

SANRAL

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 R.573-020-2019/2

**FOR THE UPGRADING OF NATIONAL ROAD
R573 SECTION 2: WORK PACKAGE D FROM
KM 8.60 TO KM 13.00**

PROJECT DOCUMENT

DATE: **APRIL 2024**

TENDER DOCUMENT

VOLUME 3

BOOK 3 OF 3

PRICING DATA, SCOPE OF WORKS, PROJECT INFORMATION, ANNEXURES

**CHIEF EXECUTIVE OFFICER
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED
48 TAMBOTIE AVENUE
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NAME OF TENDERER:

Set sequential number

CONTRACT SANRAL R.573-020-2019/2

FOR

THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE D FROM KM 8.60 TO KM 13.00

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VOLUME 3

BOOK 3 OF 3

PRICING DATA, SCOPE OF WORKS, PROJECT INFORMATION, ANNEXURES

**THIS DOCUMENT COMPILED UNDER THE DIRECTION OF THE REGIONAL
MANAGER**

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

The Regional Manager (Northern Region)
The South African National Roads Agency SOC Ltd
38 Ida Street
Menlo Park
Pretoria, 0081

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).

Volume 2B: SANS 10120: 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 indicated in Book 1.

Volume 4: The road works and electrical drawings

Volume 5: The structural drawings

Volume 6: Materials investigation and utilisation

Volume 7: Environmental Management Plan report

Volume 8: Project Occupational Health and Safety Specification

Notes to tenderer:

1. **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), is obtainable from CESA, P. O. Box 68482, Bryanston, 2021. Tel: (011) 463 2022 Fax: (011) 463 7383, e-mail: general@cesa.co.za.

2. **Volume 2: The COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition)** is obtainable from SANRAL and can be downloaded free of charge from the SANRAL's website www.nra.co.za.

- 2B: **SANS 10120: 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.

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 may be downloaded from the CIDB website as indicated in Book 1.

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:**

Volume 3 – ELECTRONIC SUBMISSION

The following information has to be submitted electronically on flash drive

a) The 1st file in pdf format which contains;

- Scanned copy of Form of Offer (pdf) and printed hardcopy of Form of Offer
- Scanned copies of all returnable schedules and attachments (pdf)
- Scanned copy and printed Summary of Pricing Schedule.

b) The 2nd file in Excel format which contains:

- Completed pricing schedule

For alternative offers the tenderer shall submit the following additional documentation, printed and bound hard copy and electronically in a separate flash drive marked

a) Alternative (followed by the Tenderer name)" in a sealed envelope in the following order:

- Form of Offer (signed and scanned as .pdf and state "Alternative Form of Offer" and printed hardcopy of Form of Offer)
- All returnable schedules and attachments and certificates applicable to the

alternative offer (signed and scanned as .pdf).

b) Alternative Pricing Schedule (printed Summary of Pricing Schedule and copy in Excel)

- **Other relevant information.**

- 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 **Error! Hyperlink reference not valid.** 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
STRUCTURES

SCHEDULE C
ELECTRICAL INSTALLATION

SCHEDULE D

**STAKEHOLDER AND COMMUNITY LIASION, AND
TARGETED LABOUR AND TARGETED ENTERPRISES
UTILISATION AND DEVELOPMENT**

CALCULATION OF TENDER SUM

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SCHEDULE D:	STAKEHOLDER AND COMMUNITY .	R
	LIAISON, AND TARGETED LABOUR	
	AND TARGETED ENTERPRISES	
	UTILISATION AND DEVELOPMENT	
	(from page C2-106)	
SUBTOTAL A	R
CONTRACT SKILLS DEVELOPMENT GOAL:		
0.25% of Subtotal A.....		R
SUBTOTAL B	R
VALUE ADDED TAX:		
15% of Subtotal B		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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SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R.573-020-2019/2

FOR THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE D FROM
KM 8.60 TO KM 13.00

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 **April 2024** no amendments have been issued by COTO.

**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.

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COTO CHAPTER 1: GENERAL

SECTION 1.1: GENERAL PREAMBLE

PART A: SPECIFICATIONS

A1.1.2 DEFINITIONS

Replace the Definition for "Site / Site of the Works" with the following:

"Site / Site of the Works - shall mean the entire road reserve (both new and existing), inclusive of road junctions and property accesses, required for construction of the Works as defined by the limits of construction given in the Contract Documentation. It shall also include areas within statutory building lines where work has to be carried out and any additional lengths of road required for the placement of advanced warning road signs and/or traffic accommodation measures beyond the limits of construction as shown on the drawings. The Site shall also include areas outside of the road reserve required for Construction camps, Engineer's site facilities, Borrow pit areas or quarry areas, haulage and access roads, temporary deviations, storage areas, spoil areas and stockpile areas. The exact extent of the limits of the construction will be verified once the Site is handed over to the Contractor."

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 include 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/or 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 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 paragraphs:

“The Contractor’s responsibility for routine maintenance on this contract is indicated in the Contract Documentation.”

The backfilling for patching shall be done as indicated in the Contract Documentation.

The riding quality of gravel deviations shall comply with the requirements indicated in the Contract Documentation.”

Add the following new subclause after A1.2.3.23:

"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 Sabita Manuals/TRH or Sabita 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 Sabita Manual/TRH publication or Sabita 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

(ii) Items that will not be measured separately

Replace the wording of item 8 with the following:

“8. The design of all temporary work and the construction of all temporary work, unless otherwise indicated in the Contract Documentation.”

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

C1.2.7 Road safety audits

In the wording of item C1.2.7.2, replace “C1.2.6.1” with “C1.2.7.1”.

In the wording of item C1.2.7.4, replace “C1.2.6.3” with “C1.2.7.3”.

In the 4th paragraph of the item description, replace “C1.2.7.2” with “C1.2.7.3”.

Add the following new pay items:

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

C1.2.10 Dispute Adjudication Board (DAB)

C1.2.10.1 Employer's contribution to DAB (50%)prime cost (PC) sum

The unit of measurement for item C1.2.10.1 is the prime cost sum. Payment of the prime cost sum shall be in terms of Fidic Clause 13.5 for 50% of the amounts invoiced from the appointed DAB. No sum for overhead charges and profit in terms of Fidic Clause 13.5(ii) is payable for this item.”

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, leasing costs, hire costs or cost of ownership 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 period, and no other Costs (including other monthly costs) shall be payable.

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"

SECTION 1.5: ACCOMMODATION OF TRAFFIC

PART A: SPECIFICATIONS

A1.5.7 EXECUTION OF THE WORKS

A1.5.7.10 Construction of temporary deviations

a) General

Delete the last paragraph and replace with the following: "The proposed location, layout, temporary drainage, earthworks, pavement layers, surfacing and ancillary works details of all temporary deviations, including the signage and road marking required, shall be agreed with the Engineer before construction of any temporary deviation commences."

b) Drainage works for temporary deviations

In the 2nd paragraph in the 1st sentence delete "specified" and replace with: "approved".

PART C: MEASUREMENT AND PAYMENT

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

C1.5.4	Construction of temporary deviations
---------------	---

In the last sentence of the item description, after the words "...include full compensation for the", add the following: "design and the".

Add the following:

"Item	Unit
C1.5.13 Temporary Median Barriers	
(a) Barrier sections provided and erected.....	metre/month
(b) Moving and re-erecting the vehicle restraint system at another location on site.....	metre (m)
(c) Terminal attenuator sections.....	number (No)
(d) Removable barrier sections.....	number (No)

The unit of measurement for subitem C1.5.13 (a) shall be the linear metre of barrier provided by the Contractor and erected on site to make up vehicle restraining systems. The tendered rate shall include full compensation for supplying, loading transporting and unloading the barrier sections, placing them, and fastening them together as specified to form a vehicle restraint system of the required length. The rate shall also include for full compensation for the cost of general maintenance of the barriers including resetting of the barriers in the event of displacement, cost of insurance to replace structurally damaged barriers and other overhead costs. The quantity measured will be the product of the number of metres erected on site and the number of months that the barrier sections are used on site for the approved duration of the contract. Any units stored on site and not being used on site for traffic accommodation purposes shall not be measured for payment.

The unit of measurement for subitem C1.5.13(b) shall be the linear metre of barrier already placed on the road which is dismantled, moved, and re-erected to form a vehicle restraining system in another location on site. The tendered rate shall include full compensation for dismantling and moving the barrier sections, including any associated terminal and removable sections, placing them in a new position and fastening them together as specified to form a vehicle restraint system of the required length in the new location as approved by the Engineer.

The unit of measurement for subitem C1.5.13(c) shall be the number of terminal attenuator sections (crush cushions – NCHRP 350, design velocity of 60 km/h, re-directive & non-gating) erected at the ends of vehicle restraint systems. The tendered rate shall include full compensation for the provision and erection of each terminal attenuator section in accordance with the manufacturer's specifications.

The unit of measurement for subitem C 1.5.13(d) shall be the number (10m lengths each) of removable barrier sections (plastic – polyethylene-UV stabilised water filled barriers) erected in the vehicle restraint system at locations approved by the Engineer. The tendered rate shall include full compensation for the provision and erection of each removable barrier section in accordance with the manufacturer's specifications including for the cost of general maintenance of the removable barriers, opening and closing of the barriers when required, cost of insurance to replace structurally damaged sections and other overhead costs.

The tendered rates shall include for all costs related to the removal and disposal of the temporary median barriers post construction of the Works"

SECTION 1.6: CLEARING AND GRUBBING

PART C: MEASUREMENT AND PAYMENT

(iii) Items to be measured and paid for using items specified elsewhere in the specifications

In Table C1.6-1 for the Preparation of topsoil stockpile sites activity, delete reference to "Chapter 11" and replace with "Chapter 4".

COTO CHAPTER 2: SERVICES

There are no amendments to this Chapter

COTO CHAPTER 3: DRAINAGE

SECTION 3.2: CULVERTS

PART C: MEASUREMENT AND PAYMENT

Item	Description	Unit
C3.2.2	Backfilling	
C3.2.2.3	Extra over sub-items C3.2.2.1 and C3.2.2.2 for soil cement backfilling	
	<i>In sub-item (a), delete "of 3% cement".</i>	
	<i>In sub-item (b), delete "of 3% cement".</i>	

Item	Description	Unit
C3.2.13	Removing and relaying existing culverts	
	<i>In the 2nd paragraph of the item description, delete the wording: "transporting for a haul distance within 5,0 km without additional payment," and replace with the following: "transporting over a distance of less than and up to 1,0 km,"</i>	

Replace C3.2.15 with the following:

Item	Description	Unit
C3.2.15	Manholes and catch pits, with prefabricated elements	
	(a) Stormwater manhole (300mm diameter pipe)	number (No.)
	(b) Stormwater manhole (750mm diameter pipe)	number (No.)

The tendered rate for item C3.2.15 shall include full compensation for supplying all materials, including frame and cover, labour, plant, loading, transporting and off-loading, excavation, installation, backfill and compaction and any other work necessary for constructing the complete structures"

COTO CHAPTER 4: EARTHWORKS AND PAVEMENT LAYERS: MATERIALS

SECTION 4.1: BORROW MATERIALS

PART A: SPECIFICATIONS

A4.1.7 EXECUTION OF THE WORKS

A4.1.7.2 Borrow pit and quarry operations

b) Classes of excavation

(iv) Hard excavation

In the 2nd bullet after: "Ripping with a bulldozer" add the following:

"Ripping shall be carried out on typically moderately weathered soft rock (soft rock as defined in Section 12.1 Table A12.1.7-1) that can be efficiently ripped by a bulldozer with a weight of at least 35 tons and minimum nett power of 220 kW."

SECTION 4.2: CUT MATERIALS

PART A: SPECIFICATIONS

A4.2.3 GENERAL

A4.2.3.2 Contractor prepared plans for cuttings

In 1st paragraph at the end of the last sentence, add the following as part of the last sentence:

" , unless otherwise indicated in the Contract Documentation."

SECTION 4.4: COMMERCIAL MATERIALS

PART A: SPECIFICATIONS

A4.4.7 EXECUTION OF THE WORKS

A4.4.7.1 Selection (design) of the stabilising agent content

c) Cementitious stabilising agent for chemical stabilisation

Step 2: Determine the Initial Consumption of Stabiliser (ICS) of the material.

Add the following after the 1st paragraph:

"The ICS shall be determined for more than one stabilizer agent and the stabilizer agent to be utilised in Step 3 shall be selected by the Engineer based on the ICS results."

COTO CHAPTER 5: EARTHWORKS AND PAVEMENT LAYERS: CONSTRUCTION

SECTION 5.3: ROAD PAVEMENT LAYERS

PART A: SPECIFICATION

A5.3.5 MATERIALS

A5.3.8.4 Pavement layer thickness and compaction requirements

Crushed stone pavement layer compaction requirements (G1 to G4A and G5A materials)

Add the following:

“The crushed stone base layer shall be tested for density at depths of 50mm, 100mm and 150 mm to determine the compaction gradient through the layer. The density measured for each depth shall conform to the specified density for crushed stone base layers.”

Add the following after the last paragraph:

“Crushed stone base on stabilised layers shall not be processed and compacted before 7 days after completion and approval of the stabilised layer.”

A5.3.8 WORKMANSHIP

A5.3.8.4 Construction tolerances for pavement layers

Add the following as a new sub-clause:

“f) Surface texture

The maximum volumetric texture depth (measured as described in SANS 3001-BT11) of the base, shall be as specified in Table A5.3.8-7, for the different seal types to be placed on the base.

Table A5.3.8-7: Maximum texture of base

Surfacing type	Max texture depth of the base
Single seal with 10 mm aggregate	0,8
Single seal with 10 mm aggregate (with cover spray)	1,0
Single seal with 14 mm aggregate	0,8
Single seal with 14 mm aggregate (with cover spray)	1,5
Single seal with 14 mm aggregate (with Bitumen rubber)	1,2
Double seal with 10 mm aggregate and sand	1,0
Double seal with 14 mm aggregate and sand	1,5
Cape Seal with 10 mm aggregate and one layer of slurry	1,5
Cape Seal with 14 mm aggregate and one layer of slurry	2,0
Cape Seal with 20 mm aggregate and two layers of slurry	2,5
Double seal with 14 mm aggregate and a layer of 7 mm aggregate	1,5
Double seal with 14 mm aggregate and a layer of 5 mm aggregate	1,5
Double seal with 20 mm aggregate and a layer of 10 mm aggregate	2,0
Double seal with 20 mm aggregate and a layer of 7 mm aggregate	2,0
Double seal with 20 mm aggregate and two layers of 7 mm aggregate	1,5

Other surfacing type (as indicated in the Contract Documentation)	As specified in the Contract Documentation"
---	---

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 6: CONCRETE LAYERS

SECTION 6.1: PAVER LAID CONCRETE LAYERS

PART A: SPECIFICATION

A6.1.5 MATERIALS

A6.1.5.1 Cementitious materials

In the 2nd paragraph insert:

“the quantity of supplementary cementitious materials be limited to” *after* “... may be used subject to”.

A6.1.6 CONSTRUCTION EQUIPMENT

A6.1.6.2 Concrete batching plant

In the 1st sentence of the 2nd paragraph delete the following:

“Where concrete is supplied by a commercial source outside the direct control of the Engineer”.

A6.1.7 EXECUTION OF THE WORKS

A6.1.7.4 Joint forming

Add the following before the 1st paragraph a:

“The requirements for the thickening of slabs at joints, will be specified in the Contract Documentation.”

A6.1.8 WORKMANSHIP

c) Construction tolerances

(vii) *Surface regularity*

Add the following new paragraph:

“Any adjustment in the payment for the concrete layer will be made by multiplying the full payment value for each 100 m section, (for all the relevant payment items for this work) by the payment adjustment factor derived from Table A9.1.8-3. The payment adjustment shall apply to the total concrete layer width placed over the 100 m sections in question.”

PART C: MEASUREMENT AND PAYMENT

(iii) Items that will not be measured separately

Concrete mix design and materials for design
Additional trial sections
Removal of trial section
Protection of concrete

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.”

SECTION 8.3: TEXTURE TREATMENT

PART A: SPECIFICATION

A8.3.5 MATERIALS

A8.3.5.2 Aggregate

In clause a), delete reference to “A10.15.17” and replace with “A10.1.5.17”.

In clause b), delete reference to “A10.15.18” and replace with “A10.1.5.18”.

SECTION 8.6: GEOSYNTHETIC CRACK SEALING

PART C: MEASUREMENT AND PAYMENT

Add the following new pay item:

“Item	Description	Unit
C8.6.2	Bituminous binder variation:	
C8.6.2.1	Bitumen emulsion (<i>indicate type and binder content</i>)	litre (ℓ)

The unit of measurement for bituminous binder in respect of an increase or a decrease in the specified rates of application shall be the litre measured in terms of the residual cold bitumen before dilution.”

COTO CHAPTER 9: ASPHALT LAYERS

SECTION 9.1: ASPHALT LAYERS

PART A: SPECIFICATION

A9.1.5 MATERIALS

A9.1.5.4 Aggregates

a) Aggregate properties

In the 1st paragraph, delete the 2nd sentence: "Coarse and fine aggregate shall be clean and free from decomposed materials, vegetable matter or any other deleterious substances, and shall meet the requirements listed in Table A9.1.5-1 below unless otherwise specifically stated in the Contract Documentation.", and replace with the following:

"Coarse and fine aggregate shall be clean from excess dust and free from decomposed materials, vegetable matter and any other deleterious substances such as clay lumps and organic matter and shall meet the requirements listed in Table A9.1.5-1 below unless otherwise specifically stated in the Contract Documentation."

A9.1.8 WORKMANSHIP

A9.1.8.4 Surface regularity

a) Measured using inertial laser profilometers

In the 6th paragraph add the following prior to "The applicable Full Payment Bracket ...":

"For the Asphalt Base the values in Payment Bracket 6 in Table A9.1.8-3 shall be applied as the payment adjustment factors for the Asphalt Base on the contract or section, and for the Asphalt Surfacing".

In the 6th paragraph add the following after "...assessment of the base as per Clause A5.3.8.5c) of Chapter 5 for granular bases":

", and this clause A9.1.8.4a) for Asphalt bases."

In the 7th paragraph, delete: "under 1".

Add the following after the 8th paragraph:

"Where the asphalt surfacing is placed on a surface, other than a granular or asphalt base, constructed by the Contractor through mill and replace or patching, the surface regularity of the replaced or patched surface shall be measured before the surfacing is placed. Should the IRI values per 100m section so determined be better than the IRI values of the original surfacing for the particular 100m section, the measured values shall be used for the $IRI_{b Ave}$ in the above calculation. Should the IRI values per 100m section so determined be worse than the IRI values of the original surfacing for the particular 100m section, the IRI values of the original surfacing shall be used for the $IRI_{b Ave}$ in the above calculation."

