Re-instatement of the existing pole hole, to match or better its surrounding area.

F18 LV DISTRIBUTION AND STREET LIGHTING CABLES

F18.1 Feeder Cables

Cables PVC/SWA/PVC/PVC Cu 4-Core to SABS 1507/1990.

LV cables shall be terminated by means of tinned crimped lugs. The shank of the cable lugs shall be sealed and insulated by means of colour coded SPO tubing.

Joints shall only be made at full drum length intervals.

Orange PVC warning sheet shall be laid along the entire LV cable routes at 300 mm above the cable or duct as may be the case.

The Contractor shall provide test certificates for the insulation of the installed cables ie “Megger” test for all LV cables.

F18.2 Street Light Cabling

The Contractor shall install LV cabling in accordance with the requirements depicted on the drawings and as specified elsewhere herein.

Street lighting cables shall be 25mm² 4-core PVC/PVC/SWA/PVC AI to SABS 1507/1990 or sized as shown on the drawings.

LV cables shall be laid in trenches and ducts, as indicated on the drawings.

Where bolted connections are used, lighting cables shall be terminated by means of tinned crimped lugs. The shank of the cable lugs shall be sealed and insulated by means of colour coded SPO tubing.

No joints shall be allowed on street light cabling.

Orange PVC warning sheet shall be laid along the entire LV cables routes. These sheets shall be installed at minimum 300 mm above the cable.

The Contractor shall supply test certificates for the insulation of the installed cables i.e. "Megger" test for all LV cables.

F19 STREET LIGHTING

F19.1 Scope of Specification

This specification covers the detail requirements for the manufacture, supply and delivery of lighting luminaires for this project.

F19.2 Street Lighting infrastructure will be installed as per Buffalo City Municipality specification and will be maintained by Nelson Mandela Bay Municipality or Sanral as agreed.

F19.3 Streetlighting Supply and Control

The streetlighting circuits will be supplied from and controlled at street lighting control kiosks. These kiosks will be positioned at each minisub. The electrical supplies to the kiosks will be supplied from an 80A triple pole breaker, installed in the minisub connected to the minisub's LV busbar.

F19.3 Luminaires and Internal Wiring

Refer to table capture on next page

IEC 60598-1	Luminaires - Part 1: General requirements and tests
IEC 60598-2-3	Luminaires - Part 2: Particular requirements - Section 3: Luminaires for road and street lighting
ISO 4762	Hexagon socket head cap screws
SANS 529	Heat-resisting wiring cables
SANS 121	Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods.
SANS 1088	Luminaire entries and spigots
SANS 60529	Degrees of protection provided by enclosures (IP Code)
SANS 1507	Electric cables with extruded solid dielectric insulation for fixed installations (300/500V to 1 900/3 300V) Part 3: PVC Distribution cables
SANS 1574	Electric flexible cores, cords and cables with solid extruded dielectric insulation Part 3: PVC-insulated cores and cables
SANS ARP 035:2014	Guidelines for the installation and maintenance of street lighting
SANS 61000-3-2	Electromagnetic compatibility (EMC) Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
OHSACT (Act 85 of 1993)	Occupational Health and Safety Act and Regulations

F19.4 General

- The luminaire shall be Class I of IEC 60598-1 and be totally enclosed type. Luminaires shall be supplied completely assembled with housing, driver, LED module and protector lens.
- The luminaire output shall be provided as nominal flux at Tq of 35°C.

- The colour temperature of the luminaire shall be neutral white, 4000K and a colour rendering index of 70 (minimum).
- The luminaire shall deliver 80% of initial lumens, when installed for a minimum of 60 000 hours. This shall be supported with appropriate depreciation graphs.
- The LED module or array shall be designed in such a manner that the failure of a single LED shall not cause additional LED's to switch off. Proof of this requirement shall be provided if required.

F19.5 Degree of Protection

The degree of protection shall comply with SANS 60529. The categories shall be:

Luminaire (Led- and driver compartment):IP 66

The IP rating shall be certified by a SABS test report in accordance with SANS 60598-2-3.

F19.6 Mounting

Spigot entries shall be designed to easily fit over the bracket pipe and shall be parallel to the fitting axis and shall comply with Table 1 of SANS1088:1990.

F19.7 Optics

The luminaires shall be able to be equipped with a variety of lenses, providing the desired light distribution.

Luminaires to be provided shall match or better the existing luminaires and shall be Beka LEDlume or equivalent.

F19.8 Power supply and driver

LED module and driver shall be fully housed within the sealed body of the luminaire.

F19.9 Wiring

The luminaire shall be earthed in accordance with Clause 13 of the Electrical Machinery Regulations of the OHSACT (Act 85 of 1993).

The internal wiring of the luminaires shall be flexible and suitably insulated to withstand the voltage and temperature encountered in service.

F20 GALVANIZED STEEL POLES

All steel poles shall be designed to withstand static and dynamic loads on the poles, fittings and cross arms with a minimum factor of safety of 2.5 and a wind speed of 120 km/h with gusts. (wind pressure ± 1.2 kPa).

All materials used shall be new material and shall be free from cracks, laminations and other defects.

The poles will be used for carrying street lighting luminaires each having a mass of 15 kg and a maximum projected area 0.2 m² on the respective double or single outreach arms.

The steel used in the manufacture of the poles shall have an ultimate tensile strength of not less than 370 MPa and an elongation of not less than 15% on a 50 mm test piece.

The table below indicates minimum criteria to be considered in the design of the poles when assembled, with single or double outreach arms and luminaires mounted respectively:

Description	Particulars
	11.5 m
1. Straightness	10 mm/6 mm
2. Maximum permissible deflection under design loads	
2.1 Horizontal mm	400
2.2 Vertical mm	150

The poles shall have a safety factor of 2.5 times the ultimate tensile strength of the steel from which they are made.

The minimum thickness of steel used shall be as stated on the design calculation drawing to be submitted before construction commences. Any deviation from the minimum requirement as indicated on the accompanying detailed drawings will be for the account of the contractor.

Cross-section dimensions shall comply strictly with the drawings. Poles of reduced cross-section at the access opening will not be considered.

The poles shall be hot dipped galvanized and not be painted.

To allow interchangeability between pole stems and outreach arms, the outreach arms shall be manufactured exactly to the dimensions specified on the respective drawings. Any part that does not comply shall not be accepted.

An entry hole shall be provided for 3 off 16 mm² x 4 core conductor PVC insulated SWA cables to fit through.

A 10A, 2.5 kA special street lighting miniature circuit breaker shall be mounted on the hardwood backboard behind the access opening.

Wiring from the circuit breaker to the luminaire shall be affected using 2 x 4 mm² PVC insulated copper conductors and from the earth stud using 1 off 4 mm² PVC insulated copper earth conductor.

All luminaires, steelwork and poles shall be properly earthed.

The poles shall be installed by direct burial into the ground. The tenders shall allow for all types of soil conditions to be encountered.

F20.1 Reference Specifications

The street lighting poles shall be in accordance with the requirements of the following standard specifications:

SABS 657 and 62-Tubular steel

SABS 064-Preparation of steel surfaces for coating

SABS 763-Hot-dip galvanizing

SABS 1088-Luminaire entries and spigots

BS 5649-Street lighting poles

(BS 5135) SABS 044-Welding

SABS 0160-Loading

SABS 0214-Design, fabrication and inspection articles for hot-dip galvanizing

SABS 0225-1991-Design, loadings and deflections of lighting masts

F20.2 Standard Components

The streetlight installation shall consist of a combination of the poles and outreach arms as shown in the illustrations that forms part of this document.

F20.3 Access Openings, Covers, etc

Each pole shall have an access opening as detailed on the respective drawing.

The pole shall be installed as per the detail drawings.

A shaped galvanized steel cover secured to the pole by means of two electroplated or suitably protected 6 mm diameter Allen type countersunk screws shall be provided to close the access opening. A 3 mm thick synthetic rubber gasket shall be fixed to the cover. Details are shown on the drawings.

A hardwood backboard shall be fixed inside each pole opposite the opening. One of the bolts used to fix the backboard to the pole shall be extended to act as an earthing stud and to be provided with a washer and two nuts as shown on the drawings.

F20.4 Baseplates

Where justified, no baseplates are required. The use of baseplates is to be cleared with the Engineer during tender stage.

F20.5 Galvanizing

All material covered in this section shall be hot-dip galvanized in accordance with the latest edition of SABS 763. Before galvanizing, all fabrication is to be complete, which will include completion of cutting, drilling, bending, punching, forming and welding and the cleaning of welding slag and burs.

In the event that the proposed components cannot comply with all provisions of specification SABS 763, detail of departures are to be provided and approved by the Manager: Public Lighting.

The quality of the galvanizing shall be tested in accordance with SABS 763.

The poles shall be checked for the formation of white rust before installation and shall be rejected should white rust have occurred in the period before delivery to site.

F20.6 Inspection and tests

During manufacture and prior to dispatch, all poles will be inspected at the manufacturer's works. Up to 5% of such poles are subject to tests, which shall include the following, where applicable:

(a) Bending test

Poles shall be subjected to a bending test to be conducted in accordance with Clause 5 of BS 5649: Part 8, and shall be agreed upon by the supplier and the Engineer.

For convenience in testing, the pole may be fixed horizontally with the test load applied vertically.

(b) Straightness

The poles must be straight and true to within 10 mm in 6 m lengths.

(c) Rejection

In the event of any pole failing any of the above-mentioned tests, a further 5% of the poles shall be subjected to tests. Should any further failure occur, the whole lot from which the poles have been selected may be rejected.