In the 9th paragraph, delete : "surfacing".

For Table A9.1.8-3, delete "surfacing" in the heading and add the following additional Payment Bracket to Table A9.1.8-3

"Target $IRI_{100m Ave}$ (m/km)"	Payment Bracket 9
< 0.80	1.050
0.81 to 0.90	1.050

0.91 to 1.00	1.050
1.01 to 1.10	1.050
1.11 to 1.20	1.050
1.21 to 1.30	1.050
1.31 to 1.40	1.050
1.41 to 1.50	1.050
1.51 to 1.60	1.050
1.61 to 1.70	1.025
1.71 to 1.80	1.010
1.81 to 1.90	1.000
1.91 to 2.00	0,990
2.01 to 2.10	0,975
2.11 to 2.20	0,955
2.21 to 2.30	0,930
2.31 to 2.40	0,900
2.41 to 2.50	0.865
>2.51	Reject"

PART C: MEASUREMENT AND PAYMENT

Item	Description	Unit
------	-------------	------

C9.1.9 Application of rolled-in chippings (State nominal size)

Delete the 1st paragraph of the item description: "The unit of measurement shall be the ton of specified size of rolled-in chippings applied at the approved application rate, measured loose in hauling vehicles. The tendered rate shall include full compensation for the procuring, furnishing, pre-coating, spreading and rolling in of the chippings and for any additional costs resulting from the construction of the asphalt surfacing with rolled-in chippings.", and replace with the following:

"The unit of measurement shall be the square metre of specified size of rolled-in chippings applied at the approved application rate. The tendered rate shall include full compensation for the procuring, furnishing, pre-coating, spreading and rolling in of the chippings and for any additional costs resulting from the construction of the asphalt surfacing with rolled-in chippings."

Add the following items:

Item	Description	Unit
------	-------------	------

C9.1.17	Raised pedestrian crossing (50mm high) with kicker (Asphalt compacted in 40m layers and placed within existing road surfacing), complete as per drawing No.: 60487450-10-0-C-DA-129 with positions as shown on the layout plans	metre (m)
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The tendered rate for item C9.1.17 shall include full compensation for supplying all materials, labour, plant, loading, transporting and off-loading, excavation, installation, backfill and compaction and any other work necessary for constructing the raised pedestrian crossing and kicker"

COTO CHAPTER 11: ANCILLARY ROAD WORKS

SECTION 11.4: ROAD RESTRAINT SYSTEMS

PART A: SPECIFICATION

A11.4.1 SCOPE

Delete the last paragraph, and replace with the following:

“Moveable vehicle restraint systems required for traffic accommodation during construction and truck mounted attenuators are also specified in Clauses A1.5.6.1, A1.5.6.3 and A1.5.7.11 of Chapter 1.”.

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.

SECTION 11.5: FENCING

PART C: MEASUREMENT AND PAYMENT

Add the following items:

Item	Description	Unit
C11.5.11	Pedestrian security fence 1.8m high complete as per drawing 60487450-10-0-C-DA-129 installed on top of the masonry walls	metre (m)

The tendered rate for item C11.5.11 shall include full compensation for supplying all materials, labour, plant, loading, transporting and off-loading, installation, and any other work necessary for constructing the security fencing”

SECTION 11.6: ROAD SIGNS

PART A: SPECIFICATION

A11.6.7 EXECUTION OF THE WORKS

A11.6.7.5 Erecting road signs

b) Excavation and backfilling

In the 1st sentence of the 2nd paragraph, before “Section A13.4 of Chapter 13”, add the following:

“Section A13.2, Section A13.3 and”.

PART C: MEASUREMENT AND PAYMENT

Item	Unit
C11.6.1 Road signboards with painted or coloured semi-matt background. Symbols, lettering and borders in semi- matt black or in Class I retro-reflective material, where the sign board is constructed from:	
<i>Add the following new pay item:</i>	
“C11.6.1.13 Moveable barricade/road sign combination (signboard material, background, symbol retro-reflective class and size indicated)	number (No)
The unit of measurement for item C11.6.1.13 shall be the number of moveable barricades, complete with road signs provided.	
The tendered rate for item C11.6.1.13 shall include full compensation for providing and erecting each moveable barricade and signs and shall also include full compensation for moving the barricade as and when required.”	

SECTION 11.7: ROAD MARKINGS AND ROAD STUDS

PART A: SPECIFICATION

A11.7.5 MATERIALS

A11.7.5.2 Materials

a) Marking materials

(iii) *Thermoplastic road marking material*

In the 4th paragraph, delete “mcd/m².lux” and replace with “mcd/m²/lux”.

PART C: MEASUREMENT AND PAYMENT

Item	Unit	
C11.7.3 Thermoplastic road marking		
<i>Amend the retro-reflective luminance unit to be “mcd/m²/lux”.</i>		
<i>Add the following items:</i>		
“Item	Description	Unit
C11.7.12	Apply COSBI (Control of Speed By Illusion) line strips (500mm width and 3mm thickness cold plastic), complete as shown on the General Layout Plans	metre (m)

The unit of measurement for applying the line strips shall be per metre of each specified colour and width of line and the quantity paid for shall be the actual length of line painted in accordance with the instructions of the Engineer, excluding the length of gaps in broken lines.

The tendered rate per metre for applying the road markings in cold plastic or PMMA and shall include full compensation for establishing specialist teams and equipment, and for procuring and furnishing all labour and material.”

COTO CHAPTER 12: GEOTECHNICAL APPLICATIONS

SECTION 12.5: SHOTCRETE

PART A: SPECIFICATION

A12.5.7 EXECUTION OF THE WORKS

Preconstruction trial panels

Add "A12.5.7.21" before the heading "Preconstruction trial panels".

PART C: MEASUREMENT AND PAYMENT

Item

Unit

C12.5.4 Shotcrete (of specified thickness or volume):

Amend the unit for item C12.5.4.4 Dental shotcrete, to "cubic metre (m³)".

SECTION 12.6: MECHANICALLY STABILISED EARTH AND GABIONS

PART A: SPECIFICATION

A12.6.8 WORKMANSHIP

A12.6.8.1 MSE Walls

b) Concrete facings

Replace the letter "W" with "durability" in the first sentence.

SECTION 12.10: HARD EXCAVATION BY BLASTING

PART A: SPECIFICATION

A12.10.5 MATERIALS

A12.10.5.1 Explosives

b) Controlled bulk blasting

Add the following at the end of the 2nd paragraph:

"The use of pumped emulsions for controlled bulk blasting will only be permitted if emulsion ingress into rock fissures is prevented and the emulsion is encapsulated and separated from the blast hole."

PART C: MEASUREMENT AND PAYMENT

Item

Unit

C12.10.1 Excavation in hard rock using controlled blasting techniques

Add the following at the end of the pay item specification:

"Where the excavated material is not to be utilised in earthworks or layerworks, the volume measured for payment shall be the tight volume of excavated material."

Add the following new pay item:

"Item

Description

Unit

C12.10.8 Ground vibration, air blast and fly rock monitoring

lump sum

The unit of measurement for the monitoring as required shall be the lump sum.

The tendered rate shall include for the monitoring of all blasts as per the specification and shall include the services of an independent specialist, providing and operating all equipment necessary to successfully monitor all blasting operations and for compilation of all reports.”

SECTION 12.11: GEOSYNTHETICS

PART A: SPECIFICATION

A12.11.5 MATERIALS

Add the following sub-clause:

“A12.11.5.4 Grade Classification

The Grade classification for Geosynthetics is specified in the Contract Documentation.”

COTO CHAPTER 13: STRUCTURES

SECTION 13.1: FOUNDATIONS

PART B: LABOUR ENHANCEMENT

B13.1.7 EXECUTION OF THE WORKS

B13.1.7.4 Utilisation of excavated material

Delete reference to: "100 m" and replace with "50 m".

SECTION 13.3: STEEL REINFORCEMENT

PART A: SPECIFICATION

A13.3.8 WORKMANSHIP

A13.3.8.4 Tolerances

b) Concrete cover

Delete reference to "Clause A13.4.8.1a)(iv)" and replace with: "Clause A13.4.8.1a)(v)".

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

A13.8.7 EXECUTION OF THE WORKS

A13.8.7.2 Drainage for structures

d) Crushed stone in drainage strips behind walls

Delete "19 mm nominal size" and replace with "20 mm nominal size".

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

A20.1.4.8 Testing of asphalt

Add the following new paragraph:

“Sabita Manual 39: Laboratory Testing Protocols for Binders and Asphalt, shall be implemented together with the asphalt tests listed.”

*Delete reference to: “Sabita Manual 35 for Design and Use of Asphalt in Road Pavements: Determining the Richness Modulus of EME asphalt mixes.”
and replace with “Sabita Manual 33 for Design Procedure for High Modulus Asphalt (EME): Determining the Richness Modulus of EME asphalt mixes.”*

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 site/commercial laboratory

Delete reference to: “/commercial”

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 R.573-020-2019/2

FOR THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE D FROM
KM 8.60 TO KM 13.00

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. Where, however, a clause has been amended under Section A2, the clause number is prefixed with a "P" in this Section.

COTO CHAPTER 1: GENERAL

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
1			GENERAL	
	A1.1		GENERAL PREAMBLE	
		PA1.1.2	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 the Key plan. Refer to drawing number 60487450-10-0-C-AD-002.
	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 Officer is 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" is 23 . 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 The entire extent of the site will be handed over on the date of Right of Access to Site b) Temporary deviations Maximum total length: 3km Maximum total number allowed at a time: 2
			A1.2.3.9 Monthly reports	Other information to be included in monthly progress reports are as follows: a) Information as required in terms of Conditions of Contract Clause 4.21 b) Aerial progress footage (images and video) The images and video shall cover the full extent of the Works and the resolution of the images shall be of sufficient quality to clearly identify all elements of the Works.
			A1.2.3.10 Notices, signs and advertisements	Details of the contract sign board is provided in Drawing No.: 60487450-10-0-C-DA-105.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA						
			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><th>Asset description</th><th>Estimated quantity</th><th>Disposal requirement</th></tr><tr><td>Temporary traffic accommodation signs</td><td>All traffic accommodation signs that are on site at the end of the contract.</td><td>The signs become the property of the Contractor and shall be removed from site. A negative rate may be tendered where allowed for this item in the schedule of quantities.</td></tr></table>	Asset description	Estimated quantity	Disposal requirement	Temporary traffic accommodation signs	All traffic accommodation signs that are on site at the end of the contract.	The signs become the property of the Contractor and shall be removed from site. A negative rate may be tendered where allowed for this item in the schedule of quantities.
Asset description	Estimated quantity	Disposal requirement								
Temporary traffic accommodation signs	All traffic accommodation signs that are on site at the end of the contract.	The signs become the property of the Contractor and shall be removed from site. A negative rate may be tendered where allowed for this item in the schedule of quantities.								
			A1.2.3.13 Prevention of damage to nearby properties and services	<p>Structures that could be affected by excessive ground vibrations is listed in the following table:</p> <table><tr><th>Structure</th><th>Type</th><th>Location</th></tr><tr><td>Buildings</td><td>Residential and/or Commercial</td><td>Immediately adjacent to the R573 and access road intersections</td></tr></table>	Structure	Type	Location	Buildings	Residential and/or Commercial	Immediately adjacent to the R573 and access road intersections
Structure	Type	Location								
Buildings	Residential and/or Commercial	Immediately adjacent to the R573 and access road intersections								
			PA1.2.3.15 Routine maintenance	<p>The Contractor shall be responsible for:</p> <ul style="list-style-type: none">- All the routine maintenance responsibilities <p>The Contractor shall take over the specified maintenance responsibility on the date of Access to site</p> <p>The backfilling for patching shall be done in accordance with the requirements of Chapter 8.</p> <p>The general condition, including riding quality, of gravel deviations shall comply with Clause A1.5.7.10 f) of COTO</p>						
			A1.2.3.18 Stakeholder liaison	<p>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.</p>						
			A1.2.3.20 Road safety audits	<p>A Work zone traffic management audit as well as a Pre-opening stage road safety audit, shall be carried out.</p>						
			A1.2.3.22 Wayleaves/Agreements and Permits	<p>The Contractor shall be responsible for applying for the following wayleaves:</p> <p>Relocation of overhead telephone lines – Telkom</p>						

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				Relocation of overhead power lines – Eskom Relocation of bulk water-main – Rand Water
		A1.2.7	EXECUTION OF THE WORKS	
			PA1.2.7.1 Programme of work	
			a) General	A scheme 2 programme shall apply.
			b) Scheme 2	The programme shall be drawn up or be compatible with a licenced copy of the latest version of 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 Chapter 2 of COTO, as amended in the project specifications. The Contractor will be responsible for obtaining the necessary approvals from the Service owner for the protection/relocation of existing services, forming part of the Works.
	A1.3		CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS	
		A1.3.3	GENERAL	
			A1.3.3.1 Construction camps	The Contractor is responsible to identify a suitable location for the establishment of the construction camp.
	A1.4		FACILITIES FOR THE ENGINEER	
		A1.4.3	GENERAL	Refer to drawing number: 60487450-10-0-C-DA-130
		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	Refer to drawing number: 60487450-10-0-C-DA-130
			c) Laboratories	Refer to drawing number: 60487450-10-0-C-DA-130
			f) Ablution unit	Refer to drawing number: 60487450-10-0-C-DA-130
			A1.4.7.3 Services	
			b) Water, electricity and gas	A stand-by generator shall be supplied by the Contractor and must be able to supply 24-hour electricity to the laboratory.
			A1.4.7.5 Office staff	An office secretary/receptionist is to be provided by the Contractor.
	A1.5		ACCOMMODATION OF TRAFFIC	
		A1.5.3	GENERAL	
			A1.5.3.2 General requirements	Refer to drawing number: 60487450-10-0-C-AD-601
		A1.5.6	CONSTRUCTION EQUIPMENT	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A1.5.6.1 Traffic control facilities	
			A1.5.6.2 Illuminated traffic signs and safety devices	
			d) Sign mounted flashing lights	Sign mounted flashing lights are required at all advance warning signs, lane closures and any other potentially hazardous positions and are to be operated during hours of darkness and in poor visibility conditions.
		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>No half or partial width construction sections where the traffic can only pass in one direction at a time shall be allowed.</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 period:</p> <p>During the Contractor's annual shutdown between 15 December and 06 January.</p>
			A1.5.7.10 Construction of temporary deviations	
			d) Earthworks and pavement layers for temporary deviations	<p>150mm C4 stabilised base compacted to 97% of MDD</p> <p>150mm gravel subbase/fill/roadbed prep layer compacted to 93% of MDD</p> <p>Refer to Tables A4.1.5-2, A4.1.5-3, A4.1.5-4 & A4.4.5-2 of COTO.</p>
			e) Surfacing of temporary deviations	30mm asphalt, continuously graded surfacing PG64S-16 binder, 7.1mm NMPS, Level IB design)
	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	
			A2.1.1.2 Location, identification, protection and relocation of existing services	All Telkom and ESKOM services are overhead. Water pipes can be identified through the constructed valve-chambers. Refer to Layout drawings numbers: 60487450-10-1-C-AD-101 to 110.
		A2.1.3	GENERAL	
			A2.1.3.1 Installation of new services	New street-lighting related infrastructure shall be installed. Refer to drawing numbers: 60487450-10-1-AF-101 to 104
			A2.1.3.2 Location, identification, protection and relocation of existing services	
			a) Existing as-built records	The following known existing services have been identified: Overhead Telkom lines, overhead electrical lines and underground water pipes. Refer to Layout drawings numbers: 60487450-10-1-C-AD-101 to 110.
			b) Location of existing services	Refer to Layout drawings numbers: 60487450-10-1-C-AD-101 to 110. The location of services to be determined by making use of Ground Penetrating Radar.
			d) Protection of services	
			<i>(i) Service owners</i>	The identified service owners (and their contact details) include: Telkom, ESKOM & Rand Water
			<i>(ii) Protection</i>	Services effected by the new road infrastructure will be relocated either by the Service providers or by the Contractor with approval by the service providers.
			<i>(iv) Relocation</i>	The relocation of services is to be negotiated upon appointment of the Contractor. Timelines for relocation of services to be communicated with Services Providers in accordance with the approved Construction Programme. No services connections or down time shall be permitted after 1 November up 15 January.
			A2.1.3.3 Safety, Method Statements, safeguarding the works and	In accordance with approved OHS specification.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			accommodation of traffic	
			a) Safety and Method Statements	In accordance with approved OHS specification.
			c) Accommodation of traffic	In accordance with approved Accommodation of Traffic drawings and OHS specification.
			A2.1.3.5 Programming for services	
			a) Trenching and installation sequence	Pipes to be installed by trench methods. Horizontal drilling to be executed for the installation of ducts/cable sleeves across the R573.
			A2.1.3.6 Provision of record drawings and details	Surveyor to be registered with PLATO.
			A2.1.3.9 Limitations and restrictions	
			e) Working widths	A minimum width of 2x3.5m wide lanes are required for accommodation of traffic at all times. Refer to drawing number: 60487450-10-0-C-AD-601.
		A2.1.4	DESIGN BY CONTRACTOR / PERFORMANCE BASED SYSTEMS	
			A2.1.4.1 Temporary works	Temporary works relating to Services shall be designed and installed by the Contractor as required to construct the permanent works.
		A2.1.5	MATERIALS	
			A2.1.5.2 Soil cement and stabilised trench backfill material	
			a) Soil cement backfill	The material used for soil cement shall be G8 in accordance with COTO standard specification.
			b) Cement stabilised backfill	The material stabilised shall be G8 in accordance with COTO standard specification.
		A2.1.6	CONSTRUCTION EQUIPMENT	
			A2.1.6.1 Excavation equipment	For base widths of trenches, refer to drawing number: 60487450-10-0-C-DA-107 to 109
		A2.1.7	EXECUTION OF THE WORKS	
			A2.1.7.1 Trenching for Services	
			f) Safe placement of excavated material	Suitable stockpiling site to be identified and planned by the Contractor.
			h) Excavation	For trench widths, refer to drawing number: 60487450-10-0-C-DA-108
			k) Excavations outside the normal trench profile	Excavations outside the normal trench profile to include thrust blocks, valves, manholes, draw pits, catch pits, junction boxes and wing walls.
			l) Timbering and shoring	
			(ii) Contract Specific Shoring Requirements	Timbering, strutting and shoring shall be provided to ensure the stability of, or for the protection of services where needed in accordance with the approved OHS.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			m) Soil cement backfilling	Soil cement backfilling to be for the installation of services to be as directed by the Engineer on site.
			n) Erosion protection with sandbags	Sandbags shall be used in trenches to prevent the ingress of water and / or erosion during construction of the completed works.
			p) Preparation of the bottom of trenches	Trenches to be excavated to a depth of 100mm below the pipe invert levels for services.
			r) Dealing with water	
			<i>(i) Contractor's obligations for dealing with water</i>	The Contractor to take adequate precautions to control the inflow of water into trenches.
			A2.1.7.2 Reinstatement of existing roads and existing road furniture	
			a) General	<p>The reinstatement of roadways to consist of the following pavement layers:</p> <p><u>Typical Carriageway</u></p> <p>150mm lower selected layer (minimum G9 quality material) compacted to 93% of MDD 150mm upper selected layer (minimum G7 quality material) compacted to 95% of MDD 250mm C3 subbase compacted to 97% of MDD 150mm G1 base compacted to 88% of apparent relative density 50mm continuously graded asphalt (PG64E-16(EMB))</p> <p><u>Pedestrian Refuge Area within Carriageway</u></p> <p>150mm upper selected layer (minimum G7 quality material) compacted to 95% of MDD 250mm C3 subbase compacted to 97% of MDD 190mm gravel (minimum G7 quality material) selected layer compacted to 95% of MDD 150mm C20/25-20 concrete with expansion joints @ 1.5m centres</p> <p><u>Pedestrian Walkway</u></p> <p>150mm gravel (minimum G7 quality material) selected layer compacted to 95% of MDD 60mm block paving (Class 30/2.0 SANS 1058, type S-A, on 20mm bedding sand</p>
			b) Reinstatement of existing road carriageways and other paved areas	<p>The reinstatement of roadways to consist of the following pavement layers:</p> <p><u>Typical Carriageway</u></p> <p>150mm lower selected layer (minimum G9 quality material) compacted to 93% of MDD 150mm upper selected layer (minimum G7 quality material) compacted to 95% of MDD</p>