F20.7 General

- The masts shall be suitable for use at a mean altitude of 0 – 1800 m above sea level in an environment subject to sea air and heavy industrial pollution at ambient temperatures of - 15°C to 65°C.
- The masts shall be designed, approved and certified by an individual who is professionally registered with the South African Engineering Council as a structural engineer in accordance with SABS 0225 and manufactured for new materials.
- The design of each mast shall be accompanied by comprehensive strength calculations certified by a qualified professional structural engineer.

F21 TESTS, RECORDS AND RECORD DRAWINGS

F21.1 Definitions

Commissioning procedures:

The documented method whereby the contractor shall ensure that the installation is constructed in accordance with the requirements of the applicable manufacturers' specifications, the engineer's specification and design, regulations and codes of practice.

Performance tests:

The physical testing in the manufacturing works or on site of the equipment or systems as needed to demonstrate the ability to reach the performance levels specified or required.

Acceptance tests:

The physical testing and inspection on site of the system or sub-system to show that it is supplied, installed and operates generally in accordance with the specifications, design and regulations.

F21.2 Commissioning

The Contractor shall supply, as part of the contract documentation and for approval before implementation, the commissioning procedures to be used on the project.

The commissioning procedure will cover in detail all the major items of equipment and sub-systems of the works.

The procedures must allow for the recording in writing and the signing off by a qualified person in terms of applicable regulations for any inspections or tests made in accordance with the procedures. The records and signed documents will form part of the as-built records.

F21.3 Performance Tests

Where required in terms of the commissioning procedure, specification or an instruction, a supplier or Contractor shall carry out on site or at the manufacturer's premises, performance tests on selected equipment or portions of the works. Type test certificates in accordance with appropriate standard specifications will be accepted as performance tests unless otherwise specified.

On-site performance tests will always be carried out on the following:

- Voltage withstand tests of all cabling, wiring and distribution boards.
- The mechanical operation and tripping and control of all LV circuit breakers and all MV switchgear and control gear.
- Earth continuity and resistance.
- Polarity and phase rotation of three phase circuits.
- Rigidity of all fastenings.
- The results of all tests shall be recorded in writing by the Contractor.
- Only a representative sample of performance tests on site will be witnessed.

F21.4 Acceptance Tests

Acceptance tests will be carried out in terms of the commissioning procedure and in particular the following:

- All switching procedures.
- Repetition of selected performance tests on a random basis.
- Operation of the most important control, protection and emergency systems.

On completion of acceptance tests, a test certificate shall be signed by the Contractor and taking-over authority to the effect that the tests specified on the certificate have been completed successfully.

F21.5 Responsibility of Contractor

The Contractor shall provide not less than seven days' notice in writing of all performance and acceptance tests so that they may be witnessed if considered necessary.

Notwithstanding the attendance at or failure to attend performance or acceptance tests by any witness, the Contractor is responsible for the correctness of the installation in terms of the manufacturers' requirements, the design and specification and applicable regulations and for the preparation of a written record of the tests and test results.

F21.6 Record Drawings

The Contractor shall supply, after approval of the works, three bound sets of operating instructions, parts lists and maintenance manuals covering all items of equipment forming part of the contract.

The Contractor shall supply two bound copies of the records of all inspections and tests carried out in accordance with the commissioning procedures, performance tests and acceptance tests, not later than two weeks after completion of the acceptance tests.

The Contractor shall supply marked up original size, transparency drawings of the as-built installation. The original drawings may be used as the basis for the as-built record provided that the marking up is neat and clearly understandable.

PART C4: PROJECT INFORMATION

PART C4: PROJECT INFORMATION

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Information Only

All data and descriptions contained in this section of the contract documents are given for information purposes only and cannot be interpreted as prescriptive or as an instruction despite the fact that the text may give the opposite perspective. If any conflict arises between the content of this section and other sections of the contract documents, the latter take precedence.

C4.1 DESCRIPTION OF THE WORKS

The description of the works shall inter alia contain the following particulars regarding the work to be constructed and maintained under the contract.

C4.1.1 ROADWORKS

The contract for Upgrading of Road R335 between Motherwell and Addo has been split up into two phases to tie in with the Municipal boundaries between the Nelson Mandela Bay Municipality and the Sundays River Valley Municipality as follows:

Phase 1 – km 5.16 to km 27.5 and upgrading of the N2/R335 interchange ramps and cross road, with project number SANRAL-R.335-010-2017/1 (This Tender)

and

Phase 2 – km 27.5 to km 37.50 with project number SANRAL-R.335-010-2017/2 (Future Tender)

The existing R335 is in very poor structural condition, the surfaced road width varies between 6m and 7m width, and the vertical and horizontal geometry is grossly sub standard, with poor sight distances and the resultant is a high accident rate. To remedy this situation, SANRAL intend to (completely) reconstruct the road to achieve a Class 3 RIFSA standard.

The southern Limit of Construction is at km 5.16, which is approximately 170 metres North of WM Maku Street in the heart of Motherwell. The northern limit is at km 37.50, which is on the southern boundary of the Addo CBD. The total length of the R335 that will be upgraded is 32.34 km.

The section of R335 from km 5.16 (WM Maku) Street to the R334 intersection at km 8.66, which links to Uitenhage and Coega, is classified as an Urban Dual Carriageway. The cross section for each carriageway is indicated in Figure 1 below. Figure 2 shows the carriageway cross section with left and right turning lanes.

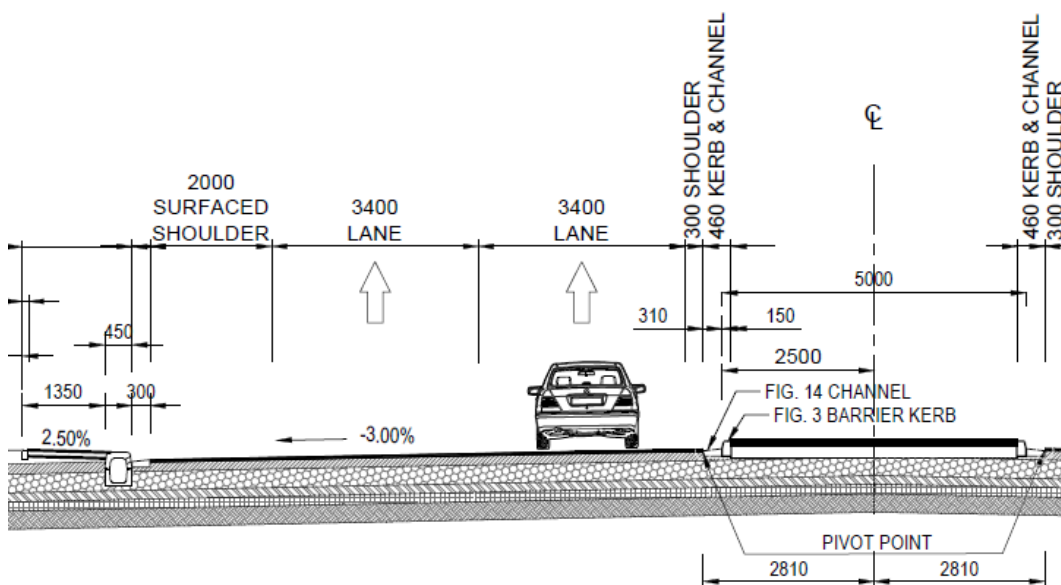


Figure 1: Urban Cross Section

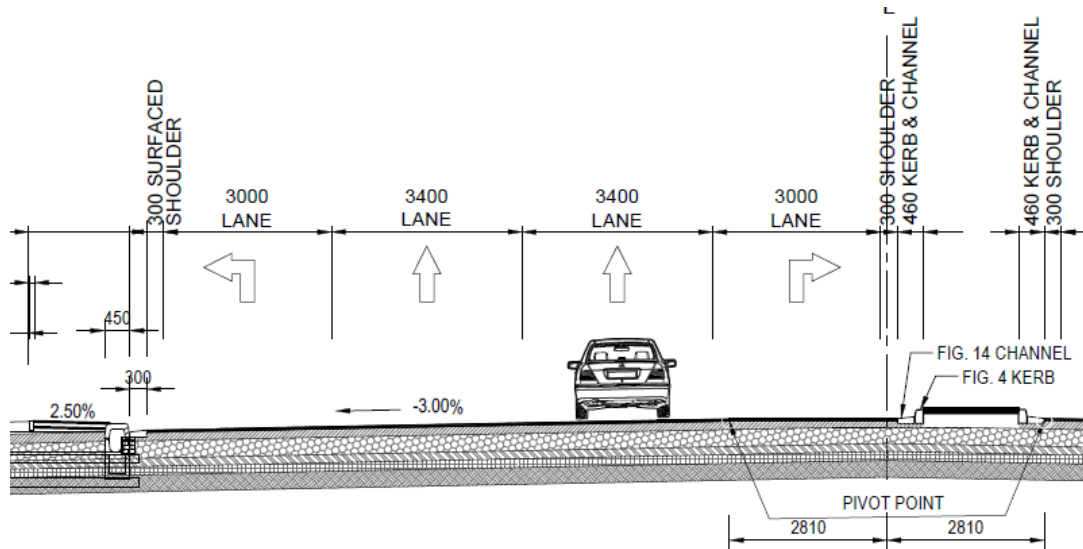


Figure 2: Urban Cross section with Turning lanes

The section of R335 from km 8.66 to km 37.5 is classified as a Rural Single Carriageway and it will be upgraded to a 13.4m surfaced width as indicated in Figure 3 below.

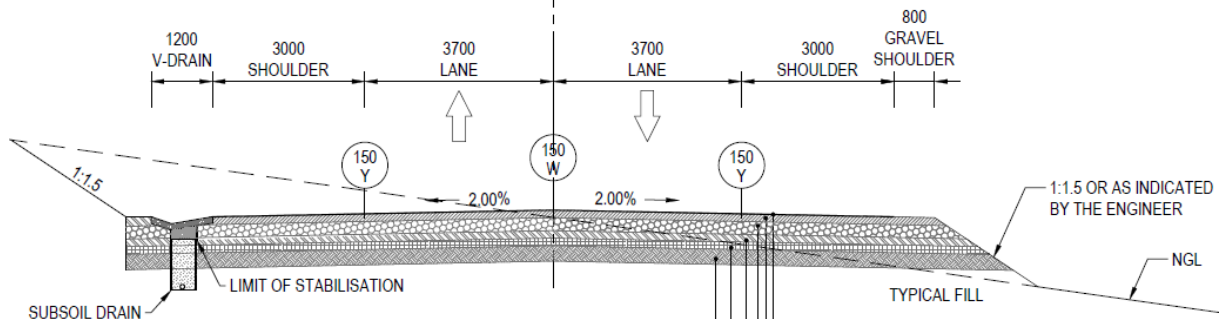


Figure 3: Rural Cross Section

Upgrading of the Markman interchange between the R335 and the N2 will be included under Phase 1 of the construction. The capacity of the existing interchange will be improved by adding additional lanes to all four of the ramps (A-D) in order to increase capacity for all directional movements. It is also proposed to signalise the intersections on either side of the bridge.

Auxiliary (passing) lanes will be constructed where required and capacity upgrades (dedicated turning lanes and taxi bays where required) will be implemented at all intersections along the urban and rural sections.

Pedestrian sidewalks and new street lighting installed in the rural section through Motherwell.

Refer to Volume 4 for the roadworks drawings.

Traffic accommodation will be implemented mainly using 4 methods which are described below:

- i) Offset construction whereby the traffic is maintained on the existing road while the first half of the road is constructed. Thereafter two way traffic is retained on the newly constructed half while the second half is constructed.

Refer to Figure 4 Offset Construction

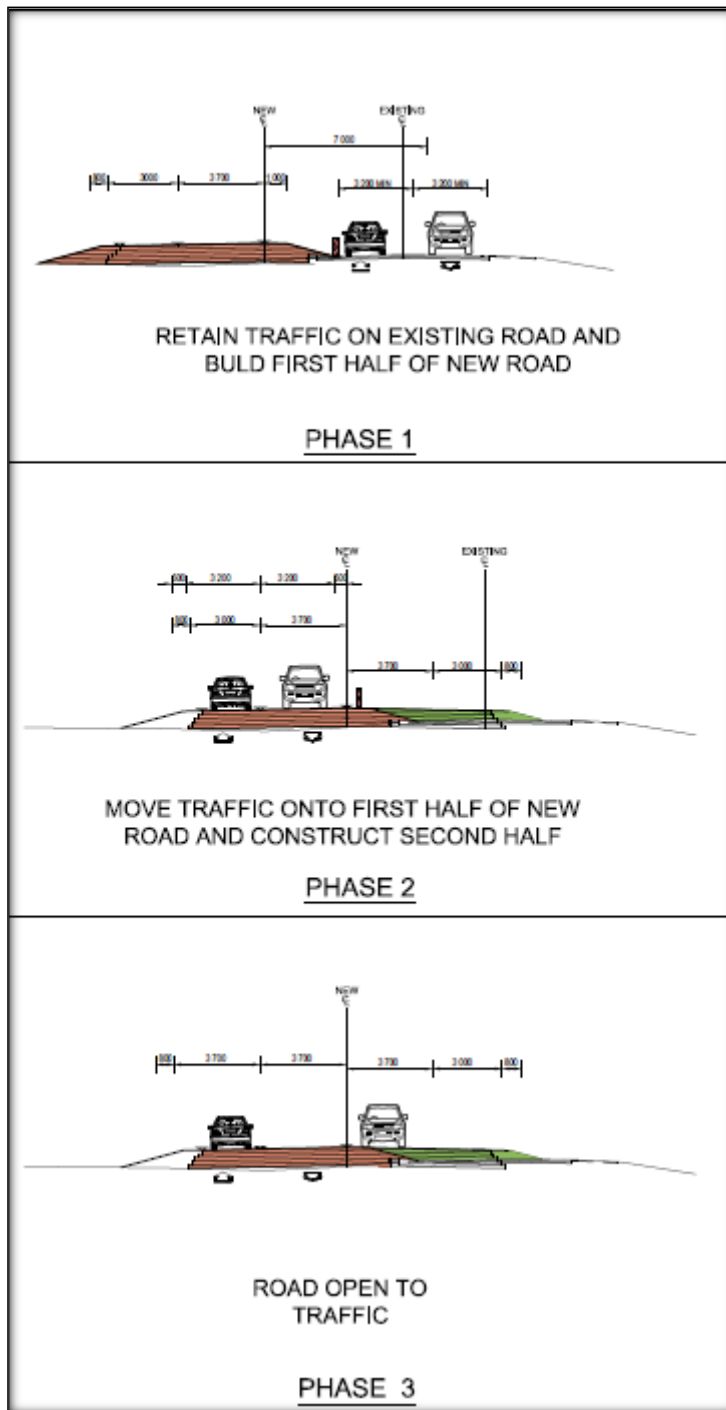


Figure 4: Offset Construction

- ii) Semi-Offset construction whereby the traffic is maintained on the existing road while the existing road shoulder is widened on one side. Then the traffic is moved over for 2 way traffic on the widening while the first "full" half of the road is constructed. Thereafter two way traffic is retained on the newly constructed half while the second half is constructed

Refer to Figure 5 Semi Offset Construction

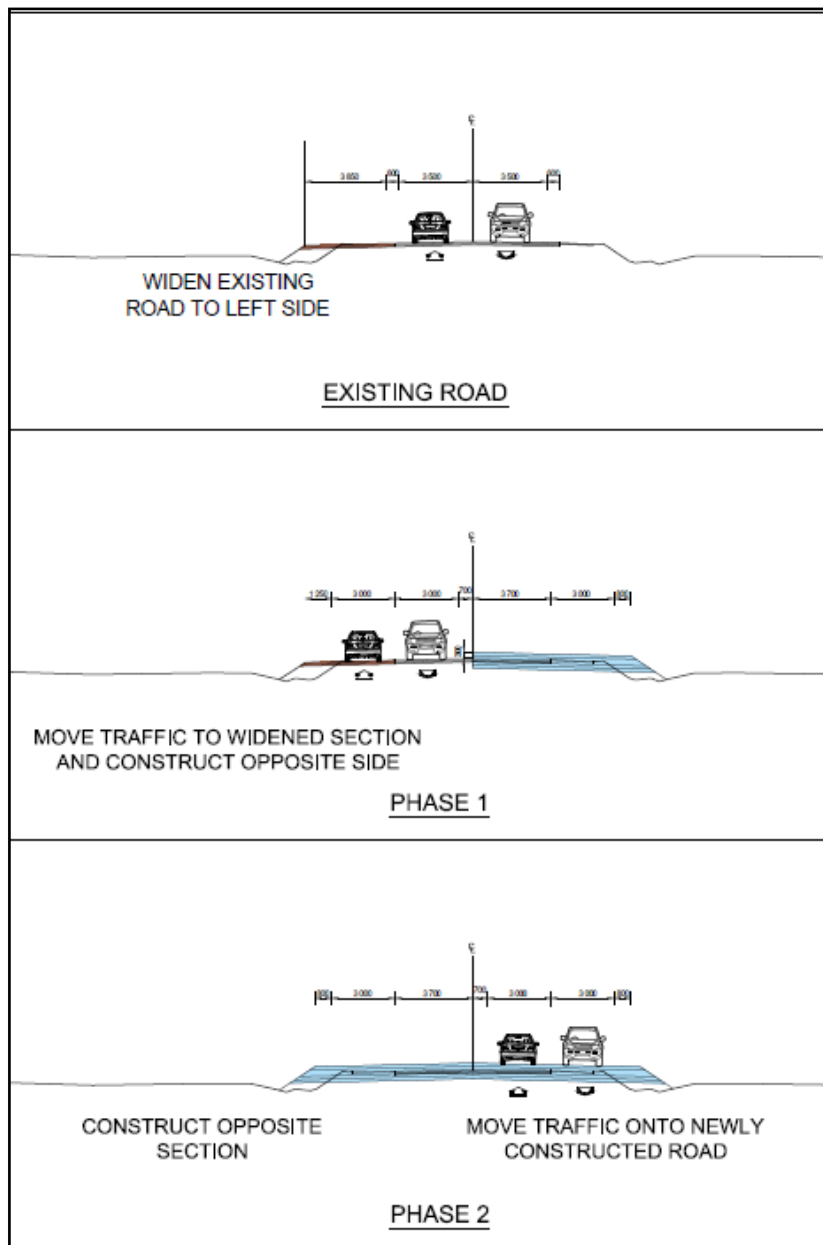


Figure 5: Semi-offset Construction

- iii) Construction of detours around structures which have to be totally reconstructed.
- iv) Stop Go's to be kept to a minimum and only used for switching over of work sections.