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				<p>250mm C3 subbase compacted to 97% of MDD 150mm G1 base compacted to 88% of apparent relative density 50mm continuously graded asphalt (PG64E-16(EMB))</p> <p><u>Pedestrian Refuge Area within Carriageway</u></p> <p>150mm upper selected layer (minimum G7 quality material) compacted to 95% of MDD 250mm C3 subbase compacted to 97% of MDD 190mm gravel (minimum G7 quality material) selected layer compacted to 95% of MDD 150mm C20/25-20 concrete with expansion joints @ 1.5m centres</p> <p><u>Pedestrian Walkway</u></p> <p>150mm gravel (minimum G7 quality material) selected layer compacted to 95% of MDD 60mm block paving (Class 30/2.0 SANS 1058, type S-A, on 20mm bedding sand</p>
			d) Reinstatement of unpaved areas	Topsoil (75mm thick) to be placed over affected area followed by hydro seeding.
			A2.1.7.6 Ownership, removal and disposal of existing service materials	Contractor shall become the owner of specific recovered service materials and shall be responsible for the disposal of the materials and for providing the Engineer with a full record of the disposal of the materials for control purposes.
		A2.1.8	WORKMANSHIP	
			A2.1.8.2 Compaction	
			a) Relative density compaction control	DCP compaction quality control shall only be permitted in areas falling outside the road reserve.
			<i>(ii) Areas subjected to vehicle traffic loads or within the road prism</i>	Areas over and above any fill or embankment within the road prism where layers are backfilled in thickness (after compaction) that do not exceed 150mm and the material shall be compacted to a minimum of 93% of MDD or a minimum of 100% of MDD where sand is used.
			c) DCP compaction control	<p>DCP compaction quality control shall only be permitted in areas falling outside the road reserve.</p> <p>DCP Acceptance criteria to be in accordance with Table A2.1.8-1 of COTO</p>
	C2.1		GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES PART C: MEASUREMENT AND PAYMENT	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			(ii) Notes on measurement and pay items	Trench depths should be measured from the surface of the ground along the centreline of the trench to the bottom of the specified bedding layer.
		C2.1.16	Subsurface drains in trench bottoms (Contract Documentation reference or drawing number indicated)	Refer to drawing number: 60487450-10-0-C-DA-113 to 114.
		C2.1.17	Removal and disposal of spoil material from trench excavations:	Contractor to identify spoil sites.
	A2.2		DRY SERVICES	
		A2.2.1	SCOPE	Refer to drawing numbers: 60487450-10-1-E-AF-101 to 105
			A2.2.1.1 General note	In certain SANS documents referred to in this Section the term "specified in the scope of work" is used. For the purposes of this specification the term shall be deemed to mean "specified in the Contract Documentation".
		A2.2.5	MATERIALS	Service ducts to be 110mmø and 160mmø uPVC Class 6
			A2.2.5.1 Ducts and sleeves	
			c) Concrete pipe ducts	In accordance with SANS 677, reinforced type SC concrete pipes with spigot and socket type joints with a rolling rubber ring, Class 100D
			g) End caps or plugs	Cement and sand plug or suitable wood stopper
			h) Draw wires and marker tapes	2.5mm galvanised draw wire with a 2m free length.
			A2.2.5.4 Cable duct markers	Refer to drawing number: 60487450-10-0-C-DA-107
			A2.2.5.5 Concrete	Concrete shall be Class C25/30-20
			A2.2.5.7 Handhole, manhole and access chamber types and covers	
			a) Handhole, manhole and access chamber	
			<i>(i) Telecommunications handholes, manholes and access chambers</i>	Telecommunications Service Provider will relocate their own service in accordance with their own typical details.
			<i>(iv) Other handholes, manholes and access chambers</i>	Telecommunications Service Provider will relocate their own service in accordance with their own typical details.
			b) Covers and frames	
			<i>(i) Telecommunications covers and frames</i>	In accordance with SANS 558 and SANS 50124
			<i>(ii) Other covers and frames</i>	In accordance with SANS 50124
		A2.2.7	EXECUTION OF THE WORKS	
			A2.2.7.2 Duct installation by methods other than by	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			micro or mini trenching	
			a) Trench widths for duct installations	Refer to drawing number: 60487450-10-0-C-DA-107 to 108
			A2.2.7.4 Duct markers	
			b) Route markers	Refer to drawing number: 60487450-10-0-C-DA-106. All route markers to be replaced.
			c) Road crossing markers	Cut the letter "D" in concrete drain or face of kerb (centre of duct grouping), 75mm high by 5mm thick. Where ducts cannot be marked on kerbs or drains, an E1 edging must be buried vertically with 300mm protruding, painted white with the letter "D" in black.
		A2.2.8	WORKMANSHIP	
			A2.2.8.2 Proving ducts	
			a) Standard proving requirements	In accordance with Clause 5.1.5 of SANS 2001-DP3
	C2.2		DRY SERVICES PART C: MEASUREMENT AND PAYMENT	
		C2.2.6	Duct accessories (markers, marking, draw wires and end caps etc.)	The tendered rates shall include full compensation for the manufacture, delivery and installation of the markers, draw wires, end caps, plugs or other accessories complete as specified or for completing the marking on kerbs as specified.
		C2.2.8	Covers and frames for duct handholes, manholes and access chambers	The tendered rates shall include full compensation for the manufacture, delivery and installation of the covers and frames complete as specified.
	D2.2		DRY SERVICES PART D: GUARANTEES AND COMPLIANCE CERTIFICATES	
		D2.2.2	WARRANTIES FOR PRODUCT OR ELEMENT DESIGN AND INSTALLATION OF PROPRIETARY SYSTEMS	The design and installation of proprietary dry service systems shall require that a warranty of 15 years be supplied by the Contractor.
		D2.2.3	PERFORMANCE SPECIFICATIONS	The performance-based specification shall be according to the requirements as set out in D2.2.3.1 & D2.2.3.2.
	A2.3		WET SERVICES	
		A2.3.1	SCOPE	The manholes of the existing water mains are shown the layout plans (60487450-10-1-C-AD 101 to 110). The relocated positions thereof will need to be agreed with the Service Provider.
			A2.3.1.1 General note	In certain SANS documents referred to in this Section the term "specified in the scope of work" is used. For the purposes of this

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				specification the term shall be deemed to mean "specified in the Contract Documentation".
		A2.3.7	EXECUTION OF THE WORKS	
			A2.3.7.3 Water mains	
			e) Valve and hydrant chambers and manholes	To be in accordance with Clauses 4.9 and 4.10 of SANS 2001-DP2
		A2.3.8	WORKMANSHIP	
			A2.3.8.3 Water mains	
			a) Tolerances	To be in accordance with Clause 5.1 of SANS 2001-DP2
			b) Construction tests	To be in accordance with Clause 5.3 of SANS 2001-DP2 and/or Clauses 5.3 and 5.4 of SANS 2001-DP6
	C2.3		WET SERVICES PART C: MEASUREMENT AND PAYMENT	
		C2.3.21 to C2.3.36	Measurement and Payment Items for Water Mains (Items C2.3.21 to C2.3.36)	
		C2.3.26	Supplying and installing pipes, specials and valves on short pipe runs	The pipes, specials and valves and installation thereof shall be in accordance with the Service Providers typical details.
	A2.4		ENERGY AND OTHER SERVICES	
		A2.4.1	SCOPE	<p>The purpose of Section A2.4 is therefore partly to provide a structured framework for the Contract Documentation for civil construction work related to energy services or any other types of services not dealt with elsewhere in Chapter 2.</p> <p>In certain SANS documents referred to in this section the term "specified in the scope of work" is used. For the purposes of this specification the term shall be deemed to mean "specified in the Contract Documentation"</p>
		A2.4.5	MATERIALS	
			A2.4.5.1 General	<p>Lighting poles and masts to be of material type hot-dipped galvanised steel as per SANS 121 and SANS 10225</p> <p>Low-voltage cabling to be of PVC/PVC/SWA/PVC type, with copper or aluminium conductors in accordance with SANS 1507. See drawing 60487450-10-1-E-FC-001.</p> <p>Luminaire materials to be as per section F1009.</p>

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				Roadway lighting kiosks to be of material type 3CR12.
			A2.4.5.3 Backfill for electric power cables	Refer to section F1010 (d)
			A2.4.5.6 Electric power cable markers	Concrete blocks consisting of the shape of truncated pyramids, approximately 300mm high, 150 x 150 mm at the top and 250 x 250 mm at the bottom for cable markers.
		A2.4.7	EXECUTION OF THE WORKS	
			A2.4.7.2 Trenching for electric power cables	
			b) Trench dimensions	
			<i>(i) Trench width</i>	Refer to drawing number: 60487450-10-1-E-FC-001
			<i>(ii) Trench Depth</i>	Refer to drawing number: 60487450-10-1-E-FC-001
			A2.4.7.8 Electric Power cables and markers	Cable markers to be installed.
			A2.4.7.9 Steel supporting structures	Refer to section F1009 (i).
		A2.4.8	WORKMANSHIP	
	C2.4		ENERGY AND OTHER SERVICES PART C: MEASUREMENT AND PAYMENT	
		C2.4.3	Cable laying accessories (warning tape, protection slabs, markers etc.)	Warning tape to be of orange plastic type.
	D2.4		ENERGY AND OTHER SERVICES PART D: GUARANTEES AND COMPLIANCE CERTIFICATES	
		D2.4.1	Scope (Guarantees and compliance certificates)	In accordance with SANS-10142

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	160mmø uPVC perforated or slotted drainage pipe and fittings
		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>	Refer to drawing number: 60487450-10-0-C-DA-113 to 114.
			A3.1.7.5 Manholes, outlet structures and cleaning eyes	Refer to drawing number: 60487450-10-0-C-DA-113 to 114. 300mm & 750mm dia. – SANRAL typical detail – drawing numbers TD-D-MC-1002-V1 to TD-D-MC-1004-V1
	A3.2		CULVERTS	
		A3.2.5	MATERIALS	
			A3.2.5.2 Culvert materials	
			h) Protective coating for metal culverts	Reinforced bituminous mastic, applied in accordance with manufacturer's specification.
	A3.3		CONCRETE KERBING AND CHANNELING, ASPHALT BERMS, CHUTES, DOWNPIPES, AS WELL AS CONCRETE, STONE PITCHED AND GABION LININGS FOR OPEN DRAINS	
		A3.3.7	EXECUTION OF THE WORKS	
			A3.3.7.1 Drainage structures	
			a) Prefabricated concrete kerbing and channelling	Refer to drawing number: 60487450-10-0-C-BA-101 to 102
			f) Cast in situ chutes on cut slopes	Refer to drawing number: 60487450-10-0-C-DA-111 and 121
			i) Stone pitched open drains	Refer to drawing number: 60487450-10-0-C-DA-119

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	Refer to Volume 6 for the Materials Investigation and Utilisation Report.
			A4.1.3.2 Contractor identified borrow pits and quarries	The Contractor may identify compliant borrow pits sources subject to the Engineer's approval and in accordance with the requirements of A4.1.3.2 of COTO
			A4.1.3.4 Contractor prepared plans for borrow materials	Refer to Volume 6 for the Materials Investigation and Utilisation Report.
		A4.1.7	EXECUTION OF WORKS	
			A4.1.7.2 Borrow pit and Quarry operations	
			a) General control at the borrow pits and quarries	A full-time materials manager is required, with at least a relevant diploma in engineering or geology and minimum 10 years' relevant experience. The materials manager will be responsible for managing control at borrow-pits and quarries, managing the control of excavations and management of materials.
			g) Selection and excavation of material in borrow pits	A full-time materials manager is required, with at least a relevant diploma in engineering or geology and minimum 10 years' relevant experience. The materials manager will be responsible for managing control at borrow-pits and quarries, managing the control of excavations and management of materials.
			h) Selection and excavation of material in quarries	A full-time materials manager is required, with at least a relevant diploma in engineering or geology and minimum 10 years' relevant experience. The materials manager will be responsible for managing control at borrow-pits and quarries, managing the control of excavations and management of materials.
			l) Use of the borrow material	Refer to Volume 6 for the Materials Investigation and Utilisation Report.
			m) Closing of the borrow pits and quarries	Large boulders or remaining in-situ hard material shall not be left to protrude from the slopes or faces of the excavation.
	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	A full-time materials manager is required, with at least a relevant diploma in engineering or geology and minimum 10 years' relevant experience. The materials manager will be responsible for managing control at borrow-pits and quarries, managing the control of excavations and management of materials.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			h) Excavation of material in cuttings	No deep hard material or rock cuttings are anticipated for this Contract. Refer to drawing number: 60487450-10-0-C-BA-101 to 102
			i) Excavation of material in box cuts	Refer to drawing number: 60487450-10-0-C-BA-101 to 102
			k) Selection and the use of the cut material	Refer to Volume 6 for the Materials Investigation and Utilisation Report.
	A4.3		EXISTING ROAD MATERIALS	
		A4.3.3	GENERAL	
			A4.3.3.1 Employer identified existing road materials	Refer to Volume 6 for the Materials Investigation and Utilisation Report. Refer to drawing number: 60487450-10-0-C-BA-101 to 102 for typical pavement layers detail.
		A4.3.5	MATERIALS	
			A4.3.5.2 Reclaimed Asphalt Material	The millings from the 40mm asphalt surfacing and the water-bound macadam base from the existing road shall be used for the construction of the new upper selected layer. Mix proportions to be determined by testing on site.
		A4.3.7	EXECUTION OF THE WORKS	
			A4.3.7.12 Stockpiling of material	
			a) Preparation of the stockpile site	The floor for the reclaimed asphalt stockpile shall be stabilised to a depth of 150mm.
	A4.4		COMMERCIAL MATERIALS	
		A4.4.3	GENERAL	
			A4.4.3.1 Employer identified commercial materials	
			a) Materials from commercial suppliers	Refer to Volume 6 for the Materials Investigation and Utilisation Report. Materials to be imported from commercial sources include the following: G1 base material G5A & G6 material for stabilised subbase layer G5B subbase material G7 selected layer material G9 selected layer material Gravel wearing course Aggregate for concrete
			c) Materials from the Employer's own sources	Quarry 3 - Refer to Volume 6 for the Materials Investigation and Utilisation Report, if available.
	D4.4		COMMERCIAL MATERIALS PART D: GUARANTEES AND	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			COMPLIANCE CERTIFICATES	
		D4.4.4	FUNCTIONAL PERFORMANCE ASSESSMENTS	Material compliance certificates to be provided by the Contractor from commercial source used for the provision of material.

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	Slope gradients for cut or fill batters shall be 1V:2H except behind guardrails where fill slopes are 1V:1.5H. Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
		A5.1.3	GENERAL	
			A5.1.3.1 Roadbed material Investigation	Refer to Volume 6 for the Materials Investigation and Utilisation Report. Roadbed to be minimum G10 quality material, scarified and compacted to 93% of MDD.
		A5.1.5	MATERIALS	
			A5.1.5.2 Topsoil	Topsoil to be obtained from within the road reserve.
			A5.1.5.3 Collapsing soil material	No expansive or collapsible strata has been identified within the road prism.
		A5.1.7	EXECUTION OF WORKS	
			A5.1.7.1 Clearing and grubbing	Material from clearing and grubbing shall be removed from site.
			A5.1.7.3 Normal roadbed treatment	
			a) Construction overview	Benching for roadbed treatment that is located on a slope that is steeper than 1 (one) vertical to 10 (ten) horizontal shall be maximum of 150mm vertical to 150mm horizontal steps.
			b) Removal of unsuitable roadbed material	Should unsuitable material be encountered, the material should be removed to a designated spoil site as instructed by the Engineer.
			c) Percentage of Max Dry density (MDD)	Roadbed to be minimum G10 quality material, scarified and compacted to 93% of MDD.
			f) Hard material	Treatment of in-situ hard roadbed material shall be by ripping or drilling and blasting.
			g) Inactive clay and normal clay	Treatment to be either lime modification or removal of material as per instruction of Engineer.
			<i>(ii) Lime modification</i>	Minimum 2% lime by weight, to a depth not exceeding 200mm.
			<i>(iii) Removal of material</i>	To a maximum depth of 450mm.
			h) Active Clay	Method of treatment shall be by Alternative 2 – Roadbed construction by removal of active clay.
			<i>(ii) Alternative 2 – Roadbed construction by removal of active clay</i>	Depth of active clay layer to be removed to be a minimum of 750mm. Replacement with complaint material and shall be compacted to 93% of MDD.
			i) Construction of a pioneer layer	Pioneering layer to be installed where founding material is found to be soft and saturated, as confirmed by the Engineer.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				Material for the pioneer layer shall be in accordance with Clause A4.1.5.3 of COTO. All pioneering layers to be installed in single stone thick layer rolled in statically until refusal.
			A5.1.7.4 Special drainage measures, dewatering	Refer to drawing number: 60487450-10-0-C-DA-113 to 114 for subsoil drainage details.
		A5.1.8	WORKMANSHIP	
			A5.1.8.2 Compaction requirements	Minimum lot size in accordance with COTO standard specifications and locations of tests per lot to be determined on site.
	C5.1		ROADBED PART C: MEASUREMENT AND PAYMENT	
		C5.1.13	Construction of a levelling layer	Measurement by cross-sections or if impractical by volume of the levelling layer computed as 70% of the loose volume in haul trucks.
	A5.2		FILL	
		A5.2.3	GENERAL	
			A5.2.3.1 Fill Dimensions and shape	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			A5.2.3.3 Fill layer thickness	The compacted fill thickness shall not be more than 200mm per lift.
			A5.2.3.4 Fill compaction classification	
			a) MDD compaction	
			<i>(ii) Normal fill and Coarse Fill</i>	Compaction to 93% of MDD.
			<i>(iii) Fill widening</i>	Compaction to 93% of MDD.
		A5.2.5	MATERIALS	
			A5.2.5.2 Use of fill materials	Fill materials shall be of minimum G9 quality material compacted in to 93% of MDD in thicknesses not exceeding 200mm per lift.
		A5.2.7	EXECUTION OF THE WORKS	
			A5.2.7.3 Benching for fill construction	Benching shall be in steps not more than 500mm wide by 500mm high.
			A5.2.7.4 Widening of fills	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
		A5.2.8	WORKMANSHIP	
			A5.2.8.2 Materials Quality and compaction requirements	Minimum lot size in accordance with COTO standard specifications and locations of tests per lot to be determined on site.
			Table A5.2.8-1	Compaction to 93% of MDD.
	A5.3		ROAD PAVEMENT LAYERS	
		A5.3.3	GENERAL	
			A5.3.3.3 Requirements prior to the construction of any pavement layer	In-situ material to be minimum G9 quality material compacted to 93% of MDD.
			A5.3.3.4 Compaction of pavement layer material	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A5.3.3.7 Joints between pavement layers	
			a) Location of joints	Longitudinal joint in the asphalt surfacing shall coincide with a road marking line (lane or shoulder).
			b) Longitudinal joints	Saw cut or milled joints (as instructed by the Engineer) for the full depth of the asphalt (nominal 50mm).
			c) Transverse Joints	Number of 500mm wide steps cut into the existing road pavement layers or between new sections shall be the same as the number of constructed pavement layers. Cutting of new asphalt surfacing to be made by roller cutting wheel or milled. Saw cuts may only be made with the approval of the Engineer.
		A5.3.5	MATERIALS	
			A5.3.5.1 Material information	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			A5.3.5.2 Pavement Layer thickness and compaction requirements	
			a) Pavement layer thickness requirements	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			b) Gravel and soil pavement layer compaction requirements (G4B to G9 material)	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			c) Crushed stone pavement layer compaction requirements (G1 to G4A and G5A material)	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
		A5.3.7	EXECUTION OF WORKS	
			A5.3.7.1 Controlling pavement layer thickness	
			b) Minimum pavement layer thickness in transition areas	In accordance with the COTO standard specification Clause A5.3.7.1 b).
			A5.3.7.3 Construction of gravel pavement layers	
			a) Construction	Longitudinal construction joints shall be in accordance with COTO clause A5.3.3.7 (a).
			A5.3.7.12 Construction of trial sections	
			a) Trial Sections	Trial sections will be required for stabilised layers and G1 base. The length of a trial section shall be a full layer-width and at least 150m long, with a maximum length of 200m.
		A5.3.8	WORKMANSHIP	
			PA5.3.8.4 Construction tolerances for pavement layers	No layers less than 150mm specified therefore no specific tolerance required other than as per COTO standard specifications.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			d) Width tolerances	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			PA5.3.8.5 Surface regularity	G1 base – C5.3.2.1 (aa) Using a laser profiler.
	C5.3		ROAD PAVEMENT LAYERS PART C: MEASUREMENT AND PAYMENT	
		C5.3.1	Compiling and implementing M&U plans for the construction of all the pavement layers	One plan shall be required for each of the pavement layers.
	A5.4		STABILISATION	
		A5.4.3	GENERAL	
			A5.4.3.2 Work in restricted areas	Payment for treatment and stabilisation of layer work materials in restricted areas shall not be measured separately for payment.
			A5.4.3.3 Construction limitations	
			e) Traffic limitations	Construction equipment such as side-spraying water tankers, which are required for curing may not travel on a stabilised layer.
		A5.4.5	MATERIALS	
			A5.4.5.1 General	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			A5.4.5.2 Material for modification or pre-treatment	Cementitious pre-treatment of subbase material.
			b) Cementitious pre-treatment of material before stabilization	Pre-treatment with 3% lime
			A5.4.5.3 Cementitious stabilising agents	Cement Class 32.5N CEM II B-L Nominal cement content: 3% (to be verified by stabilisation design and after construction of a trial section)
		A5.4.6	CONSTRUCTION EQUIPMENT	Curing with the subsequent layer, in accordance with COTO standard specifications. Side-spraying water tankers, travelling off the stabilised layer may be used.
		A5.4.7	EXECUTION OF THE WORKS	
			A5.4.7.3 Chemical pre-treatment and stabilization	
			e) Applying and mixing in the cementitious agent using a recycler	Full width if the stabilised layer shall be stabilised.
			A5.4.7.7: Protection and curing of chemically stabilised layers	By curing with the subsequent layer and water curing using side-spraying water tankers travelling off the stabilised layer.

COTO CHAPTER 6: CONCRETE LAYERS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
6			CONCRETE LAYERS	
	A6.1		PAVER LAID CONCRETE LAYERS	
		A6.1.5	MATERIALS	
			A6.1.5.5 Reinforcing steel, tie-bars and dowels	
			a) Dimensions	The dimensions of the steel is as follows: 25mmø R-steel dowels, 450mm long The dimension detail is also indicated on the following drawing number: 60487450-10-0-C- BA-101 to 102.
			A6.1.5.7 Materials for joints	
			b) Silicone sealant	
			<i>(vii) Sealant.</i>	The joint filled with sealant detail is indicated on the following drawing number: 60487450- 10-0-C-BA-101 to 102.
			<i>(iv) Materials for cleaning, repairing and resealing of existing joints and cracks</i>	The requirements for resealing of existing joints or cracks shall comply with the requirements of Chapter 7 (section 7.1)
		A6.1.7	EXECUTION OF THE WORKS	
			A6.1.7.1 Preparing the Underlying Layers	
			a) General	Refer to drawing number: 60487450-10-0-C- BA-101 to 102.
			A6.1.7.3 Placing, Compacting and Finishing Concrete	
			a) General requirements for both side-form and slip- form paving	
			<i>(vi) Placing of dowel bars</i>	The placing of dowel bar detail is indicated on the following drawing number: 60487450-10-0- C-BA-101 to 102.
			A6.1.7.3 Placing, Compacting and Finishing Concrete	
			a) General requirements for both side-form and slip- form paving	
			<i>(x) Surface texturing</i>	The pavement surface shall be further textured with a broom finish.
			a) Construction joints	The joint detail is indicated on the following drawing number: 60487450-10-0-C-BA-101 to 102.
			c) Weakened-plain transverse contraction joints	The depth of sawn groove detail is indicated on the following drawing number: 60487450- 10-0-C-BA-101 to 102.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				The joints shall be sealed in accordance with clause A6.1.7.5 and as indicated on the following drawing number: 60487450-10-0-C-BA-101 to 102.
			A6.1.7.5 Joint sealing	
			a) Silicone sealant	
			<i>(vii) Materials</i>	The dimensions and positions of the sealant and appurtenant materials is indicated on the following drawing number: 60487450-10-0-C-BA-101 to 102.
		PA6.1.8	WORKMANSHIP	
			c) Construction tolerances	
			<i>(vii) Surface regularity</i>	The surface regularity shall be measured with either an Inertial High speed profilometer (IRI) or a Direct Contact Device (IRI). The Direct Contact Device (IRI) shall be used in small (inaccessible) areas.
	A6.2		SEGMENTAL BLOCK PAVING LAYERS	
		A6.2.5	MATERIALS	
			A6.2.5.1 Paving blocks	Pedestrian Walkways: The paving blocks shall be of class 30/2.0, type S-A and thickness 60mm Apron Block Paving: The paving blocks shall be of class 40/2.6, type S-A and thickness 80mm
			A6.2.5.4 Concrete beams, kerbs and channelling	Prefabricated kerbing and channelling shall comply with the requirements of Section A3.3
		A6.2.7	EXECUTION OF THE WORKS	
			A6.2.7.1 Preparing the underlying layers.	Refer to drawing number: 60487450-10-0-C-BA-101 to 102.
			A6.2.7.4 Laying of the blocks.	The laying pattern shall be in a herringbone pattern. Refer to drawing no.: 60487450-10-0-BA-101
	D6.2		SEGMENTAL BLOCK PAVING LAYERS PART D: GUARANTEES AND COMPLIANCE CERTIFICATES	Segmental block paving, shall be interlocking and in accordance with SANS 1058

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 OMC.
		A8.1.5	MATERIALS	
			PA8.1.5.1 Bituminous material	The priming material shall be one of the following as specified in Part C: Measurement and Payment: MC-30 OR inverted emulsion prime

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	<p>50mm sand skeletal coarse continuously graded asphalt surfacing (PG64E-16(EMB)) with 14mm nominal maximum particle size, with surface texture of 0.8mm</p> <p>60mm sand skeletal continuously graded asphalt on bridge deck (PG64E-16(EMB)) with 14mm nominal maximum particle size</p> <p>120mm sand skeletal continuously graded asphalt base (PG64H-16) 20mm nominal maximum particle size</p> <p>30mm sand skeletal continuously graded asphalt surfacing (PG64S-16) with 7.1mm nominal maximum particle size (temporary widening surfacing)</p> <p>Asphalt to be paver placed with a Material Transfer Vehicle, where practically applicable.</p>
			Aggregate	Grading class 2
		A9.1.3	GENERAL	
			A9.1.3.1 Nominal mix proportions and application rates	
			Table A9.1.3-2: Nominal Mix Proportions of Sand Skeletal Mixes for Tender Purposes	<p>In accordance with Table A9.1.3-2 for continuously graded base and surfacing.</p> <p>Reclaimed asphalt will not be used.</p>
			Table A9.1.3-2 *Note 2:	<p>Standard nominal mix proportions shall apply.</p> <p>Reclaimed asphalt will not be used.</p>
			b) Bond coat and rolled-in chippings	Nominal application rates in accordance with Table A9.1.3-3
		A9.1.4	DESIGN BY THE CONTRACTOR	
			A9.1.4.1 Mix Designs	<p>Asphalt Surfacing: Sand skeletal coarse continuously graded</p> <p>Asphalt base: Sand skeletal continuously graded</p> <p>Asphalt surfacing (temporary widening): Sand skeletal continuously graded</p>
			A9.1.4.2 Mix design requirements	<p>Asphalt Surfacing: Design level II 14mm nominal maximum particle size Temperature zone - > 58 °C Traffic speed – < 20 km/h; 20 – 80 km/h; > 80 km/h E80 axles - 10 – 30 MESA</p>

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				PG Binder – PG64E-16(EMB) Asphalt Base: Design level II 20mm nominal maximum particle size PG64H-16 Asphalt Surfacing (temporary widening): Design level IB 10mm nominal maximum particle size PG64S-16
		A9.1.5	MATERIALS	
			A9.1.5.2 Bituminous binders for asphalt mixes	Asphalt Surfacing: PG64E-16(EMB) Asphalt Base PG64H-16 Asphalt Surfacing temporary widening): PG64S-16
			PA9.1.5.4 Aggregates	
			a) Aggregate Properties	In accordance with Table A9.1.5-1 of COTO
			A9.1.5.5 Fillers	
			Table A9.1.5-7: Filler requirements	Active filler shall be 1% by mass of hydrated lime.
			A9.1.5.8 Mix properties	Asphalt surfacing (temporary widening): Level IB Asphalt surfacing and asphalt base (permanent works): Level II Mix properties required as per SABITA Manual 35 (latest edition) for the design level indicated here.
		A9.1.6	CONSTRUCTION EQUIPMENT	
			A9.1.6.5 Rollers	Only oscillating type vibratory compaction equipment may be used on bridge decks.
		A9.1.7	EXECUTION OF THE WORKS	
		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.

COTO CHAPTER 11: ANCILLARY ROAD WORKS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
11			ANCILLARY ROAD WORKS	
	A11.4		ROAD RESTRAINT SYSTEMS	
		PA11.4.1	SCOPE	Method specification: Timber post systems with elements conforming to SANS 1350 Performance based systems: Concrete barriers conforming to EN 1317 with containment level H1 Crash cushions conforming to NCHRP 350, TL-3
		A11.4.5	MATERIALS	
			A11.4.5.2 Materials	
			c) Guardrail posts	Guardrail posts to comply with SANS 457 Part 3 Refer to drawing number: 60487450-10-0-C-DA-101 to 102.
		A11.4.7	EXECUTION OF THE WORKS	
			A11.4.7.2 Construction of guardrails on timber posts	Refer to drawing number: 60487450-10-0-C-DA-101 to 102.
	A11.5		FENCING	
		A11.5.5	MATERIALS	
			A11.5.5.2 Straining posts, stays, standards and droppers	Where timber posts are used the preservative shall be CCA treatment.
		A11.5.7	EXECUTION OF THE WORKS	
			A11.5.7.7 Erecting special purpose fencing	Security fencing fixed by baseplate on the median barrier. Mesh fence, 12.m high with Grade A galvanising.
	A11.6		ROAD SIGNS	
		A11.6.7	EXECUTION OF THE WORKS	
			A11.6.7.1 Classification of Materials	Overbreak in width or depth of excavations for road sign footings will not be measured for payment.
			A11.6.7.2 Manufacturing of road signboards and supports	
			d) Galvanizing	Galvanised steel plates and profiles shall be pre-painted.
			A11.6.7.3 Road sign faces and painting	
			b) Preparing surfaces and applying paint and	Aluminium signs not required.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			retro-reflective sheeting	
			PA11.6.7.5 Erecting road signs	
			a) Position	Position of road signs to be erected is shown on the drawings
			b) Excavation and backfilling	Excavations to be backfilled with soil-cement mixture and compacted in 100 mm thick layers to 93% of MDD.
			A11.6.7.7 Dismantling, storing and re-erecting existing road signs	Road signs that are no longer required will be dismantled and removed from site. Dismantling of signs shall include sign panels and sign supports.
	C11.6		ROAD SIGNS PART C: MEASUREMENT AND PAYMENT	
			ii) Notes on measurement and pay items	Measurement for payment shall be taken from the ground surface.
			iii) Items that will not be measured separately	No separate payment will be made for backfilling excess excavations or disposing of surplus material etc.
	A11.7		ROAD MARKINGS AND ROAD STUDS	
		A11.7.5	MATERIALS	
			PA11.7.5.2 Materials	
			a) Marking materials	
			(ii) Retro-reflective road marking	The base-type for retro-reflective road marking paint shall be water based, for the first application.
			(iii) Thermoplastic road marking material	Thermoplastic road marking materials will be applied over the first coat of retroreflective road marking paint on all longitudinal lines at the end of the defect's notification period, while all transverse markings, arrows, symbols and painted island markings will be redone with cold plastic materials as a second coat.
			b) Road studs	Road studs shall be type RSA-2 compliant to SANS 1442.
	A11.8		LANDSCAPING AND PLANTING PLANTS	
		A11.8.5	MATERIALS	
			A11.8.5.2 Materials	
			b) Fertiliser/soil-improvement material	Lime Superphosphate Limestone ammonium nitrate 2:3:2 (22)
			d) Grass seeds	Grass seed mixture: Paspalum Notatum 4 kg/ha Chloris gayana (Katambora) 6 kg/ha Katambora dachylon 4 kg/ha Eragrostis tef 4 kg/ha Eragrostis curnula 12 kg/ha

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				Digitaria eriantha (Smuts finger grass) 6kg/ha
		A11.8.7	EXECUTION OF THE WORKS	
			A11.8.7.3 Grassing	
			c) Hydroseeding	<p>75mm topsoil. Hydroseeding (if instructed) will be applied to topsoil and existing fill/in-situ material.</p> <p>Application rate of the seed mixture for hydroseeding to be 40kg per hectare.</p> <p>Also refer to d) Grass seeds above.</p>

COTO CHAPTER 12: GEOTECHNICAL APPLICATIONS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA																													
12			GEOTECHNICAL APPLICATIONS																														
	A12.11		GEOSYNTHETICS																														
		A12.11.5	MATERIALS																														
			A12.11.5.1 General	Synthetic fibre fabric filter in accordance with the following: Penetration load – SANS 12236: 2013 Puncture resistance – SANS 13433: 2013 Water percolation – SANS 11058: 2013																													
			PA12.11.5.4 Grade Classification	Table A12.11.5-1 shall be used for determining the grade of the geosynthetics: TABLE A12.11.5-1: Grade Classification of Geosynthetics <table><tr><th rowspan="2">Property</th><th colspan="5">GRADE</th></tr><tr><th>1A</th><th>1B</th><th>1C</th><th>2</th><th>3</th></tr><tr><td>Penetration load (CBR) (minimum), N Test Method: SANS 12236: 2013</td><td></td><td></td><td></td><td>2400</td><td>1500</td></tr><tr><td>Puncture resistance (maximum), mm Test Method: SANS 13433: 2013</td><td></td><td></td><td></td><td>26</td><td>32</td></tr><tr><td>Water percolation (minimum), l/m²/s Test Method: SANS 11058: 2013</td><td></td><td></td><td></td><td>20</td><td>20</td></tr></table>	Property	GRADE					1A	1B	1C	2	3	Penetration load (CBR) (minimum), N Test Method: SANS 12236: 2013				2400	1500	Puncture resistance (maximum), mm Test Method: SANS 13433: 2013				26	32	Water percolation (minimum), l/m ² /s Test Method: SANS 11058: 2013				20	20
Property	GRADE																																
	1A	1B	1C	2	3																												
Penetration load (CBR) (minimum), N Test Method: SANS 12236: 2013				2400	1500																												
Puncture resistance (maximum), mm Test Method: SANS 13433: 2013				26	32																												
Water percolation (minimum), l/m ² /s Test Method: SANS 11058: 2013				20	20																												