All appurtenant works such as fencing, road signs, landscaping, etc. will be replaced.

The minor culverts encountered along the route are generally smaller than the minimum 600 mm diameter SANRAL requirement and will have to be replaced.

Refer to Volume 4 for the roadworks drawings.

The traffic volumes and number of heavy vehicles vary along the route and therefore 2 pavement designs have been proposed as follows:

Section 1: km 5.16 to km 8.8

- Surfacing (40 mm Asphalt)
- 150 mm G1 base, compacted to 88% ARD,
- 300mm C3 (using G5A quality material), compacted to 97% of MDD ,
- 150 mm G6 selected subgrade, compacted to 95% of MDD,
- 150 mm G7 selected subgrade, compacted to 93% of MDD,
- Roadbed treatment per engineer's instruction.

Section 2: km 8.8 to km 37.16

- Surfacing (20 mm Cape Seal)
- 150 mm G1 base, compacted to 88% ARD,
- 250mm C3 (using G5A quality material), compacted to 97% of MDD,
- 150 mm G6 selected subgrade, compacted to 95% of MDD,
- 150 mm G7 selected subgrade, compacted to 93% of MDD,
- Roadbed treatment per engineer's instruction

The upgrading of the R 335, resulted in 7 structures to be demolished and be replaced with totally new structures and the provision of 3 agricultural underpass and the widening of one bridge. Refer to table 1 for the extent of the proposed work.

a) Hydraulic Culverts

The proposed upgrading of the approximate 27km rural section of the R335-01 through Nelson Mandela Bay Metropole and Sundays River Valley Local Municipality up to the end of the project at km 37.360 has the following five locations in an approximate 6km stretch between km 26 – 32 where replacement major drainage culverts (as multi cell in-situ box structures) are proposed to be constructed over a single northerly flowing tributary to the Sundays River that snakes across this stretch of the proposed upgraded R335-01:

The following culvert will be constructed under Phase 1 (km 5.16 to km 27.5)

- C0734 Sundays River Tributary 2 @ km 26.668
3 cell 3.4m(W) x 3.2m(H) box culvert replacing existing 1/600Ø silted up & buried minor pipe culvert at assumed same location on R335-01 upgraded offset alignment

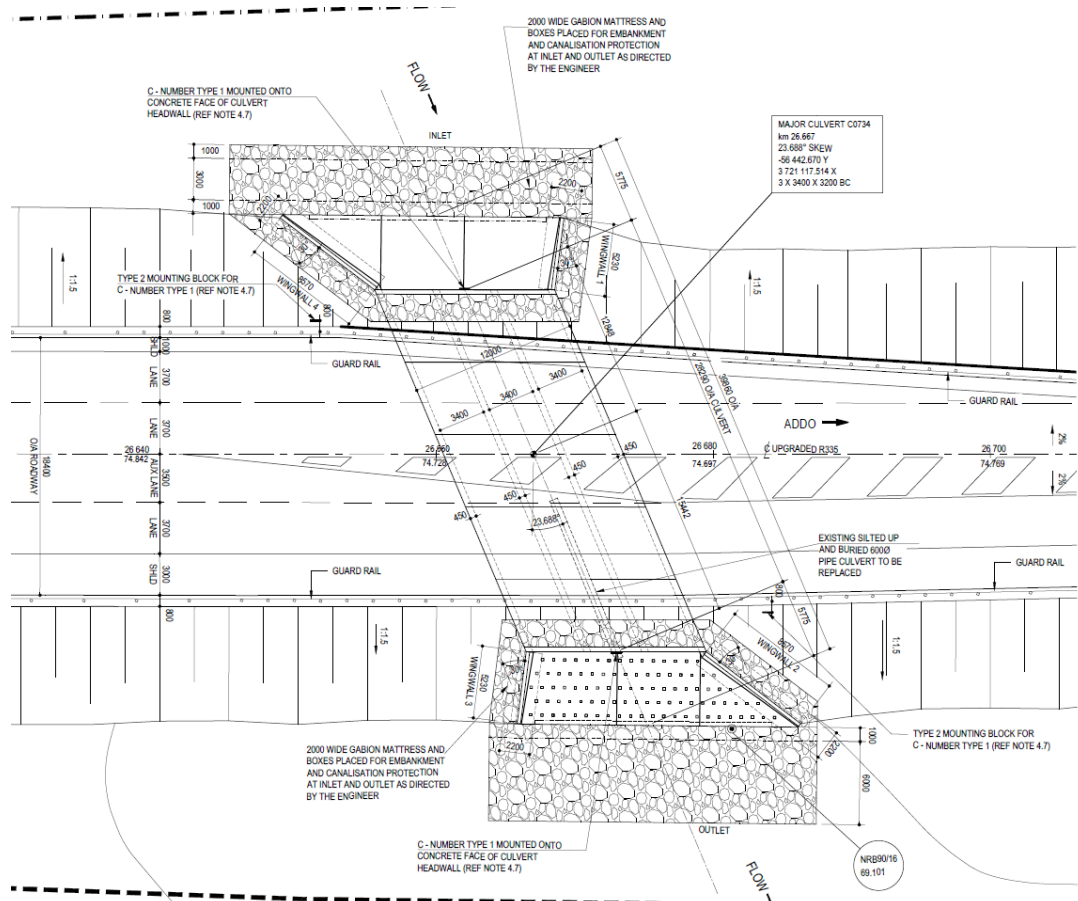


Figure 6: Culvert C0734

The following culverts will be constructed under Phase 2 (km 27.5 to km 37.5):

- **C0735 Sundays River Tributary 3 @ km 28.423**
3 cell 3.4m(W) x 3.2m(H) box culvert replacing existing 2/600Ø minor pipe culvert at same location on R335-01 upgraded offset alignment
- **C0736 Sundays River Tributary 4 @ km 28.858** 3 cell 3.4m(W) x 3.2m(H) box culvert replacing existing 2/450Ø & 2/600Ø minor pipe culverts at southerly optimised relocation on R335-01 upgraded offset alignment
- **C0737 Sundays River Tributary 5 @ km 30.285**
New 2 cell 1.8m(W) x 2.0m(H) box culvert on MN50267 upgraded alignment in close proximity to upgraded intersection with R335-01 @ km 30.285 with sub-tributary connecting to the main tributary downstream of C0738 outlet
- **C0738 Sundays River Tributary 6 @ km 30.313**
3 cell 3.4m(W) x 3.2m(H) box culvert replacing existing single cell in-situ arch major culvert (IDC 3787) at same location on R335-01 upgraded realignment
- **C0739 Sundays River Tributary 7 @ km 31.891**
3 cell 3.4m(W) x 3.2m(H) box culvert replacing existing single cell in-situ arch major culvert (IDC 3790) at same location on R335-01 upgraded realignment

Additionally, the following new major drainage culvert is (as multi cell in-situ box structures) proposed for a sub-tributary to the above main Sundays River tributary that crosses the existing district roads DR01958 in close proximity to the intersection with the R335-01, which intersection and approach length of the district road includes this sub-tributary crossing, but currently without any drainage culvert, is proposed to be upgraded:

- **C0733 Sundays River Tributary 1 @ km 26.575**
New 2 cell 2.4m(W) x 2.4m(H) box culvert on DR01958 upgraded alignment in close proximity to the upgraded intersection with R335-01 @ km 26.575 with sub-tributary connecting to the main tributary upstream of C0734 inlet