COTO CHAPTER 13: STRUCTURES

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
13			STRUCTURES	
	A13.1		FOUNDATIONS	
		A13.1.3	GENERAL	
			A13.1.3.5 Hold points	Foundation depth and material to be approved by geotechnical engineer.
		A13.1.7	EXECUTION OF THE WORKS	
			A13.1.7.2 Excavation	
			a) General	Refer to drawing nos. 60487450-10-1-S-DA-003, 60487450-10-1-S-AB-002 & 60487450-10-1-S-AC-005 Refer also to Geotechnical Investigation Report – available on request.
			g) The safety and protection of excavations	Refer to Section 16.7 of the Project Specific Health and Safety Specification..
			A13.1.7.6 Foundation fill	Refer to Geotechnical Investigation Report – available on request as well as to the following drawings: 60487450-10-1-S-DB-006 Mass concrete class C25/30-20 Blinding concrete class C12/15-20
	A13.2		FALSEWORK, FORMWORK AND CONCRETE FINISH	
		A13.2.3	GENERAL	
			A13.2.3.1 Method Statements	The Contractor shall provide method statements to the Employer's Agent at least 28 days prior to the start of work and in accordance with COTO standard specifications.
	A13.3		STEEL REINFORCEMENT	
		A13.3.3	GENERAL	
			A13.3.3.1 Method Statements	The Contractor shall provide method statements to the Employer's Agent at least 28 days prior to the start of work.
		A13.3.5	MATERIALS	
			A13.3.5.1 Steel bars	Refer to drawing numbers: 60487450-10-1-S-AD-017 to 034 60487450-10-1-S-AD-311 to 314
		A13.3.7	EXECUTION OF THE WORKS	
			A13.3.7.4 Cover and supports	Refer to drawing numbers: 60487450-10-1-S-AD-017 to 034 60487450-10-1-S-AD-311 to 314
			A13.3.7.5 Laps and joints	Refer to drawing numbers: 60487450-10-1-S-AD-017 to 034

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				60487450-10-1-S-AD-311 to 314
		A13.3.8	WORKMANSHIP	
	A13.4		CONCRETE	
		A13.4.3	GENERAL	
			A13.4.3.1 Method Statements	The Contractor shall provide method statements to the Employer's Agent at least 28 days prior to the start of work.
			A13.4.3.2 Hold points and approvals	The Contractor shall take and submit samples of materials and/or mixtures to the engineer who must approve mix designs before construction work can commence.
		A13.4.5	MATERIALS	
			A13.4.5.1 Cementitious binder	
		A13.4.7	EXECUTION OF THE WORKS	
			PA13.4.7.12 Placing and Compaction	
			h) Curing and surface protection	Refer to all concrete drawing notes.
			k) Precast concrete	
			<i>(i) Manufacturing</i>	Refer to drawings: 60487450-10-1-S-DA-015 to 016 60487450-10-1-S-DA-306-309
	A13.6		BEARINGS	
		A13.6.4	DESIGN BY CONTRACTOR / PERFORMANCE BASED SYSTEMS	
			A13.6.4.2 Design of proprietary bearings	
			b) Technical data	Refer to drawing: 60487450-10-1-S-DB-053
		A13.6.5	MATERIALS	
			A13.6.5.1 Bearings in structures	
			g) Proprietary mortars	
			<i>(iii) Mortar Thickness under bearings</i>	Refer to drawing: 60487450-10-1-S-DB-053
		A13.6.7	EXECUTION OF THE WORKS	
			A13.6.7.3 Proprietary bearings	
			a) General	Refer to drawing: 60487450-10-1-S-DB-053
			b) Manufacture	Refer to drawing: 60487450-10-1-S-DB-053
			e) Installation	Refer to drawing: 60487450-10-1-S-DB-053

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
	D13.6		BEARINGS	
		D13.6.3	PERFORMANCE GUARANTEE REQUIREMENTS	
			D13.6.3.2 Performance specifications	Submission of warranty certificate required
	A13.7		JOINTS	
		A13.7.3	GENERAL	No construction joints other than those indicated on the drawings will be permitted without the written approval of the engineer. In all cases the proposed method of forming the joint shall be discussed and agreed with the engineer.
			A13.7.3.1 Method Statements	The Contractor shall provide method statements to the Employer's Agent at least 28 days prior to the start of work and in accordance with COTO standard specifications.
		A13.7.4	DESIGN BY CONTRACTOR / PERFORMANCE BASED SYSTEMS	
			A13.7.4.1 Design and manufacture of proprietary joints	Refer to drawing: 60487450-10-1-S-DB-053
		A13.7.7	EXECUTION OF THE WORKS	
			A13.7.7.1 Filled and unfilled joints	
			b) Filled joints	Refer to the concrete detail drawings
			d) Concrete nosings forming the edges of expansion joints shall be constructed as follows	Refer to drawing: 60487450-10-1-S-DB-053
			A13.7.7.3 Sealing the joints	
			a) General	Refer to the concrete detail drawings
			b) Preparing the joints	Refer to the concrete detail drawings
	D13.7		JOINTS	
		D13.7.3	PERFORMANCE GUARANTEE REQUIREMENTS	
			D13.7.3.2 Performance specifications	Submission of warranty certificate required.
	A13.8		ANCILLARY STRUCTURAL ELEMENTS	
		A13.8.7	EXECUTION OF THE WORKS	
			A13.8.7.1 Barriers, parapets, railings and sidewalks	
			a) Concrete barriers and parapets	Refer to the following drawings:

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				60487450-10-1-S-DA-306 to 309 60487450-10-1-S-DA-015 to 016
			d) Numbers for structures	
			<i>(i) Number plates</i>	Refer to the following drawings: 60487450-10-1-S-DB-053
			PA13.8.7.2 Drainage for structures	
			a) Weep holes, drainage pipes and channels	Refer to all typical drainage detail drawings.
			c) Synthetic filter fabric	Refer to all typical drainage detail drawings.
			A13.8.7.3 Bolt groups for electrification brackets	Refer to the following drawings: 60487450-10-1-S-DB-301 to 305
	A13.11		STRUCTURAL STEELWORK FOR MAJOR STRUCTURES	
		A13.11.7	EXECUTION OF THE WORKS	
			A13.11.7.1 Welding	
			d) Stud shear connectors: Welding and procedure trials	Refer to components notes on the following drawings: 60487450-10-1-S-DB-047 to 052
	A13.12		STRUCTURAL STEEL PROTECTIVE TREATMENT OF MAJOR STRUCTURES	
		A13.12.7	EXECUTION OF THE WORKS	
			A13.12.7.15 Specified paint systems	
			c) System 2:	Refer to components notes on the following drawings: 60487450-10-1-S-DB-047

COTO CHAPTER 14: REPAIR AND REHABILITATION OF STRUCTURES

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
14			REPAIR AND REHABILITATION OF STRUCTURES	
	A14.5		ANCHORING OF REINFORCEMENT, GROUTING AND CRACK INJECTION	
		A14.5.5	MATERIALS	
			A14.5.5.2 Grout	
			c) Working characteristics of grout	
			(ii) <i>Strength development, cure time and environmental conditions</i>	As specified in chapter 13 section A13.5.5.7 in COTO standard specifications.
		A14.5.7	EXECUTION OF THE WORKS	
			A14.5.7.2 Grouting	
			e) Batching and mixing	As specified in chapter 13 section A13.5.5.7 in COTO standard specifications.

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 as indicated under A20.1.3.3 a)(i)3.

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 (Full -time Dedicated)
SECTION D		STAKEHOLDER AND COMMUNITY LIAISON AND TARGETED LABOUR AND TARGETED ENTERPRISES UTILISATION AND DEVELOPMENT	
	D1002	DEFINITIONS AND APPLICABLE LEGISLATION	
		D1002.01 Definitions	
		(r) Target Area(s)	For Targeted Labour: Thembisile Hani Local Municipality
		(w) 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 is defined in clause D1003.04
		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	0.5% of targeted labour value
		b. Black women;	30% of targeted labour value

		CPG for Targeted Enterprise	<p>Minimum of (30%) the Final Contract Value by the end of the contract to Targeted Enterprises</p> <p>Targeted Enterprises appointed for the Community Development work shall not contribute towards the CPG for Targeted Enterprise.</p> <p>The Final Contract Value for purposes of this clause, is defined in clause D1003.04.</p>
		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 1.5% of the Final Contract Value
		vi) Targeted Enterprise with CIDB 3 or 4 grading	Minimum of 1.5% of the Final Contract Value

	D1008	WORK SUITABLE FOR EXECUTION BY TARGETED ENTERPRISES	<p>The following has been identified as, but not limited to possible work for execution by Targeted Enterprises:</p> <ul style="list-style-type: none"> - Erection and maintenance of the Contractor's camp site; - Clearing and grubbing; - Provision of traffic control facilities; - Management of traffic control facilities and traffic safety as part of the accommodation of traffic; - Construction and clearing of drains; - Installation of prefabricated culverts including inlet and outlet structures; - Concrete channelling and concrete linings for open drains; - Construction of concrete paving, kerbs and channels; - Construction of small concrete and other structures; - Construction of walkways; - Pitching, stonework and protection against erosion; - Construction of gabions; - Patching and repairing edge breaks; - Erection of guardrails; - Landscaping; - Fencing; - Road sign; - Road markings; - Finishing the road and road reserve; - Site security services; - Haulage of materials; - Supply of plant; & - Supply of fuel.
SECTION E		REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS	
	E1018	PROJECT SPECIFIC CONSTRUCTION REQUIREMENTS	Refer to Volume 8 for project Occupational Health and Safety specifications
SECTION F		ELECTRICAL (STREET LIGHTING) SPECIFICATION	

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 Sustainability Framework has developed this Environmental Management Plan (EMP) as a tool for continual improvement in environmental performance.

This EMP prescribes the methods by which proper environmental controls are to be implemented by the Contractor for construction and maintenance projects. 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 published by the Federation Internationale des Ingenieurs-Conseils (FIDIC) as the Defects Notification Period (maintenance period).

The provisions of this EMP 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 site-specific Environmental Management Programme (EMPr). In the event that any conflict occurs between the terms of the EMP and the project specifications or environmental authorisation, the terms herein shall be subordinate.

The EMP 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 EMP and/or environmental authorisation cannot occur without being submitted to SANRAL who will manage the process of amending the EMP.

The EMP 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 and the National Environmental Management: Biodiversity Act (Act No. 10 of 2004). 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 a Competent Authority, 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 Plan: An Environmental Management Plan (EMP) is an environmental management tool used to ensure that adverse impacts of the construction and operation and decommissioning of a project are prevented and/or minimised, and that the positive benefits are enhanced.

Environmental Management Programme (EMPr): A project-specific Environmental Management Plan approved by a competent authority through an environmental impact assessment process.

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

Spoil material: is material that is 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 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 EMP, 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 EMP are legally binding in terms of this contract. In the event that any rights and obligations contained in this EMP 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 EMP 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 EMP 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 EMP, 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 EMP shall be included.

The Contractor shall receive and implement any instruction issued by the Engineer relating to compliance with the EMP 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 EMP 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' or '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 EMP. 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 National Qualifications Framework (NQF) level 6 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 EMP the DEO shall also provide full cooperation whenever the Contractor is subjected to environmental audits.

(e) Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is an independent environmental specialist appointed by SANRAL or the Engineer to objectively and regularly monitor the Contractor's compliance with the conditions of the authorisations issued for the project and the approved EMP (that is this EMP 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;
- (iv) The environmental benefits of improved personnel performance and
- (v) Consequences of non- compliance

(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 most common 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	Potential 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 and/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 GN 509 in GG 40229 of 26 August 2016 - General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 Of 1998) for Water Uses as defined in sections 21(c) and (i) .

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 appropriate means 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 measure and keep records 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, 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 watercourse 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 Forestry, Fisheries and Environment.

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. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system and shall be approved by the Engineer in consultation with the ECO.

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. A waste inventory shall be drawn up of all waste streams that will possibly be generated by the site/project and an integrated approach shall be taken to its management. Records shall be kept of all waste disposed. 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 and proof of such disposal kept by the Contractor. 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 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 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 a 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 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 EMP. 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 where applicable. 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 EMP, 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 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 50m 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 relevant 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 EMP, 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 EMP, 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

Refer to Volume 7 for the Environmental Management Programme.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R.573-020-2019/2

FOR THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE D FROM
KM 8.60 TO KM 13.00

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

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 Principles for Project Liaison, Sub-contracting, and Labour Sourcing in SANRAL Projects (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. *SANRAL will establish a Project Liaison Committee (PLC) for every project to create a platform for project communication with the aim to facilitate successful, works execution, sub-contracting, procurement, participation with MOU partners, supply of material, services and goods and employment facilitation.*
2. *SANRAL will chair PLCs and provide secretarial support through the Consulting Engineer or its Agent. Representation on the PLC will comprise: SANRAL; the Contractor; the Consulting Engineer or SANRAL's Agent; business representatives; traditional authority representatives; provincial and municipal government representatives (not politicians); community representatives; and any other critical local stakeholder that may be deemed necessary by SANRAL. While serving on the PLC, PLC members must declare any conflict of interest and recuse themselves if requested by the PLC Chairperson.*
3. *The selection of a Project Liaison Officer (PLO) who will be employed by the Consulting Engineer, must be acknowledged, and supported by the PLC.*
4. *The definition of a target area (sometimes referred to as a local area or traffic area) will be determined by SANRAL in consultation with the PLC.*
5. *The setup of database for contractors, sub-contractors, consultants, and suppliers will be conducted with the input and support of the PLC. The final database will be disseminated to the PLC. The entities on the database must be assisted by the Consulting Engineer and the Contractor to be compliant with the relevant legislation required to conduct work for a SANRAL project.*
6. *The setup of databases for local labour in the target area will be done with the input and support of the PLC. The final list will be disseminated to the PLC. Entities on the database must be registered on the National Treasury Central Supplier Database (CSD). A system of labour selection from the database must be agreed at the PLC.*
7. *The databases for sub-contracting will be handed over to the Contractor for open tender processes. The labour database will be disseminated to the PLC and handed over to the Contractor to use for recruitment of local labour.*
8. *Tender processes for sub-contracting must be conducted by Contractor using government principles (e.g. public opening of received bids, announcement of bidders and prices). Winning bidders shall be tabled by the Contractor in the PLC meeting for information purposes.*
9. *Appeals to the tender process must be escalated to SANRAL for an independent review which will be facilitated by the Transformation Unit.*
10. *Capability assessments of sub-contractors and suppliers will be done with the input and support of the PLC, prior to the sub-contract tender stage commencing, to identify any deficiencies in skills and experience. For labour, skills assessments will be done at recruitment stage.*
11. *Sub-contractor development support and training must be coordinated and conducted prior to the sub-contract tender stage commencing, with the input and support of the PLC.*
12. *The PLC may identify 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 will be imported and local service providers will be given an opportunity to learn.*
13. *The PLC and Consulting Engineer must ensure that formal contracting arrangements between the main contractor and the sub-contractor are in place in all projects.*
14. *Communication will 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 sub-contracting.

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)²

- i) In the case of Targeted Enterprises, including manufacturers and suppliers, the amount equal to the value of goods, services and works for which the principal Contractor contracts to engage Targeted Enterprises in the performance of the Contract, expressed as a percentage of the tender value excluding escalation, contingency and value added tax associated with the targeting strategy that is identified in the Specification Data; or
- ii) In the case of Targeted Labour:
 - a. the sum of the wages and allowances, for which the principal Contractor, Sub-contractor or Targeted Enterprises contract to engage Targeted Labour in the performance of the Contract, expressed as a percentage of the contract amount associated with the targeting strategy that is identified in the Specification Data; or
 - b. the amount equal to the person days worked for which the principal Contractor, Sub-contractors or Targeted Enterprises contract to engage Targeted Labour expressed as a percentage of the total person days worked associated with the targeting strategy that is identified in the Specification Data.

¹ CIDB Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Work Contracts, 31 October 2017, as adapted from SANS 10845, Suite for Construction Procurement, 2015.

² Adapted from the CIDB Standard for Contract Participation Goals for Targeting Enterprises and Labour through Construction Work Contracts, 31 October 2017, as adapted from SANS 10845-5:2015 and SANS 10845-8:2015 SANS 10845, Suite for Construction Procurement, 2015.

e) Contract Participation Goal Plan (CPG Plan)

The plan which outlines how the Contractor intends to achieve the various CPG targets as stated in the Contract Data and includes the detail of the Targeted Enterprise work programme, as well as the contents and value of the work packages. See Appendix 8 for the CPG Plan template.

f) Contract Participation Performance (CPP)

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

g) Contract Skills Development Goals (CSDG)³

The number of hours or head count of skills development opportunities that a Contractor contracts to provide in relation to work directly related to the contract or order up to:

- i) completion in the case of a professional service contract;
- ii) the end of the service period in the case of a service contract; and
- iii) practical completion in the case of an engineering and construction works contract.

h) Designated Group⁴

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

- i) black designated groups;
- ii) black people;
- iii) women; or
- iv) people with disabilities;

i) Domestic Sub-contractors

A Domestic Sub-contractor is one in whose selection and appointment the Employer traditionally plays no part in other than simply giving consent when that is required under the terms of the main contract. The appointment of the sub-contractor is treated as something entirely for the benefit of Main Contractor and is a purely "domestic matter".

j) Final Contract Value

Final Contract Value as defined under Section D1003.04 - Contract Participation Goal (CPG) of the Specifications, also means Contract Price as defined in FIDIC, sub-clause 1.1.4.2, (excluding CPA, adjustments for reduced payments, Rise and Fall adjustments, penalties, and VAT)

k) 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.

l) Labour

Persons:

- i) who are employed by the Contractor or a Sub-contractor in the performance of the Contract; and

³ CIDB Standard for Developing Skills through Infrastructure Contracts, July 2020 (or latest version).

⁴ Preferential Procurement Regulations, 2017, Government Gazette N. 40553, 20 January 2017.

- 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 Sub-contractor's employment policies;
- iii) but who are not Targeted Labour as stated in the Specification Data.