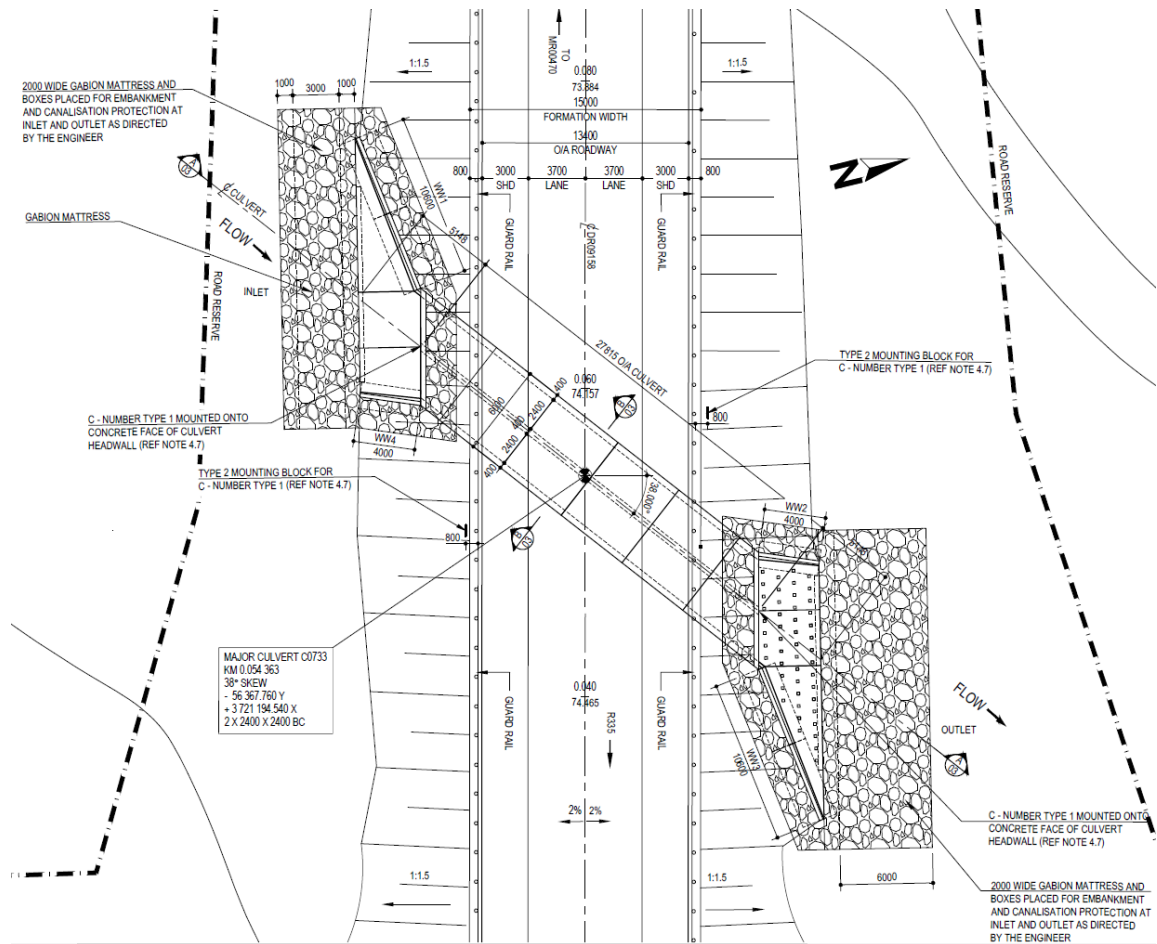


Figure 6: Culvert C0733

b) Agricultural underpasses

The need for agricultural underpasses on the rural part of the R335-01 near the farms of Kentvale, Kudu Ridge and Riverdale were identified following discussions with the relevant land/farm owners. After further consultation with SANRAL Southern Region, approval was granted to provide a new major agricultural underpass culvert, constructed as a single cell 2.5m(W) x 2.5m(H) cast in situ box culvert on Phase 1 as follows:

- C0732 Kentvale Agricultural Underpass at km 27.575

c) Bridges

(i) B0569, Coega River Bridge at km 11.556

The existing Coega River Bridge B1956 built in 1956 is a 19.9m long, 8.3 m overall / roadway (2 lane) width, 3 span (6.6m+6.7m+6.6m) simply supported bridge crossing the river at 0° skew. The bridge was constructed as an in situ slab reinforced concrete decks supported on solid wall type piers and closed abutments with splayed wing walls founded on spread footings.

The existing bridge needs to be upgraded from a hydraulic purpose and therefore a new bridge is constructed on the downstream side of the existing bridge. The existing bridge will be demolished once the new bridge is constructed. See images below of existing bridge.

The proposed new replacement Coega River Bridge B0569, on the proposed upgraded R335 crosses the Coega River in the same location as the existing Coega River Bridge B1956, the alignment being offset downstream south for construction. Refer to Section below of replacement bridge.

The proposed bridge deck consists of a continuous in-situ reinforced solid slab concrete of 21.0m overall length, 13.4 m width between parapets and 0.5m structural.

The abutments are of the closed type with return walls or splayed wing walls as typically used for river bridges subject to final assessment of ground levels. Approach slabs are to be provided at both abutments. Elastomeric type bridge bearings are proposed to be used over the abutments.

1.220m high in-situ F-shape barriers are to be installed along the road side edges. Roadway drainage consists of closely spaced freely draining through and down pipes along the kerb lines of the barriers.



Figure 6: Bridge B0569: Elevation on existing bridge



Figure 7: Bridge B0569: View from the approaches

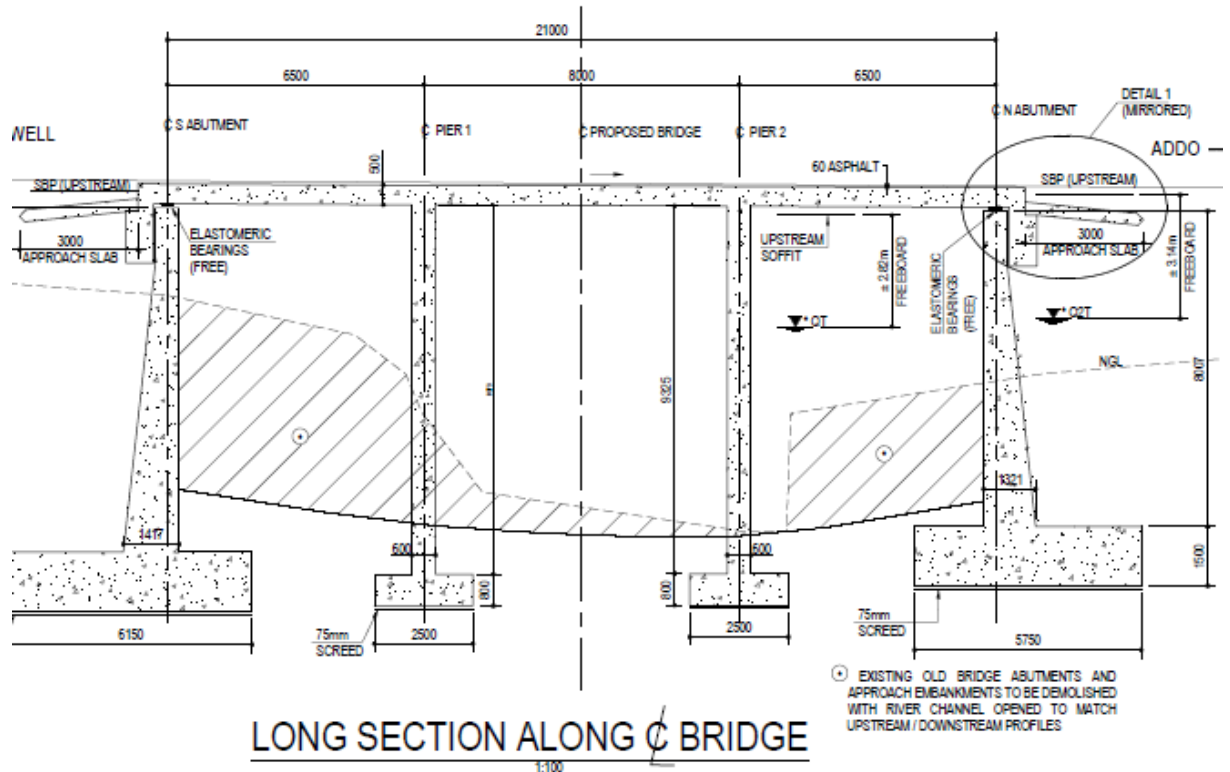


Figure 8: Bridge B0569: Replacement Bridge

(d) *Rehabilitation of structures*
None

C4.1.4 MAINTENANCE WORKS

Maintenance of the works during construction and defects notification periods.

Information on Routine Road Maintenance Contracts to be provided to the successful contractor.

C4.2 DRAWINGS

The drawings that form part of the tender document are issued for tender purposes only.

The contractor will be supplied with one set of paper prints plus a CD containing all the construction documentation.

Only figured dimensions may be used and drawings may not be scaled unless so instructed by the engineer. The engineer will supply all figured dimensions omitted from the drawings.

The levels given on bridge drawings are subject to confirmation on site, and the contractor shall submit all levels to the engineer for confirmation before he commences any structural construction work. It is the contractor's responsibility to check all clearances given on the drawings and to inform the engineer of any discrepancies.

C4.3 CAMP ESTABLISHMENT, POWER SUPPLY AND OTHER SERVICES

The contractor is to make his own arrangements concerning the supply of electrical power and all other services. No direct payment will be made for the provision of electrical and

other services. The cost thereof is deemed to be included in the rates and amounts tendered for the various items of work for which these services are required.

C4.4 CONSTRUCTION IN CONFINED AREAS

It will be necessary for the contractor to work within confined areas. In certain places the width of the fill material and pavement layers may decrease to zero and the working space may be confined. The method of construction in these confined areas largely depends on the contractor's constructional plant.

Regardless, measurement and payment will be in accordance with the specified cross-sections and dimensions only, irrespective of the method used for achieving these cross-sections and dimensions. It is deemed that the rates tendered in the Pricing Schedule include full compensation for all special equipment and construction methods and for all difficulties encountered when working in confined areas and narrow widths, and at or around obstructions. No extra payment will be made nor will any claim for additional payment be considered in such cases. (Refer to standard specification sub-clause C1.1.3.2(b)).

C4.5 MANAGEMENT OF THE ENVIRONMENT

The contractor will be responsible for construction according to an environmental management plan in terms of Section C1000 Scope of Works.

The contractor must take the utmost care to minimise the impact of his establishment and other construction activities on the environment and must adhere to the requirements as set out in Section C of the Scope of Works. Where the contractor fails to adhere to these requirements the specifications in Section C of the Scope of Works provide the methodology and cost liability of remedy.