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

m) Mentoring

Mentoring is a professional relationship in which an experienced businessperson assists another by giving advice and imparting their knowledge in developing special skills and knowledge that will enhance the less experienced businessperson'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.

n) Mobilisation Period

The period between the Commencement Date and the date of Access to Site), which period (duration) is stated in the Contract Data. This part of Section D of the Specifications describes the requirements of the Mobilisation Period.

o) 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 requisite resources availability, Project Areas other than defined above may be identified where preference would be given to Targeted Enterprises for sub-contracting opportunities.

p) Project Liaison Committee (PLC)⁵

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, and
- ii) the Engineer and Contractor becomes members of the PLC on their appointment and participate in the Committee within the scope of their respective roles and responsibilities.

q) Project Liaison Officer (PLO)⁶

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.

r) Stakeholders⁷

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;
- ii) Relevant Municipal departments;

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

⁶ CIDB Standard for Minimum Requirements for Engaging Contractors and Sub-Contractors on construction Works Contracts, 31 October 2017; CLO definition.

⁷ Derived from SANRAL communication Policy, March 2018.

- 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.

s) Sub-contractor

An entity appointed by the Contractor to execute a portion of the Works as defined in the Conditions of Contract under FIDIC subclause 1.1.2.8. This includes both Domestic Sub-contractors and Targeted Enterprises.

t) Target Area

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

- i) one or more Provinces;
- ii) one or more Metropolitan or District Municipalities;
- iii) one or more Local Municipalities;
- iv) one or more Wards that are predominantly located within the Project Area;
- v) one or more of the areas listed in the definition of Designated Groups.

u) Targeted Enterprise⁸

A Targeted Enterprise is an entity to which the Contractor sub-contracts 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.

In addition, Targeted Enterprises must be:

- a. CIDB registered where applicable;
- b. registered with National Treasury's Central Supplier Database;
- c. tax compliant prior to award of the sub-contract; and
- d. COIDA compliant prior to award of the sub-contract where applicable.

Targeted Enterprises are also Sub-contractors as defined in the Conditions of Contract under FIDIC subclause 1.1.2.8.

v) Targeted Enterprise Construction Manager (TE Construction Manager)

The full-time dedicated 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 Targeted Enterprise Construction Manager also mentors, guides and coaches the Targeted Enterprises.

⁸ Preferential Procurement Regulations, 2017 Pertaining to the Preferential; Procurement Framework Act, Act no 5 of 2000.

w) Targeted Enterprise Monitor

The Targeted Enterprise Monitor is an independent service provider, or individual, appointed by the Employer's Transformation Unit, to audit the Contractor and his TE Construction Manager's activities with respect to their obligations to Targeted Enterprises.

x) 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 sub-contractors.

y) Target Group

It is a group of entities and/or persons selected from the Designated Group and may include both Targeted Enterprises and Targeted Labour.

z) Targeted Labour⁹

Persons:

- i) who are unemployed; and
- ii) who are then employed by the Contractor or a Sub-contractor (including Targeted Enterprises) in the performance of this Contract; and
- 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 Sub-contractor's or Targeted Enterprise's employment policies; and
- iv) 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
- v) who are stated as being Targeted Labour in the Specification Data.

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

aa) Trainee Targeted Enterprise

A Targeted Enterprise as defined in this Section D of the Specifications, but which is selected and sub-contracted as a Trainee in terms of the Community Development Project associated with this Contract.

bb) 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.

⁹ SANS 10845-7:2015, definition 2.12

cc) Training and Skills Development Programme

The programme which outlines how the Contractor intends to achieve the CSDG targets, as per Section D1010 of the Specifications and in line with the CIDB Standard for Developing Skills through Infrastructure Contracts (refer to latest version on cidb.org.za), by applying the various training methods described in Section D1010 of the Specifications.

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 latest applicable 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);
- h) The Skills Development Levies Act, 1999 (Act no. 9 of 1999);
- i) 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;
- j) The National Small Enterprises Act, 1996 (Act 102 of 1996) as amended.

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 (refer to latest version on www.cidb.org.za).

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 sub-contracting.

It also describes the measurement of, and penalties or bonus to be applied, with respect to the CPG as defined in the Specification 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, over the full duration of the contract, from site establishment up to the completion of the works:

- i) employ Targeted Labour from the Target Area(s) as stated in the Specification Data; and
- ii) sub-contract Targeted Enterprises as stated in the Specification 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 system for the recruitment of Targeted Labour shall be agreed with the PLC prior to the commencement of labour recruitment. This system shall be fair and transparent.

Based on the system for recruitment, a Targeted Labour Database shall be compiled by the Contractor, with the assistance of the PLO, and the input and support of the PLC, for the Target Area(s) as stated in the Specification Data. If necessary, the assistance of the Department of Labour may be called upon to provide a labour database of labourers with the required skills and within the required designated groups and Target Area. Once the Database has been disseminated to 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 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, with the assistance and inputs of the PLC, compile a Targeted Enterprise Database from which Targeted Enterprises shall be sub-contracted to construct portions of the work as described in this part of Section D of the Specifications.

a) Market Analysis and Requisite Resources Availability Audit

The Contractor shall conduct a market analysis and requisite resources availability audit to determine the availability, expertise, abilities, and proficiency of Targeted Enterprises in the Project Area.

To inform the market analysis and requisite resources availability audit, the Contractor shall, as a minimum, use the National Treasury's Central Supplier Database (CSD) which can be obtained from the Employer's Supply Chain Management department via the Project Manager, as well as the CIDB contractor database (if applicable).

The market analysis and requisite resources availability audit, and all updates thereof for the duration of the Contract, shall be submitted to the Engineer and the Employer's Project Manager in a format acceptable to the Employer.

Following the market analysis and a requisite resources availability audit, the Contractor shall apply the CPG Target Group criteria in the Specification Data to compile a **preliminary** Targeted Enterprise Database (see D1003.03(c) below).

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 Specification Data and other Database criteria, 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 requisite resources availability audit, and the information obtained from the call for an expression of interest, additional criteria for the Preliminary Targeted Enterprise Database may be tabled by the PLC to the Contractor to ensure Target Group participation as intended by the Employer.

d) **Final Targeted Enterprise Database**

Once the Preliminary Targeted Enterprise Database has been disseminated to 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 disseminated to 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 sub-contract tender or group of similar sub-contract 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 for Targeted Labour and Targeted Enterprises expressed as a percentage of the Final Contract Value. The participation targets comprise of the following:

% Targeted Labour (TL_{Total%}) = the sum of the % Targeted Labour employed by the Contractor, Sub-contractors and Targeted Enterprises.

% Targeted Enterprises (TE_{Total%}) = the % Targeted Enterprises, including the % Targeted Labour employed by Targeted Enterprises.

While the individual participation targets, i.e. TL_{Total%} and TE_{Total%} must be met, the total CPG (CPG_{Total}) is not the sum thereof, but are calculated as follows:

CPG_{Total} = Final Contract Value x [TL_{Total%} + (TE_{Total%} - Targeted Labour employed by the Targeted Enterprises)]

where

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 any Contract Price Adjustment and adjustments for reduced payments, Rise and Fall, Retention Money, Penalties and VAT.

The Contractor shall strive to distribute and implement the participation targets and opportunities equally and continuously over the duration of the Contract. Where the

Contractor deems such an equal and continuous distribution of the participation targets to be unachievable, he shall provide reasons and motivate it clearly in the preliminary CPG Plan submitted with the tender document.

Both the Targeted Labour and Targeted Enterprise participation targets may consist of sub-targets which are stipulated in the Specification Data, clause D1003. The Contractor is required to achieve these individual sub-targets. If the Contractor fails to achieve any one of the individual sub-targets and does not substantiate that such failure is due to quantitative underruns, the elimination by the Employer of items contracted to targeted enterprises, or any other reason beyond the Contractor's control which may be acceptable to the Employer, penalties shall apply as stated in Section D1003.05 of the Specifications, and as provided for in clause 8.7 of the FIDIC Conditions of Contract.

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 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:

$$\begin{aligned} \text{CPP} &= \text{CPG}_{\text{Actual}} \\ &= \text{total monetary value (excluding VAT) of Targeted Labour employed by the Contractor} + \text{total monetary value (excluding VAT) of Targeted Enterprises contribution, including Targeted Labour employed by the Targeted Enterprises.} \end{aligned}$$

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 a comparison of the actual expenditure on Targeted Labour and Targeted Enterprises with the planned expenditure for Targeted Labour and Targeted Enterprises as per the accepted CPG Plan. 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 the envisaged CPG programme in its initial contract programme which is to be submitted within 28 days after the Commencement Date. The CPG programme shall be updated in the accepted construction programme on acceptance of the CPG plan and 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

$$\text{The bonus} = 0.015 \times (\text{CPP} - \text{CPG}_{\text{Total}})$$

Any bonus due (or portion thereof) shall be calculated on the Final Contract Value. 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 as stipulated in Section D1003.04 of the Specifications. Penalties for Targeted Labour and for Targeted Enterprises shall be calculated as follows:

$$\text{Penalty Targeted Enterprises} = 1.0 \times ((\text{TE} - \text{TGE}) + \text{Sum} (\text{TE}_n - \text{TGE}_n) - 1.2 \times \text{TE}_{mv} - 1.2 \times \text{TE}_{dp})$$

Where:

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

$$\text{Penalty Targeted Enterprises} = 1.0 \times ((\text{TE} - \text{TGE}) + \text{Sum} (\text{TE}_n - \text{TGE}_n) - 1.2 \times \text{TE}_{mv} - 1.2 \times \text{TE}_{dp})$$

Where:

- n = Each lowest order sub-group of Targeted Enterprise stipulated in the Contract Data.
- TE = Monetary value (excluding VAT) of Targeted Enterprises calculated at the percentage stipulated in the Specification Data applied to the Final Contract Value
- TGE = Cumulative monetary value (excluding VAT) by Targeted Enterprises sub-contracted 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, sub-contracted to the Contract by the Contractor.
- TE_{dp} = Cumulative monetary value (excluding VAT) by Targeted Enterprises being majority owned by black Disabled Persons, sub-contracted to the Contract by the Contractor.
- $(\text{TE}_n - \text{TGE}_n)$ = 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, based on the accepted CPG Plan, shall be calculated to interim Payment Certificate values (excluding VAT) to establish the anticipated outcome, and to plan corrective actions for non-adherence to the CPG Plan.

Interim penalty valuations shall not be applied to the interim certificate value, but the Contractor shall by notice be placed on terms to correct as prescribed in sub-clause 15.1 of the FIDIC Conditions of Contract. Failure to correct by completion of the Contract will lead to an Employer's Claim in terms of sub-clause 2.5 of the FIDIC Conditions of Contract.

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

D1003.06 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.

D1003.07 Contractor's Responsibility

In terms of the Conditions of Contract, all Targeted Labour recruitment and employment and Targeted Enterprises sub-contracting, 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.

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 that 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 Contractor shall take cognisance of the Employer's PLC and PLO Forms, attached as Appendix 10, which shall be provided to the Contractor by the Engineer. While the Employer holds its own staff accountable for the deliverables listed in the checklist, the Contractor and the Engineer shall assist the Employer in accomplishing the deliverables.

The Employer's establishment of the PLC, and the Engineer 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.

To ensure that all relevant Stakeholders are represented in the PLC, the Employer did, or will, consult with the Executive Mayor's office, as well as with the LED Department of the Local Municipalities in the Project Area. Once, the PLC has been established, the Employer's further Stakeholder engagement activities shall not prevent the Contractor from continuing with construction.

Typical Stakeholder representation on the PLC may include:

- i) A PLC member from the relevant RRM PLC.
- ii) Local Municipality LED Office.
- iii) Traditional leadership representation.
- iv) Forums representing people with disabilities.
- v) Forums representing women.
- vi) Forums representing youth.
- vii) Forums representing business sector.
- viii) Forums representing transport sector.
- ix) Any other Stakeholder forum/organisation recognised by the Employer and the Local Municipality's LED Office.

Every forum/organisation/constituency shall have one (1) representative on the PLC, which representation shall be confirmed by a duly signed nomination form.

It should be noted that the PLC is not a political platform. While Councillors may be invited to some PLC meetings, they may not be PLC members and hence, will not have voting rights when attending a PLC meeting.

b) Seating Allowance for PLC Members

PLC membership is voluntary and PLC members shall not be remunerated for any time spent or work done associated with representing their constituency on the PLC.

Provision for the cost of liaison, social facilitation and PLC support has been made under pay-item D10.02(a). This pay-item provides for the Contractor's cost incurred in executing his responsibilities w.r.t. Stakeholder and Community liaison.

This pay-item may also be utilised to pay an allowance to PLC members for actual costs incurred in executing their PLC duties (other than time or work done related). The Contractor will determine and table to the PLC a realistic seating allowance which will be substantiated by an outline of the anticipated actual costs envisaged to be incurred by PLC members.

The seating allowance shall be increased annually based on the CPI figure contained in Table B2 of Statistical Release P0141 by StatsSA.

c) Induction of the PLC

The Employer shall conduct an induction meeting with the PLC to acquaint PLC members with the following information:

- i) SANRAL's Horizon 2030 Strategy.
- ii) SANRAL's Fourteen Point Plan.
- iii) The role and responsibilities of PLC members.
- iv) SANRAL's Transformation Policy.
- v) How the Transformation Policy impacts on SMMEs.
- vi) Relevant details of the Contract, e.g.
 - a. Start and end dates
 - b. Important milestones
 - c. CPG targets
 - d. Envisaged Targeted Enterprise packages
 - e. Envisaged work for other SMMEs (non-CPG).

d) Rules of Engagement for the PLC

In the execution of their duties, members of the PLC shall adhere to the undertakings listed below and the Contractor shall inform the Engineer of any transgression of these undertakings.

i) General Matters and Membership

- a. A PLC member may not be a politically elected representative and political party representation will not be allowed in the PLC.
- b. Ward Councillors may interact with the project team through the Mayor's Office.
- c. If required, and in consultation with the Employer, a Political Steering Committee (PSC) may be established to address political matters. A PSC will only be established where the Project Area traverse over more than one municipal area.

ii) Term of Office for the PLC

- a. The duration of PLC members' participating in the PLC (term of office) shall depend on the duration of the project.
- b. If the Employer finds the performance of a PLC member to be below expectation or their conduct to be unacceptable, the affected member will be discharged from their obligations and a new nomination process shall commence.

iii) Targeted Enterprise and Targeted Labour

PLC members shall:

- a. ensure that they, or companies in which they hold equity, will not tender on the Contract for any work or sub-contract that may be issued. Should they tender, this will be treated as a conflict of interest and the tender proposal submitted will not be evaluated.
- b. not have private or business interests in any of the sub-contract tenders tabled to the PLC or considered in this Contract.
- c. shall recuse themselves from discussions that deal with a sub-contract tender if any other member is of the opinion that a member's participation in deliberations, which is rightly or wrongly construed as improper or irregular, may lead to the award of a sub-contract to a tenderer known to the member or to the member itself.
- d. recuse themselves from the operations of the PLC following a situation as described in paragraphs ii) above and shall cease to be a PLC member for this Contract.

- e. during the tender and tender evaluation processes, neither deliberately favoured nor prejudiced a person or tenderer, as intended, or contemplated in treasury Regulation 16, A8.3 (a), (b) & (c).
- f. ensure that no conflict of interest arises from members' involvement in the PLC and potential involvement in targeted labour recruitment and/or targeted enterprises procurement and/or any other supplier/sub-contractor/service provider procurement or involvement in the contract.

iv) Confidentiality

- a. PLC members shall accept that all information, documentation, and decisions regarding any matter serving before the PLC are confidential and undertake not to communicate decisions or discussions of PLC meetings to external or internal parties unless so directed and approved by the Project Manager.
- b. Information for public dissemination shall be clearly indicated by the committee to ensure that sensitive information is only disseminated to the correct audience.

v) Removal from Office

- a. PLC members who violate the provisions of these Rules of Engagement for PLCs will be removed from their role as a PLC member at the sole discretion of the Employer.
- b. The Employer reserves the right to recover any costs from PLC members whose actions can be regarded as detrimental to the Employer or to the execution of the project.
- c. The Employer also reserves the right to recommend criminal prosecution if the offence warrants such action.
- d. The Employer reserves the right to dissolve the entire PLC should it believe that such an action is in its best interest, or that of the project. The Employer will not be obliged to reconstitute the PLC if such a dissolution occurs.

e) Responsibilities and Duties of the PLC

The PLC shall execute specific duties during the design and construction phases of the project.

Some of the PLC's duties during the design and construction stages overlap 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:

ii) 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 Project Liaison Committee duties outlined in this Section D of the Specifications and agree on the duties of, and procedures to be followed by, the PLC to fulfil its duties.
Note: The principles outlined in this section 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 with 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 sub-contracted respectively.
- h. Assist the Engineer to identify the project's Target Groups for inclusion in the Tender Documents and provide input and support to 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.
- c. Assist the Contractor to identify the eligibility, functionality, preference and compliance criteria to select and sub-contract Targeted Enterprises.
- d. Provide input and support for the Databases compiled by the PLO and the Contractor from which Targeted Labour will be selected and employed and Targeted Enterprises will be sub-contracted respectively.
- e. Verify that the criteria and methodologies applied by the Contractor to select and employ Targeted Labour and sub-contract Targeted Enterprises are executed in a fair and transparent manner and are within Government legislation and regulations and the Employer's Policies.
- f. Verify that the conditions of employment and the conditions of sub-contracting, in the employment of Targeted Labour and sub-contracting of Targeted Enterprises are applied in a fair and transparent manner and according to the Employer's employment and sub-contracting 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 party to the PLC wishes 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. Assist parties to the PLC to 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.

f) PLC Meetings

- i) Frequency
 - a. Meetings will be conducted monthly or as required by the Stakeholders or the project matters.
- ii) Notice of Meetings
 - a. The notice of the PLC meeting shall be given at least seven (7) calendar days prior to the meeting date.
 - b. Where meetings have been diarised over a period by the PLC, it shall be the duty of each PLC member to ensure his/her attendance on the set dates.
 - c. Where a PLC member has missed any meeting, he/she bears the onus of establishing the date and venue of the next meeting.
- iii) Venue
 - a. The venue for PLC meetings shall be the project site office or any other venue agreed to by the members of the PLC and approved by the Employer' Project Manager.
 - b. During the COVID-19 lockdown, or any other lockdown as announced by government, the meetings shall be held on an online platform such as WhatsApp, MS Teams, Zoom or similar.
- iv) Agenda
 - a. An agenda shall be made available or displayed to all participants at the commencement of such meetings or the minutes of the previous meeting will serve as the agenda of such meetings.
 - b. The agenda shall not be amended without prior approval from the Employer's Project Manager.
- v) Chairperson
 - a. PLC meetings shall be chaired by the Employer which will typically be the Employer's Project Manager, or a SANRAL staff member, with decision--making delegation, or the Engineer. The Chairperson shall:
 - i. chair all meetings of the PLC,
 - ii. co-ordinate all the activities of PLC,
 - iii. ensure that members are fulfilling their tasks as assigned by the PLC,
 - iv. see to the execution of decisions taken by the PLC,
 - v. ensure the validity of members' claim for allowance,
 - vi. ensure compliance of all activities of the PLC with current rules, law and general SANRAL policy, and
 - vii. be a co-signatory to all official documents of the PLC.
- vi) Secretariate
 - a. The Engineer's staff shall provide a secretarial service to take minutes of PLC meetings.
 - b. Secretarial support other than taking minutes at PLC meetings shall be provided by the PLO.
- vii) Quorum
 - a. The quorum for PLC meetings shall be constituted by 50%+1 ratio excluding co- opted members.
- viii) Apologies and Non-attendance
 - a. Apologies shall be in writing except in emergency where the member apologising cannot communicate the apology in writing.
 - b. Apologies may be sent through any media agreed to prior by the PLC for example through SMS or WhatsApp messaging or similar application.
 - c. The organization, represented by a member who fails to attend three (3) consecutive meetings without an apology, will be informed in writing and asked to nominate a replacement member.

- ix) Language
 - a. The meetings will be conducted in English to enable all participants at the meeting to understand the discussions of the meeting.
 - b. However, care and consideration must be given to provide non-English speakers an opportunity to participate. Therefore, where desirable, any of the 11 official languages may be used to conduct the meeting. If another language other than English is used, the minutes of the meeting will need to be transcribed, translated, and recorded in English.
- x) Other
 - a. The PMT shall provide a finger lunch for PLC members at PLC meetings.

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 Engineer appoints the PLO in accordance with the Employer's criteria for a PLO. The appointment of the PLO must be acknowledged and supported by the PLC.

Although the PLO 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 PLO shall 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 Community 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 sub-contracting opportunities;
 - d. the project programme as it pertains to the employment of Targeted Labour and sub-contracting 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 follow 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 the Contractor compiles the Targeted Labour databases based on the eligibility and selection criteria and that he updates it 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 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 with the current and relevant Labour legislation.
- (xvii) Be proactive in identifying project Stakeholder and affected Communities' (including Targeted Labour and/or Targeted Enterprise Sub-contractor), 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 is defined in Section D1002 of the Specifications. This Section describes the requirements of the Mobilisation Period.

D1005.01 Purpose of the Mobilisation Period

The Mobilisation Period was 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 of the Specifications;
- b) allow for the Contractor's planning to obtain the CPG as required in the Specification Data;
- c) allow for the Contractor's planning to obtain the Contract Skills Development Goals (CSDG) as required in Section D1010 of the Specifications,
- d) follow the processes prescribed in this Section D of the Specifications to employ the initially required Targeted Labour and enter the first sub-contracts with Targeted Enterprises; and
- e) provide the training required by Targeted Labour and Targeted Enterprises to commence with the construction of the Works.

Access to site for the Commencement of the Works shall thus only be issued once the following deliverables have also been submitted and/or completed by the Contractor:

- i) Submission of the CPG Plan, followed by acceptance of the Engineer.

- ii) Submission and the Training and Skills Development Programme, followed by acceptance of the Engineer.
- iii) Appointment of the initial Targeted Enterprise sub-contractors.

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 Specification Data. The Contractor shall distribute and implement the participation targets and Targeted Enterprise work opportunities equally and continuously over the duration of the Contract, i.e. from site establishment to completion of the Works. Where the Contractor deems such an equal and continuous distribution of the participation targets to be unachievable, he shall provide reasons and motivate it clearly in the CPG Plan.

The CPG Plan shall provide the detail of the Targeted Enterprise work programme, as well as the contents and value of the work packages. See Appendix 8 for the CPG Plan format.

The Targeted Enterprise work programme shall be in line with the Works Programme and once the CPG Plan has been accepted by the Engineer, it shall be captured in 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 Engineer after consultation with the Employer.

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.

Should the Contractor require an extension of the Mobilisation Period due to a delay not within his control, Contractual Procedure shall be followed, and the Contractor shall submit his Claim for an extension of time through the relevant Contractual Clauses of the Conditions of Contract.

b) Compile a Training and Skills Development Plan

The Contractor shall compile an acceptable Training and Skills Development Plan, which sets out how he intends to achieve the various CSDG targets as per the Section D1010 of the Specification and in line with the CIDB Standard for Developing Skills through Infrastructure Contracts (refer to latest version on www.cidb.org.za).

The Training and Skills Development Plan shall provide the detail of the training methods selected for implementation as described in Section D1010 of the Specifications and shall include an execution programme for acceptance by the Engineer, which shall demonstrate its correlation with the Works Programme.

The Mobilisation Period shall only be concluded once the Training and Skills Development Plan has been accepted by the Engineer after consultation with the Employer.

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

c) Sub-contracting of Targeted Enterprises

During the Mobilisation Period the Contractor shall execute the following duties w.r.t. the sub-contracting of Targeted Enterprises:

- i) Liaise with the Employer, Engineer and the PLC to structure and finalise the work packages to be sub-contracted to Targeted Enterprises.
- ii) Liaise with the Employer, Engineer and PLC to determine the Targeted Enterprise Database criteria for the sub-contracting of Targeted Enterprises.
- iii) Compile the Targeted Enterprise Database(s) for input and support 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 sub-contract the first group of Targeted Enterprises for commencement of the Works.

d) Employment of Targeted Labour

During the Mobilisation Period the Contractor shall execute the following duties w.r.t. 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.

e) 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 sub-contracting.

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 Specification 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 Sub-contracting

- i) Make recommendations to the Contractor in identifying and structuring the work packages to be sub-contracted 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 sub-contracts.
- iii) Approve tender procedures, tender documents, tender submission requirements and adjudication processes for the sub-contracting of Targeted Enterprises.
- iv) Review all tender adjudication reports and monitor that the criteria and procedures applied by the Contractor to sub-contract 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 sub-contract agreements and the conditions of sub-contracting with Targeted Enterprises are fair and transparent and within the prescripts of the Contract requirements.
- vi) Monitor the management of Targeted Enterprise sub-contracts 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 sub-contracting of Targeted

Enterprises based on the Employer's Contract Participation Goals, the Contractor shall follow the prescripts of this Section D of the Specifications.

D1007.01 Targeted Enterprise (TE) Procurement Coordinator

The Contractor shall appoint a TE Procurement Coordinator to facilitate the sub-contracting of work to Targeted Enterprises as defined in the Specification Data. For Contracts with a value of less than R 100 million the Contractor may appoint a TE Procurement Coordinator from its site staff. For Contracts with a value of more than R 100 million the Contractor shall employ or sub-contract 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.

With the input and support of the PLC, the TE Procurement Coordinator shall conduct the tender processes and procedures for Targeted Enterprise sub-contracting as prescribed in this Section D of the Specifications and shall adhere to the Employer's and Government's Supply Chain Management Policies and requirements.

D1007.02 Procedures for Targeted Enterprises Sub-contracting

The Contractor shall utilise the Employer's proforma tender and contract document for Targeted Enterprise sub-contracting. The proforma sub-contract document is attached as Appendix 11 and an electronic version will be provided to the Contractor on award.

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

a) Tender Preparation

i) Compile preliminary list of sub-contracting work packages

Based on the Specification 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 sub-contracted 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 Targeted Enterprise work packages. The Contractor shall consult the following databases as a minimum:

- a. Construction Industry Development Board (CIDB)'s contractor database (not applicable to suppliers and non-construction services).
- b. National Treasury's Central Supplier Database (CSD) to be obtained from the Employer's Supply Chain Management Department.

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 Specification 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 Specification 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. procurement, award and execution dates for the work packages, distributed over the duration of the Works Contract (from site establishment to completion of the Works) to ensure continuous work opportunities;
- c. the preliminary Targeted Enterprise Database(s) for each work package;

- d. the Targeted Enterprises (CIDB grades and types) and Designated Groups (woman, youth, etc.) which are to benefit from the subcontracting opportunities;
- e. the Project Area(s) from which Targeted Enterprises will be given preference for subcontracting opportunities; and
- f. the tender evaluation and selection criteria for the respective work packages.

viii) Acceptance of the CPG Plan

The Contractor shall submit the CPG Plan to the Engineer for acceptance after which it shall be tabled to the PLC for their information.

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 Engineer's instructions.

ix) Compile tender documents

The Contractor shall compile the tender documents for each Targeted Enterprise subcontract work package and shall utilise the Employer's proforma document for Targeted Enterprise sub-contracting (see Appendix 11).

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, on SANRAL's electronic supply development desk portal (<https://sanralesdd.co.za>), and any other place or medium as agreed with the PLC.

If the Employer have a pro-forma 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.

The Contractor shall engage with the Employer’s Regional Transformation Officer on the Employer’s SMME Pre-tender Training and Development Programme and utilise this programme if it is available at the time in the Project Area. The Regional Transformation Officer’s contact details shall be provided on award:

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 subcontract type e.g. construction, supply or services):

- 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 of the Tenderer’s locality (address registered with the CIPC).
- e. Proof that the Tenderer is registered with the CIDB in the required grading and class (not applicable to suppliers).
- f. Proof that the Tenderer is compliant with the COID Act.
- g. 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 (a)(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’s Supply Chain Management Department to print out a list from National Treasury’s CSD, of entities that adheres to the Targeted Enterprise Database criteria. This list shall become the Final Targeted Enterprise Database for relevant sub-contract tender and shall be disseminated to the PLCr.

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 Section D1002 of the Specifications.

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 with the CIDB (if applicable).
- b. Proof that the Tenderer is registered on National Treasury's CSD
- c. Proof that the Tenderer is registered with the CIPC.
- d. Proof that the Tenderer is a level 1 to 4 B-BBEE contributor.
- e. Proof that the Tenderer is an EME or a QSE.
- f. Proof that the Tenderer falls within one or more of the designated groups as per the Specification Data (if applicable).

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 adheres 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 as defined in the Specification Data, Functionality shall be scored based on the type of subcontract package, e.g. construction or the supply of goods or services and at least three (3) or more of the criteria listed below shall be applied.

The points allocated for the listed criteria shall be clearly demonstrated to tenderers as a matrix in the tender document. The functionality matrixes provided in the Employer's proforma document for Targeted Enterprise subcontracting (Appendix 11) shall be applied to evaluate the functionality of Tenderers.

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

a. Locality

For lower CIDB grade packages, the points allocated for Locality typically has a higher weighting in the total evaluation points but shall not be more than 65% of the total evaluation points.

Points scored shall be based on the Targeted Enterprise's registered address with the CIPC.

- i. If the Targeted Enterprise is more than twelve (12) months old and the company address:
 - (a) was changed with the CIPC in the twelve (12) months prior to the tender advertisement; or
 - (b) does not correlate with the company address recorded on the CSD,the Targeted Enterprise shall provide additional proof of its address in the twelve (12) months preceding the tender

advertisement date and that the address is current by submitting the following:

- (i) for urban areas:
 - 1. signed lease agreement confirming occupation in the preceding twelve (12) months; or
 - 2. mortgage statement confirming ownership in the preceding twelve (12) months; and
 - 3. a current utility bill (not older than three (3) months) confirming that occupation is current; or
- (ii) for semi-urban and rural areas
 - 1. an affidavit from the relevant ward councillor or traditional authority, signed and stamped by a registered commissioner of oaths, which confirms that the business has been operating from the said address in the preceding twelve (12) months.

- ii. If Targeted Enterprise is less than twelve (12) months old and the company address:
 - a. was changed with the CIPC in the twelve (12) months prior to the tender advertisement; or
 - b. does not correlate with the company address recorded on the CSD,
the oldest registered address on either the CIPC or the CSD will be accepted as the Targeted Enterprise's address for the purpose of scoring locality points.
- iii. If the Targeted Enterprise intends to operate from a branch office for the purpose of the anticipated subcontract, the same additional proof that the company has been operating from the branch office in the twelve (12) months prior to the tender advertisement date must be provided as listed in the paragraphs above.
- iv. If the above additional proof of address cannot be provided, locality points shall be awarded based on the tenderer's address registered with the CIPC in the twelve months prior to the tender advertisement date.

b. Equipment

For lower CIDB grade packages, the points allocated for Equipment typically has a lower weighting in the total evaluation points.

The combined points allocated for Equipment and Experience shall not be more than 35% of the total evaluation points.

c. Experience

For lower CIDB grade packages, the points allocated for Experience typically has a lower weighting in the total evaluation points.

The combined points allocated for Equipment and Experience shall not be more than 35% of the total evaluation points.

d. CIDB grade and class

The points allocated for CIDB grade and class shall not be more than 35% of the total evaluation points.

CIDB grade and class shall not be used as an evaluation criterion for packages pertaining to the supply of material, goods and/or services.

e. Project Specific Designated Groups, e.g. woman, youth, etc.

In addition to the eligibility criteria for preferential procurement functionality points may also be allocated for the following Designated Groups:

- i. Tenderer is 51%+ owned by black people who are youth.
- ii. Tenderer is 51%+ owned by black people who are women.
- iii. Tenderer is 51%+ owned by black people with disabilities.
- iv. Tenderer is 51%+ owned by black people who are military veterans.

The points allocated for Designated Groups shall not be more than 15% of the total evaluation points.

One, two or three of the Designated Groups listed above may be selected to count towards the score for Designated Groups.

If any one of the Designated Groups listed above is already an eligibility criterion, it must not be included as a functionality criterion as well.

The inclusion of any of the Designated Groups listed above shall be based on the Contractor's Resources and Skills Audit.

Youth and veterans may not be selected together.

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 (excl. CIDB 1 and 2 subcontractors).
- 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 sub-contract package to the Employer and the Engineer and thereafter table it to the PLC prior to award of the sub-contract.

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

a. Rates

If the Contractor choose 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, where after 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 point 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, where after 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 is 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 have 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 Specifications.

D1008 GENERAL RESPONSIBILITIES OF THE CONTRACTOR TOWARDS TARGETED ENTERPRISES

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

a) The Employer's Independent Targeted Enterprise Monitor

The Employer shall, through its Transformation Unit, appoint an independent Targeted Enterprise Monitor, who shall audit the Contractor with respect to his obligations to Targeted Enterprises and who shall report his findings to the Employer's Project Manager, the Engineer, and the Regional Transformation Officer (RTO) monthly.

b) Failure to Comply with Responsibilities Towards Targeted Enterprises

If the Contractor, in the opinion of the Employer's Project Manager or the Engineer, fails to comply with its responsibilities towards Targeted Enterprises, the Engineer shall issue a written warning to the Contractor, stating all the areas of non-compliance. The Contractor's time to correct shall be stated in the letter and shall be in accordance with the relevant specifications for the aspects of non-compliance.

A copy of the letter of warning shall be forwarded to the Employer's Project Manager and the Targeted Enterprise Monitor shall monitor that corrective action is taken by the Contractor.

Failure by the Contractor to comply with a deadline, will be sufficient grounds for the Employer to apply a penalty or institute a claim in accordance with the relevant Conditions of Contract.

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 of the Specifications, with an emphasis on D1008 and D1010.

The TE Construction Manager may be appointed from the Contractor's existing staff or may be employed or sub-contracted for the purpose of this Contract. Irrespective of the contractual relationship between the TE Construction Manager and the Contractor, the TE Construction Manager shall not perform any other duties than that of a dedicated TE Construction Manager on a full-time basis for this Contract.

a) TE Construction Manager's Obligations

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 of the Specifications).

The TE Construction Manager shall submit monthly TE Progress Reports in the Employer's reporting format. The report shall be submitted to the Employer's Project Manager and Regional Transformation Officer, the Engineer and the Contractor, at least one week prior to the monthly site progress meeting.

This report shall include, amongst others:

- i) Details of TEs trained, e.g., number, hours, value, modules, credits obtained, etc.
- ii) Details of TEs sub-contracted, e.g., number, packages, values, etc.
- iii) Details of TEs performance on the work packages, and skills gaps to be addressed, etc.
- iv) Details of TEs growth and sustainability, e.g., CIDB grading upgrades, business success, etc.
- v) Details of disputes and the associated interventions and/or resolutions.

b. 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.

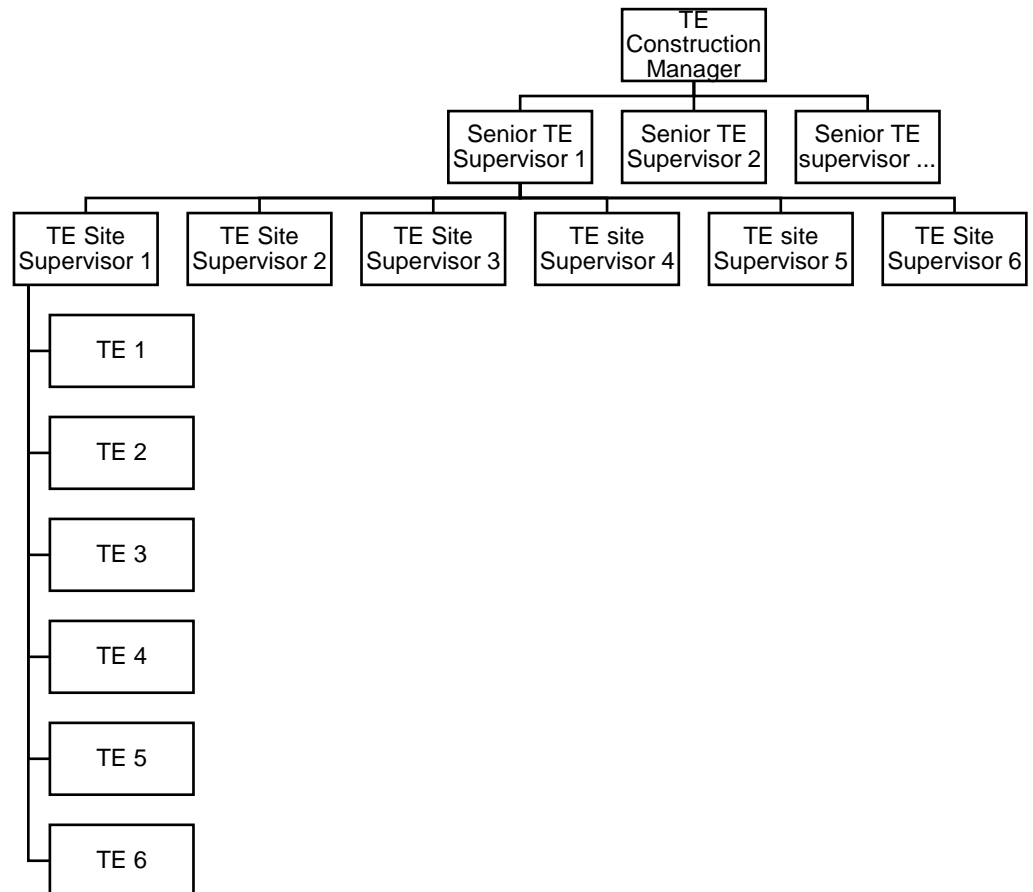
He shall have at least 5 years' experience as a Site Agent, managing construction processes in the fields of roads maintenance, new roads construction, roads rehabilitation, roads structures, etc. In addition, he shall have ample knowledge of,

and experience in, the requirements of training and mentoring in the road construction environment.

c. 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 and their employees;
- 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 sub-contracts,
- d) Assist Targeted Enterprises to monitor and manage the schedules, costs, and cash flows of their sub-contracts.
- e) Endeavour to avoid sub-contract disputes and if disputes do arise, facilitate a process to find an amicable solution.
- f)
- g) Ensure that the CPG objectives are achieved.