C4.6 TRAFFIC

Portion 1: Start (Km 5.16) to the R335/R334 Intersection (Km 8.8)

STATION NAME	2063		EC_R335_01_8.15
STATION NO.	2063		12690
DESCRIPTION	Between Motherwell and Addo just before intersection to Uitenhage		
TYPE	Temporary		Temporary
SOURCE	EC Traffic Data		Mikros
YEAR	2006	2015	2018
Start Of Survey	N/A	6-May-15	28-Feb-18
End Of Survey	N/A	8-May-15	20-Mar-18
No. of days		2	20
ADT	2490	3650	4148
ADTT	684	1108	487
% HV	27.47%	30.36%	11.74%
GROWTH RATE ADT	N/A	4.34%	4.36%
GROWTH RATE ADTT	N/A	5.51%	-23.97%
IN/OUT SEASON		IN	OUT
WEIGHTED ADTT (2018)	N/A	849	
WEIGHTED % HV (2018)	N/A	20.5%	

Portion 2: R335/R334 Intersection (Km 8.8) to End (Km 37.50)

STATION NAME	2061	EC_R335_01_9.5	EC_R335_01_18.7	EC_R335_01_29.0
STATION NO.	2061	12041	12046	12048
DESCRIPTION	Between Motherwell and Addo just after R335/R334 intersection	Between Addo and Port Elizabeth at km 9.5	Between Addo And Port Elizabeth at km 18.7	Between Addo And Port Elizabeth at km 29.0
TYPE	Temporary			
SOURCE	EC Traffic Data	Mikros	Mikros	Mikros
YEAR	2006	2015	2016	2018
Start Of Survey		6-May-15	18-Oct-16	8-Mar-18
End Of Survey		8-May-15	27-Oct-16	19-Mar-18
No. of days		3	9	11
ADT	1698	1988	1918	1993
ADTT	424	732	310	287
% HV	24.97%	36.82%	16.16%	14.40%
GROWTH RATE ADT FROM 2015-2018	1.77%	1.94%	4.23%	10.71%
GROWTH RATE ADTT FROM 2015-2018	6.26%	-3.78%	-1.37%	8.35%
IN/OUT SEASON	N/A	IN	OUT	OUT
WEIGHTED AVERAGE ADTT (2018)	N/A	543	N/A	N/A
WEIGHTED % HV (2018)	N/A	27.27%	N/A	N/A

C4.7 SMALL CONTRACTOR DEVELOPMENT, TRAINING AND COMMUNITY LIAISON

The South African National Roads Agency SOC Limited is committed to the implementation of Government's policies and in turn expects the same from its contractors. Accordingly, it is a requirement of this project that tenderers are familiar with the specifications that relate to the transformation of the construction industry through the following:

- adherence to the policies of the Reconstruction and Development Programme and other similar Government initiatives,
- employment and/or creation of Targeted Enterprises,
- arrangement of generic skills, engineering skills and entrepreneurial skills training programmes for which provision has been made in the Pricing Schedule,
- construction using labour maximisation principles and,
- active participation with community-based structures.

Tenderers should note that liaison with Community Stakeholders via active participation with the Project Liaison Committee, as well as employment of people from within the community, are essential parts of the project. A provisional sum to cover costs incurred by members of the community in the liaison process has also been included in the Pricing Schedule.

Section D of the Scope of Works covers the contractor's requirements in detail, as well as defining the targets that comprise the Contract Participation Goal (CPG).

C4.8 CLIMATE

Refer to Appendix 2

C4.9 REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS 2014

Refer to Section E of the Scope of Works for general requirements in terms of the OH&S requirements.

C4.10 SAFETY PROCEDURES

Due to the location of the contract in Motherwell, which has an increased risk of criminal activities, the tenderer to be reminded of his responsibility to provide guards for the protection of the public and construction workers i.t.o. clause 4.8 of the conditions of contract

C4.11 OTHER INFORMATION

None

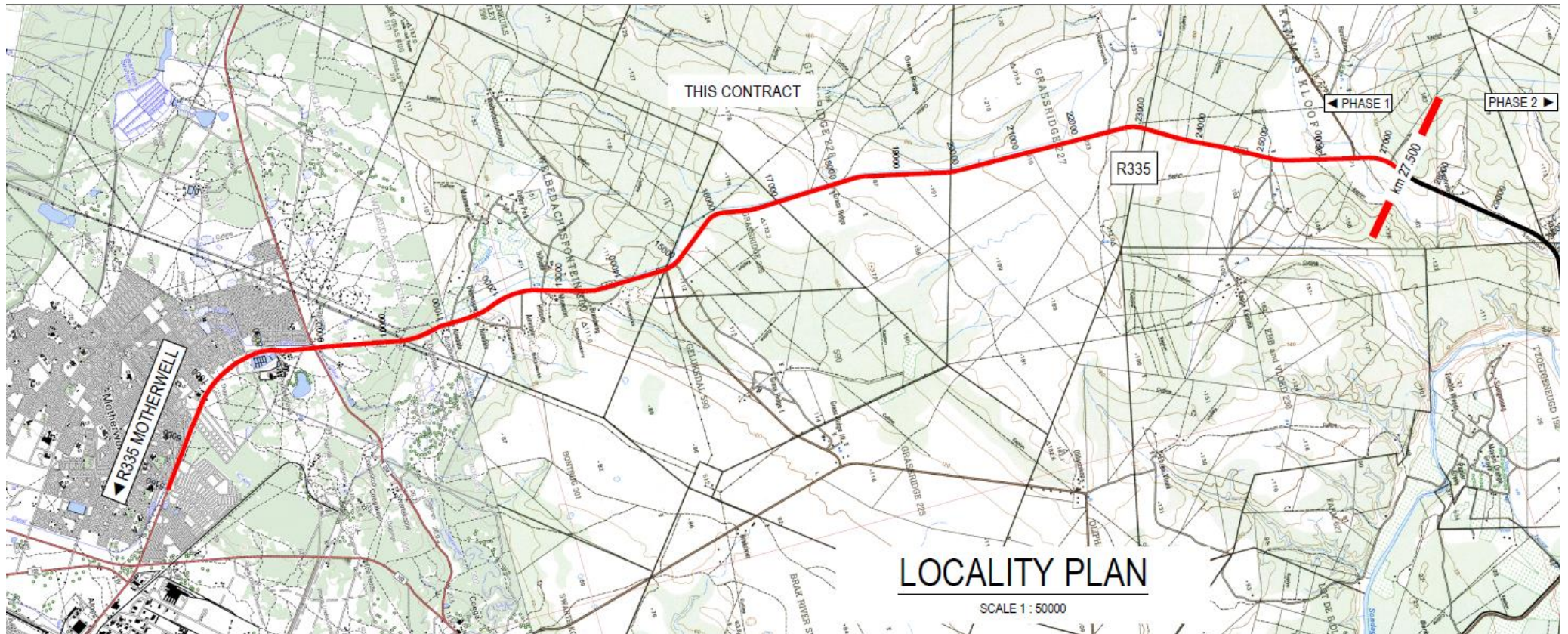
C4.12 AGREEMENT TO OCCUPY SANRAL'S PROPERTY

Not Applicable

C4.13 APPENDICES

Appendix 1:	Locality Plan
Appendix 2:	Weather Data
Appendix 3:	Dispute Adjudication Agreement
Appendix 4:	SANRAL Project Liaison Committee Guidelines
Appendix 5:	Imported Content Declaration

APPENDIX 1: LOCALITY PLAN



APPENDIX 2:WEATHER DATA

[illegible]

DISPUTE ADJUDICATION AGREEMENT

between

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

(Reg No. 1998/009584/06)

(**“Employer”**)

and

(Reg No. _____)

(**“Contractor”**)

and

(**“Member”**)

1. DEFINITIONS AND INTERPRETATIONS

- 1.1 In this Dispute Adjudication Agreement, unless the context otherwise indicates :
- 1.1.1 **“Contract”** means Contract SANRAL ... *[insert contract number]* for the *[insert contract description]* entered into between the Employer and the Contractor.
- 1.1.2 **“Contractor”** means ... *[insert contractor's details]* appointed by the Employer under the Contract.
- 1.1.3 **“DAB”** means the three person Dispute Adjudication Board as contemplated in clause 20 of the Conditions of Contract for Construction for Building and Engineering Works designed by the Employer, published by the Fédération Internationale des Ingénieurs-Conseils (hereinafter referred to as “GCC”), in accordance with the terms and conditions as set out in this Dispute Adjudication Agreement.
- 1.1.4 **“Dispute Adjudication Agreement”** means the tripartite agreement between the Employer, Contractor and Member.
- 1.1.5 **“Effective Date”** means the date that this Dispute Adjudication Agreement shall take effect, and unless otherwise stated, it shall be the latest date when the Employer, the Contractor, Member and each of the Other Members have respectively signed a Dispute Adjudication Agreement.
- 1.1.6 **“Employer”** means the South African National Roads Agency SOC Limited, Registration No. 1998/009584/06
- 1.1.7 **“Engineer”** means ... *[insert engineer's details]*.
- 1.1.8 **“Member”** means Mr _____, who *[Note to compiler: Delete the following for members other than for the Chairperson's agreement]* will act as chairman of the DAB and who is one of the three persons who are jointly called the DAB.
- 1.1.9 **“Other Members”** means the persons other than the Member, forming part of the DAB
- 1.1.10 **“Parties”** means the Employer, Contractor and Member
- 1.2 In the Dispute Adjudication Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract

2. GENERAL PROVISIONS

- 2.1 Following the Effective Date, the Employer and the Contractor shall each give notice to the Member accordingly. If the Member does not receive either notice within six months after entering into the Dispute Adjudication Agreement, it shall be void and ineffective.
- 2.2 This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Adjudication Agreement shall terminate upon the expiry of this period.
- 2.3 No assignment or subcontracting of the Dispute Adjudication Agreement is permitted without the prior written agreement of all the Parties to it and of the Other Members.
- 2.4 The Dispute Adjudication Agreement shall be governed by the law of the Republic of South Africa.
- 2.5 All disputes will be heard in _____, Republic of South Africa, unless otherwise agreed by the Parties.

3. WARRANTIES

- 3.1 The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Engineer. The Member shall promptly disclose, to each of them and to the Other Members, any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.
- 3.2 When appointing the Member, the Employer and the Contractor relies upon the Members' representations that he/she is:
- a) experienced in the work which the Contractor is to carry out under the Contract,
 - b) experienced in the interpretation of contract documentation, and
 - c) fluent in the language for communications defined in the Contract.

4. APPOINTMENT

- 4.1 The Employer and the Contractor hereby jointly appoint the Member as a Member of a three-person DAB on the terms and conditions as set out in the Dispute Adjudication Agreement, which appointment the Member by his/her signature hereto accepts;
- 4.2 The conditions of the Dispute Adjudication Agreement comprise the following:
- a) The Dispute Adjudication Agreement together with any addenda or schedules hereto; including the procedural rules;
 - b) The GCC, as amended by any particular conditions, to the extent that it is applicable to the DAB and the Member.

5. GENERAL OBLIGATIONS OF THE MEMBER

Note to compiler: Delete this clause for members other than the Chairperson's agreement

- 5.1 The Member shall act as chairman of the DAB and shall; ensure smooth administration; keep all records; ensure compliance to procedural rules; ensure the ethics of the DAB remain unchallenged; coordinate between the Parties and the DAB; chair meetings and site visits; ensure procedural correctness of all recommendations and decisions of the DAB.
- 5.2 The Member shall have no interest financial or otherwise in the Employer, the Contractor or the Engineer, nor any financial interest in the Contract except for payment under the Dispute Adjudication Agreement.
- 5.3 The Member shall not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Adjudication Agreement.
- 5.4 The Member shall have disclosed in writing to the Employer, the Contractor and the Other Members, before entering into the Dispute Adjudication Agreement and to his/her best knowledge and re-collection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part.
- 5.5 The Member shall not, for the duration of the Dispute Adjudication Agreement, be employed as a consultant or otherwise by the Employer, the Contractor, any member/partner of the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members. Notwithstanding this restriction, the Member shall not be restricted to be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer on another contract or matter, but shall disclose to the Employer, the Contractor, and the Other Members, before he/she consult, advises or accepts any instructions from either the Employer, the Contractor, any member/partner of the Contractor, or the Engineer and confirming that such advice, consultation or other instruction taken from such person shall not affect the Member's ability to be unbiased in relation to his/her duties under the Dispute Adjudication Agreement.

- 5.6 The Member shall comply with the annexed procedural rules and Sub-Clause 20.4 of the conditions of Contract.
- 5.7 The Member shall not give advice to the Employer, the Contractor, the Employer's personnel or the Contractor's personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules.
- 5.8 The Member shall not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under this Dispute Adjudication Agreement.
- 5.9 The Member shall ensure his/her availability for all site visits and hearings as are necessary.
- 5.10 The Member shall become conversant with the Contract and with the progress of the Works (and of any parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file.
- 5.11 The Member shall treat the details of the Contract and all the DAB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members.
- 5.12 The Member shall be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members.

6. GENERAL OBLIGATIONS OF THE EMPLOYER AND THE CONTRACTOR

- 6.1 The Employer, the Contractor, the Employer's personnel and the Contractor's personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DAB's activities under the Contract and the Dispute Adjudication Agreement, and except to the extent that prior agreement is given by the Employer, the Contractor and the Other Members. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's personnel and the Contractor's personnel respectively.
- 6.2 The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members:
- a) be appointed as an arbitrator in any arbitration under the Contract;
 - b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract;
 - c) be called as a witness or act on behalf of the Employer or Contractor, concerning any dispute that became the subject of litigation under the Contract; or
 - d) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Members functions unless the act or omission is shown to have been in bad faith.
- 6.3 The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he/she is relieved from liability under the preceding paragraph.

7. PAYMENT

- 7.1 The Member shall be paid a retainer fee of R... (excluding VAT) per calendar month, which shall be considered as payment in full for:
- i) being available on 28 days' notice for all site visits and hearings;
 - ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his/her duties; and
 - iv) all services performed hereunder except those referred to in sub-paragraphs 7.4, 7.5, 7.6 and 7.7 of this Clause.

- 7.2 The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Adjudication Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.
- 7.3 With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by 50%. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Adjudication Agreement is otherwise terminated.
- 7.4 The Member shall be paid a site visit daily fee of R... (excluding VAT), (reduced to an hourly fee of one eighth the daily fee, for part of a day), which shall be considered as payment in full for:
- i) each day or part of a day up to a maximum of one day's travel time in each direction for the journey between the Member's home and the site or another location of a meeting with the Other Members, as agreed by the Parties.
 - ii) each working day or part of a day on site visits.
- 7.5 The Member shall be paid a dispute analysis daily fee of R... (excluding VAT), (reduced to an hourly fee of one eighth the daily fee, for part of a day), which shall be considered as payment in full for:
- i) each day or part of a day spent on dispute analysis, hearings or preparing decisions; and
 - ii) each day or part of a day spent reading submissions in preparation for a hearing.
- 7.6 The Member shall be paid a pupillage daily fee of R... (excluding VAT), (reduced to an hourly fee of one eighth the daily fee, for part of a day), which shall be considered as payment in full for:
- i) each day or part of a day spent on preparation for pupillage.
 - ii) each day or part of a day spent on offering practical experience and mentoring to assigned pupil.
- 7.7 The Member shall be paid all reasonable expenses incurred in connection with the Member's duties, including the cost of the following:
- i) Travel expenses :-
 - Own car - motor vehicle travel expenses will be recovered at the relevant South African Automobile Association rates,
 - Car hire – group B or similar,
 - Flights – economy class.
 - ii) Accommodation – any type of accommodation up to R1,300.00 per day all inclusive,
 - iii) Subsistence costs.
- 7.8 The Member shall be paid all Value Added Taxes as per the law.
- 7.9 The retainer fee and daily fees shall remain fixed for the 1st 24 calendar months and shall thereafter be adjusted by the twelve-month year on year CPI index (as published in the monthly bulletin P0141 of Statistics South Africa under table B) at each anniversary of the Effective Date. The base month shall be the 12th month following the Effective Date.
- 7.10 The Member shall be paid in South African Rands.
- 7.11 The member shall submit invoices for payment of the monthly retainer and may include an estimate of the next month's airfares which will be incurred (and which will be reconciled and adjusted in the subsequent invoice). Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a DAB fee claim containing records of previous fee claims and a breakdown of activities performed during the relevant period and shall be addressed to the Contractor.
- 7.12 Notwithstanding the fact that the appointment is of the Member in his/her personal capacity the Member may invoice and receive payment to a legal entity of which he/she is a member, shareholder or partner.
- 7.13 The Contractor shall pay the Member's invoices in full within 30 calendar days after receiving each valid invoice, half of which shall be recovered by the Contractor from the Employer.

- 7.14 If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received and/or (ii) resign his/her appointment by giving notice under Clause 8.

8. TERMINATION

- 8.1 At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Adjudication Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for under Clause 2.
- 8.2 If the member fails to comply with the Dispute Adjudication Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.
- 8.3 If the Employer or the Contractor fails to comply with the Dispute Adjudication Agreement, the Member may, without prejudice to his/her other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.
- 8.4 Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

9. DEFAULT OF THE MEMBER

- 9.1 If the Member fails to comply with any obligation under Clause 5, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members, for proceedings or decisions (if any) of the DAB which are rendered void or ineffective.

10. DISPUTES

- 10.1 Any dispute or claim arising out of or in connection with the Dispute Adjudication Agreement, or the breach, termination or invalidity thereof, shall be finally settled by arbitration under the Rules of Arbitration of the Association of Arbitrators of Southern Africa by one Arbitrator appointed by agreement of the Member, the Employer and the Contractor or, failing such agreement, by the Chairman for the time being of the Association of Arbitrators.

11. DOMICILIA AND NOTICES

- 11.1 The Parties choose as their *domicilia citandi et executandi* for all purposes under the Dispute Adjudication Agreement, whether in respect of notices or other documents or communications of whatsoever nature (including the exercise of any option), the following addresses:

- 11.1.1 Employer (*domicilia citandi et executandi*):

Address: South African National Roads Agency SOC Limited
48 Tambotie Avenue, Val de Grace, Pretoria, 0184
Reference: ... CEO

Employer (*General Communication*)

Address: South African National Roads Agency SOC Limited
... Region, ..., ..., ...
Fax Number: ...
Tel. Number: ...
Reference: ... Regional Manager, ... Region

11.1.2 Contractor:
Address:
Fax Number:
Tel. Number:
Reference:, Contract Director

11.1.3 Member:
Address:
Fax Number:
Tel. Number:
Reference:,

11.2 Any notice or communication required or permitted to be given in terms of the Dispute Adjudication Agreement shall be valid and effective only if in writing, but it shall be competent to give notice by telefax or registered mail.

11.3 Any Party may by notice to the other Party change the physical address chosen as its *domicilium citandi et executandi* vis-à-vis that Party to another physical address in the Republic of South Africa or its telefax number, provided that the change shall become effective vis-à-vis that addressee on the 7th business day from the deemed receipt of the notice by the addressee.

11.4 Notwithstanding anything to the contrary herein contained a written notice or communication actually received by a Party shall be an adequate written notice or communication to it notwithstanding that it was not sent to or delivered at its chosen *domicilium citandi et executandi*.

12. SIGNATORIES

12.1 Signed for and on behalf of the Employer by:

.....
Name Signature of duly authorised representative

.....
Date

In the presence of Witness:

.....
Name Signature

.....
Date

12.2 Signed for and on behalf of the Contractor by:

.....
Name Signature of duly authorised representative

.....
Date

In the presence of Witness:

.....

Name

Signature

.....
Date

12.3 Signed by the Member:

.....
Name

.....
Signature

.....
Date

In the presence of Witness:

.....
Name

.....
Signature

.....
Date

ANNEXURE 1

PROCEDURAL RULES

1. Unless otherwise agreed by the Employer and the Contractor, the DAB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DAB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
2. The timing of and agenda for each site visit shall be as agreed jointly by the DAB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DAB. The purpose of site visits is to enable the DAB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims.
3. Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DAB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
4. The Employer and the Contractor shall furnish to each member of the DAB one copy of all documents which the DAB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DAB and the Employer or the Contractor shall be copied to the other Party.
5. If any dispute is referred to the DAB in accordance with Sub-clause 20.4 of the GCC, the DAB shall proceed in accordance with Sub-clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DAB shall:
 - a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
6. The DAB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
7. Except as otherwise agreed in writing by the Employer and the Contractor, the DAB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party whom the DAB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.
8. The Employer and the Contractor empower the DAB, among other things, to:
 - a) establish the procedure to be applied in deciding a dispute,
 - b) decide upon the DABs' own jurisdiction, and as to the scope of any dispute referred to it,
 - c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Rules,
 - d) take the initiative in ascertaining the facts and matters required for a decision,
 - e) make use of its own specialist knowledge, if any,
 - f) decide upon the payment of financing charges in accordance with the Contract,
 - g) decide upon any provisional relief such as interim or conservatory measures, and

- h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.
9. The DAB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties, unless requested by both the Employer and Contractor. Prior to giving notice to its decision:
- a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
 - b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members' who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
 - c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - i) either the Employer or the Contractor does not agree that they do so, or
 - ii) the absent Member is the chairman and he/she instructs the other Members not to make a decision.

Thereafter, the DAB shall make and give notice to its decision in accordance with Sub-clause 20.4 or as otherwise agreed by the Employer and the Contractor in writing.

COMPULSORY DECLARATION (INCORPORATING SBD4)

The following particulars must be furnished. In the case of a joint venture, separate declarations in respect of each partner must be completed and submitted.

Section 1: Enterprise details

Section 1. Enterprise details	
Name of enterprise	
Contact person	
E-mail	
Telephone	
Cell	
Fax	
Physical address	
Postal address	

Section 2: Particulars of companies and close corporations

Company / Close Corporation registration number	
---	--

Section 3: SARS information

Tax reference number	
VAT registration number	(state Not Registered if not registered for VAT)

Section 4: CIDB registration number

CIDB Registration number	
--------------------------	--

Section 5: Particulars of principals

Principal: means a natural person who is a partner in a partnership, a sole proprietor, a director of a company established in terms of the Companies Act of 2008 (Act No. 71 of 2008) or a member of a close corporation registered in terms of the Close Corporations Act, 1984, (Act No. 69 of 1984)

[illegible]

Attach separate page if necessary.

Section 6: Record in the service of the state:

Indicate by marking the relevant boxes with a cross, if any principal is currently or has been within the last 12 months in the service of any of the following:

- | | |
|--|--|
| <input type="checkbox"/> a member of any municipal council | <input type="checkbox"/> an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) |
| <input type="checkbox"/> a member of any provincial legislature | |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity |
| <input type="checkbox"/> a member of the board of directors of any municipal entity | <input type="checkbox"/> an employee of Parliament or a provincial legislature |
| <input type="checkbox"/> an official of any municipality or municipal entity | |

If any of the above boxes are marked, disclose the following:

Name of principal	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

Insert separate page if necessary.

Section 7: Record of family member in the service of the state:

Family member: a person's spouse, whether in a marriage or in a customary union according to indigenous law, domestic partner in a civil union, or child, parent, brother, sister, whether such relationship results from birth, marriage or adoption

Indicate by marking the relevant boxes with a cross, if any family member of a principal as defined in section 5 is currently or has within the last 12 months been in the service of any of the following:

- | | |
|--|--|
| <input type="checkbox"/> a member of any municipal council | <input type="checkbox"/> an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999) |
| <input type="checkbox"/> a member of any provincial legislature | |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity |
| <input type="checkbox"/> a member of the board of directors of any municipal entity | <input type="checkbox"/> an employee of Parliament or a provincial legislature |
| <input type="checkbox"/> an official of any municipality or municipal entity | |

If any of the above boxes are marked, disclose the following:

Name of family member	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

Insert separate page if necessary

Section 8: Record of termination of previous contracts with an organ of state

Was any contract between the tendering entity, including any of its joint venture partners, terminated during the past five years for reasons other than the employer no longer requiring such works or the employer failing to make payment in terms of the contract?

☐ Yes ☐ No (tick appropriate box)

If yes, provide particulars:

Insert separate page if necessary

Section 9: Declaration

The undersigned, who warrants that he/she is duly authorised to do so on behalf of the tendering entity, confirms that the contents of this Declaration are within my personal knowledge, save where stated otherwise in an attachment hereto, and to the best of my belief is both true and correct, and that:

- i) neither the name of the tendering entity, nor any of its principals, appears on:
 - a) the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004 (Act No. 12 of 2004); or
 - b) National Treasury's Database of Restricted Suppliers (see www.treasury.gov.za);
- ii) the tendering entity or any of its principals has not been convicted of fraud or corruption by a court of law (including a court outside of the Republic of South Africa) within the last five years;
- iii) any principal who is presently employed by the state has the necessary permission to undertake remunerative work outside such employment (attach permission to this declaration);
- iv) the tendering entity is not associated, linked or involved with any other tendering entities submitting tender offers;
- v) the tendering entity has not engaged in any prohibited restrictive horizontal practices, including consultation, communication, agreement, or arrangement with any competing or potential tendering entity regarding prices, geographical areas in which goods and services will be rendered, approaches to determining prices or pricing parameters, intentions to submit a tender or not, the content of the submission (specification, timing, conditions of contract, etc.) or intention to not win a tender;
- vi) the tendering entity has no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;
- vii) neither the tenderer nor any of its principals owes municipal rates and taxes or municipal service charges to any municipality or a municipal entity, and are not in arrears for more than three months;
- viii) SARS may, on an on-going basis during the term of the contract, disclose the tenderer's tax compliance status to the Employer and, when called upon to do so, obtain the written consent of any subcontractors who are subcontracted to execute a portion of the contract that is entered into in excess of the threshold prescribed by National Treasury, for SARS to do likewise.

I, the undersigned
certify that the information furnished in this form above is correct. I accept that the Employer may cancel this agreement should this declaration prove to be false.

.....
Signature (duly authorised)

.....
Date

.....
PositionName of Enterprise

NOTE 1: Section 30(1) of the Public Service Act, 1994, prohibits an employee (person who is employed in posts on the establishment of departments) from performing or engaging remunerative work outside his or her employment in the relevant department, except with the written permission of the executive authority of the department. When in operation, Section 8(2) of the Public Administration Management Act, 2014, will prohibit an employee of the public administration (i.e. municipalities and all national departments, national government components listed in Part A of Schedule 3 to the Public Service Act, provincial departments including the office of the premier listed in Schedule 1 of the Public Service Act and provincial departments listed in schedule 2 of the Public Service Act, and provincial government components listed in Part B of schedule 3 of the Public Service Act) or persons contracted to executive authorities in accordance with the provisions of section 12A of the Public Service Act of 1994 or persons performing similar functions in municipalities, from conducting business with the State or to be a director of a public or private company conducting business with the State. The offence for doing so is a fine or imprisonment for a period not exceeding five years, or both. It is also a serious misconduct which may result in the termination of employment by the employer.

NOTE 2: Regulation 44 of Supply Chain Management regulations issued in terms of the Municipal Finance Management Act of 2003 requires that municipalities and municipal entities should not award a contract to a person who is in the service of the State, a director, manager or principal shareholder in the service of the State or who has been in the service of the State in the previous twelve months.

NOTE 3: Regulation 45 of Supply Chain Management regulations requires a municipality or municipal entity to disclose in the notes to the annual statements particulars of any award made to a close family member in the service of the State.

NOTE 4: Corrupt activities which give rise to an offence in terms of the Prevention and Combating of Corrupt Activities Act of 2004, include improperly influencing in any way the procurement of any contract, the fixing of the price, consideration or other moneys stipulated or otherwise provided for in any contract, and the manipulating by any means of the award of a tender.

NOTE 5: Section 4 of the Competition Act of 1998 prohibits restrictive horizontal practice, including agreements between parties in a horizontal relationship, which have the effect of substantially preventing or lessening competition, directly or indirectly fixing prices or dividing markets or constituting collusive tendering. Section 5 also prohibits restrictive vertical practices. Any restrictive practices that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties.

TAX COMPLIANCE PERMISSION DECLARATION

I, (name)
the undersigned in my capacity as (position)
on behalf of
..... (name of company)
herewith grant consent that SARS may disclose to the South African National Roads Agency SOC
Limited (SANRAL) our tax compliance status on an ongoing basis for the contract term.

For this purpose, our unique security personal identification number (PIN) is
our tax reference number is and our tax clearance certificate number is

SIGNATURE:

DATE:

APPENDIX 4: SANRAL PROJECT LIAISON COMMITTEE GUIDELINES

Refer Appendix 4 attached

APPENDIX 5: IMPORTED CONTENT DECLARATION

The Excel files of Annex C, D and E are included on the SANRAL website for this tender