D1008.03 Sub-contract Agreements

The Contractor shall conclude subcontract agreements with each subcontracted Targeted Enterprise and shall utilise the be the Employer's proforma document for Targeted Enterprise sub-contracting (see Appendix 11), which is based on the 2011 FIDIC Conditions of Sub-contract for Construction 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 forms part of the subcontract agreement:

- i) The Targeted Enterprise's entitlement to receive the training contemplated in this Contract (Part C1, C1.2.1, Part B, clause 4.1).
- ii) The Targeted Enterprise's obligation to participate and co-operate in the training provided for in this Contract (Part C1, C1.2.1, Part B, clause 6.5);
- iii) The allowable sources from which Labour may be drawn in terms of the Contract (Part C1, C1.2.1, Part B, clause 6.8);
- iv) The terms and conditions relating to the recruitment, employment and remuneration of Labour engaged on the Contract (Part C1, C1.2.1, Part B, clause 6.5);
- v) The training to be provided to the Targeted Enterprise's workforce (Part C1, C1.2.1, Part B, clause 6.8);
- vi) The terms and conditions related to payment of the Targeted Enterprise (Part C1, C1.2.1, Part B, clauses 14.6 to 14.8 and 15.3);
- vii) Sanctions in the event of failure by the Targeted Enterprise to comply with the terms and conditions of the subcontract agreement (Part C1, C1.2.1, Part B, clauses 14.6 and 20.4 to 20.7);
- viii) Dispute avoidance and resolution procedures (Part C1, C1.2.1, Part B, clauses 20.4 to 20.7).

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

b) Monitoring of Sub-contract Agreements

The proforma subcontract agreement for each group of work packages shall be tabled to the Employer's Independent Targeted Enterprise Monitor for his review and confirmation that sub-contract agreements are in terms of the Employer's requirements and policies.

In addition, the PLC may 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 agreement 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 C1.3.1 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.

b) Monitoring of Payment of Targeted Enterprises

The Employer's independent Targeted Enterprise Monitor shall audit the Contractor's Payment of Targeted Enterprises to ensure timeous and correct payment in terms of the Employer's requirements and Policies and shall report his findings to the Employer's Project Manager on a regular basis.

D1008.05 Quality of Work and Performance of Targeted Enterprises

a) Ensuring Quality of Work and Performance

The purpose of the Employer's CPG is to, amongst others, enhance the utilisation and development of Targeted Enterprises. Thus, while the Contractor remains responsible for the quality of work and performance of Targeted Enterprises, he may not neglect the developmental requirements in the sub-contracting of Targeted Enterprises.

It is thus emphasised that 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 be 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's Project Manager and the Employer's independent Targeted Enterprise Monitor. The criteria are as follows:

- i) Deliver acceptable standard 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;
- v) Accommodation of traffic.

c) Assist the Targeted Enterprise to Make Good

The Contractor shall in terms of the sub-contract agreement (Part C, clause 3.1.12) 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, together with the Targeted Enterprise, identify the causes that led to failure to comply and jointly develop a plan to rectify, which plan shall be submitted to the Employer's Project Manager and the Engineer for information purposes.

Based on the plan to rectify, the Contractor shall 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.

d) Monitoring Execution of the Plan to Make Good

The Employer's independent Targeted Enterprise Monitor shall review plans to rectify and monitor the execution thereof to ensure that Targeted Enterprises are given a fair opportunity to rectify within a developmental environment. He shall report his findings to the Employer's Project Manager monthly.

D1008.06 Dispute Avoidance and Resolution Procedures

When any disputes arise, the Contractor shall within seven (7) calendar days inform the Employer's Project Manager, the Employer's Targeted Enterprise Monitor, and the Engineer, in writing, of the details of the dispute.

a) Facilitate Dispute Avoidance

Prior to taking any action, the Contractor shall commence with a facilitation process by arranging a formal meeting with the Targeted Enterprise with the aim to find an amicable solution to the dispute. The meeting shall be attended by the Employer's Project Manager, the Employer's Targeted Enterprise Monitor, and the Engineer to ensure a fair and transparent process in reaching a settlement.

If the parties are unable to find an amicable solution, the Contractor shall explain fully to the Targeted Enterprise the provisions in the sub-contract agreement to address disputes. If action is necessary, it shall be discussed with the Employer's Project Manager and the Engineer prior to any action being taken.

b) Support to Targeted Enterprise during Dispute Resolution Process

While the Employer's Project Manager and the Engineer will observe the dispute resolution process to ensure fairness and transparency, the Targeted Enterprise may request consultation and assistance from the Targeted Enterprise Monitor. The Targeted Enterprise Monitor will assist the Targeted Enterprise with the interpretation of the Conditions of Sub-contract and will guide the Targeted Enterprise during the dispute resolution process.

c) Issuing a Letter of Warning to Targeted Enterprise

The Contractor shall issue a letter of warning to the Targeted Enterprise, whom 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.

d) Failure by the Targeted Enterprise to Comply

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 may dispute any ruling given or deemed to be given by the Contractor or the Engineer, within 21 calendar days after receipt thereof by submitting a written Dispute Notice to the Contractor, in terms of the relevant Conditions of Sub-contract.

On request by the Targeted Enterprise, the Targeted Enterprise Monitor will assist the Targeted Enterprise with the interpretation of the Conditions of Sub-contract and will guide the Targeted Enterprise during the dispute resolution process.

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) Provision of traffic control facilities.
- d) Management of traffic control facilities and traffic safety as part of the accommodation of traffic.
- e) Construction and clearing of drains.
- f) Installation of prefabricated culverts including inlet and outlet structures.
- g) Concrete channelling and concrete linings for open drains.
- h) Construction of concrete paving, kerbs and channels.
- i) Construction of small concrete and other structures.
- j) Construction of walkways.
- k) Pitching, stonework and protection against erosion.
- l) Construction of gabions.
- m) Patching and repairing edge breaks.
- n) Erection of guardrails.
- o) Landscaping.
- p) Fencing.
- q) Road signs.
- r) Road markings.
- s) Finishing the road and road reserve.
- t) Site security services.
- u) Haulage of materials
- v) Supply of plant.
- w) Supply of fuel.
- x) 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) 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. Sidewalks.
- b. Side drains.
- c. Clearing and grubbing.
- d. Construction and clearing of drains.
- e. Pitching, stonework and protection against erosion.
- f. 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 with the input and support 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

To develop the Training and Skills Development Programme(s), the Contractor shall conduct a skills audit and analysis of Labour on the Targeted Labour database and the Targeted Labour of sub-contracted Targeted Enterprises 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 their supervisors sub-contracted 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 developed during the Mobilisation Period, accepted by the Engineer after consultation with the Employer and tabled to the PLC for their information before any training commence.

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 and competencies 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 Targeted Labour and Targeted Enterprises and their employees. 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 skills gap 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 D of the Specifications 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 the Contractor's consideration and inclusion into the Training and Skills Development Programme.

While considering the training needs of 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, and with the input and support 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 D of the Specifications.

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.

D1012.02 Community Development Component

Community Development (CD) components to the Contract are primarily training and skills development programmes to benefit an identified Community and Trainee Targeted Enterprises selected from this Community.

The owners and supervisors of Trainee Targeted Enterprises receive SAQA accredited training towards an accredited qualification which consists of theoretical and practical components.

The theoretical training is conducted by the Contractor's Training Service Provider while the practical training, which is the construction of the CD Works, is undertaken by the Trainee Targeted Enterprises under the mentorship and supervision of the Contractor's dedicated TE Construction Manager.

a) CD Project(s)' Service Provider(s)

CD Projects identified for implementation in association with this Contract will be let for tender by the Employer as **separate Contracts**.

The name(s) and contact details of the Service Provider(s) appointed for the implementation of the CD Project(s) will be provided to the Contractor on award of the Contract or as soon as the Service Provider(s) has/have been appointed.

The Contractor shall collaborate and cooperate with the CD Project(s)' Service Provider(s) and take cognisance of the CD Project(s)' programme in compiling the programme of the Works Contract.

b) CD Project(s) Associated with this Contract

The Employer identified a CD Project associated with this Contract (but not forming part of this Contract) with the CD project number and description being SANRAL C.002-027-2018/1 for The Training and Construction Management Services of a Community Development Project to Upgrade Access Roads in and around KwaMhlanga, near National Road R.573, Section 2 from KM 8.60 to KM 13.00

The CD Project is envisaged to commence in 2024 and has an estimated duration of 18 months.

The CD Project Works, immediately adjacent to the extents of this Contract, but outside the SANRAL road reserve, entail the following:

- i) Access Roads

D1013 MEASUREMENT AND PAYMENT

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

D10.01 Target Group Participation

- | | | |
|-----|--|---------------------|
| (a) | Contract Participation Performance bonus | Prime Cost (PC) Sum |
|-----|--|---------------------|

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 Contractor's Establishment on Site and General Obligations: Time Related Obligations.

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

D10.02 Stakeholder and Community Liaison and Social Facilitation

- | | | |
|-----|---|---------------------|
| (a) | Cost of liaison, social facilitation and PLC support | Prime Cost (PC) Sum |
| (b) | Handling cost and profit in respect of sub-item D10.02(a) | Percentage (%) |

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 Contractor's Establishment on Site and General Obligations: 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 sub-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 of the Specifications.

The tendered monthly rate for sub-item 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 sub-item D10.03(a) and the full contents of this Section D of the Specifications.

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 of the Specifications.

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

The tendered monthly rate for sub-item 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 sub-items 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 sub-item D10.04(a) and the full contents of this Section D of the Specifications.

Item		Unit
D10.05	Construction Works by Targeted Enterprises	
(a)	Payments associated with the construction works executed by Targeted Enterprise sub-contractors of CIDB 1 and 2 contractor grading designation appointed in terms of Section D of the Specifications	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 sub-contractors	Lump Sum (LS)
(d)	Preliminary and General Obligations of Targeted Enterprise sub-contractors appointed in terms of Section D of the Specifications	Lump Sum (LS)

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

The Provisional Sum for sub-item 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 of the Specifications. Expenditure under sub-item D10.05(a) shall be limited to the Provisional Sum amount stated in the Pricing Schedule. Construction works by Targeted Enterprise sub-contractors 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 sub-item D10.05(b) is the percentage of the amount spent under sub-item 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 sub-contractors, 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 sub-contractor rates more than 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 sub-contractors until the Lump Sum is depleted. Any costs incurred due to fluctuation in tendered rates more than 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 sub-contractor'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 sub-contractors.

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 more than 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 NQF training	Provisional (Prov) Sum
(ii) Accredited generic skills training	Provisional (Prov) Sum
(iii) Community skills training	Provisional (Prov) Sum
(iv) Handling cost and profit in respect of sub-items D10.06(a)(i), (ii) and (iii)	Percentage (%)
(b) Student experiential training	
(i) Student stipends	Prime Cost (PC) Sum
(ii) Provision of experiential training	Person Month
(c) Other costs during training	Provisional (Prov) Sum
(d) 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 Section D1010 of the Specifications.

The rate tendered under sub-item D10.06(a)(iv) 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), (ii), and (iii).

The prime cost sum under sub-item D10.06(b)(i) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract. The prime cost sum shall cover the monthly stipend as prescribed by the Employer to be paid to students receiving experiential training.

The unit of measurement for sub-item D10.06(b)(ii) shall be the person-month, with pro-rata payments made for partial months for training provided based on 23 workdays per month.

The rate tendered under sub-item D10.06(b)(ii) shall include full compensation for the Contractor to provide training to the students provided by the Employer inclusive of all costs to communicate with the Employer and any other body or organisation in respect of work assigned to the students. The rate tendered shall include telephone calls and charges, stationery and information technology hardware, software, connection or licence costs and lost production, profits and all other incidentals as well as all administrative and overhead costs.

The Provisional Sum under pay item D10.06(c) 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(d), 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 pro-rata 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.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R.573-020-2019/2

FOR THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE D FROM
KM 8.60 TO KM 13.00

**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 annually 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 conformance
- 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)

Appointment	Legal Reference
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 R.573-020-2019/1, 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>Hazard</u>	<u>Description</u>	Risk Rating Critical High Medium Low
Construction	Acoustic - Noise	Noise exposure in excess of 85db from Heavy Mobile Equipment	C
Construction	Chemical - Venom	Employee stung by insect	H
Construction	Chemical - Venom	Employee bitten by a venomous snake.	H
Construction	Chemical - Carcinogen	Employees exposed to Hazardous chemical agents	H
Construction	Chemical - Carcinogen	Employee's skin exposed to cement or cement products, resulting in lime burns.	H
Construction	Elastic - Compressed Fluid (Gas or Liquid)	Failure of a compressed air /hydraulic hose, clamp, or coupling.	H
Construction	Electrical - Electricity	Person electrocuted due to arc or contact with live buried cable.	C
Construction	Electrical - Electricity	Electric shock or electrocution due to the use of unsafe electrical equipment (including generators).	C
Construction	Electrical - Electricity	Electrocution / damage when vehicles comes in contact with overhead lines.	H
Construction	Ergonomic - Awkward Movement	Musculoskeletal injury while climbing into or out of the cabin, or while climbing onto or down from the load bed or bin (mobile equipment).	H
Construction	Ergonomic - Exertion	Musculoskeletal injury due to improper manual handling / lifting practices.	H
Construction	Explosion - Explosion	Tyre explosion as a result of lightning striking mobile equipment / light vehicle, a tyre fire, over-inflation, wear, damage, or the application of heat to a rim or wheel.	C
Construction	Gravitational - Collapsing Structure	Collapsing formwork or scaffold structure	C
Construction	Gravitational - Collapsing, Slumping or Flowing Material or Substance	Collapse of excavation/trench	C
Construction	Gravitational - Falling or Rolling Object	Mobile equipment / light vehicle toppling over (and possibly rolling).	C
Construction	Gravitational - Falling or Rolling Object	Tools or equipment falling from height.	C

Construction	Gravitational - Falling or Rolling Object	Mobile crane toppling over.	C
Construction	Gravitational - Falling or Rolling Object	Suspended load falling to the ground due to failure of mobile or vehicle-mounted crane or lifting tackle.	C
Construction	Gravitational - Falling or Rolling Object	Mobile equipment / vehicle falling into an excavation.	C
Construction	Gravitational - Falling or Rolling Object	Collapse of stacked items or materials.	C
Construction	Gravitational - Person Falling from Height	Member of the public falling into excavation.	C
Construction	Gravitational - Person Falling from Height	Employee falling from height.	C
Construction	Gravitational - Slip, Trip or Fall (Same Level)	Employee tripping and falling on site.	C
Construction	Mechanical - Moving Component of Fixed Machinery	Injury due to pinch, nip and shear points associated with moving / rotating machinery.	C
Construction	Mechanical - Moving Component of Powered Tool	Injury due to contact with moving parts of power tools (e.g., drill or grinder).	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Uncontrolled movement (including brake failure) of an item of mobile equipment or a light vehicle.	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Mobile equipment and light vehicle collision (construction site).	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Pedestrian struck by or run over by mobile equipment or a light vehicle (construction site).	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Road accident in construction area.	C

Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Motor vehicle accident due to poor/inadequate traffic accommodation during construction.	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Mobile equipment / light vehicle accident due to reduced visibility as a result of heavy rain, mist, dust or smoke.	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Mobile equipment / light vehicle accident due to mechanical failure.	C
Construction	Mechanical - Moving Mobile Equipment or Light Vehicle	Mobile equipment / light vehicle accident due to operator / driver being unfit for work.	C
Construction	Mechanical - Moving Object (Mechanically or Manually)	Struck by suspended load or caught between suspended load and structure.	C
Construction	Particulates and Aerosols - Dust	Employees exposed to dust during working activities.	H
Construction	Public unrest	Community unrest	C
Construction	Radiation - Ionising Radiation	Radiation leakage due to damaged troxler.	H
Construction	Radiation - Ionising Radiation	Sunburn resulting in skin cancer.	H
Construction	Thermal - Heat	Exposure to hot conditions resulting in heat stress.	H
Construction	Thermal - Heat	Burning with hot asphalt or equipment	H
Construction	Vibrational - Hand / Arm Vibration	Exposure to segmental vibration.	C
Construction	Weather - Lightning	Employee(s) struck by lightning.	C

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 operator's 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.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL R.573-020-2019/2

FOR THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE D FROM KM
8.60 TO KM 13.00

**SECTION F: PROJECT SPECIFICATION AMENDMENTS TO THE STANDARD SPECIFICATIONS
FOR ELECTRICAL (ROADWAY LIGHTING) INSTALLATION**

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DETAIL ELECTRICAL SPECIFICATION FOR INTERSECTION AND ROADWAY LIGHTING

F1001 SCOPE

The National Road R573 is owned and maintained by The South African National Roads Agency SOC Limited (SANRAL).

This specification covers the design, supply, delivery, installation, testing, commissioning and hand-over of the new roadway lighting installation within the limits of construction km 8.60 and km 13.00, which includes the roadway, intersections and traffic circles.

The requirements pertaining to the roadway lighting and associated electrical installation shall, in broad terms, comprise the supply, delivery, installation, testing and commissioning of the following equipment:

- Roadway Lighting Control Kiosks (RLCKs), including plinths and associated enclosures.
- Underground PVC/PVC/SWA/PVC low voltage (415V) distribution cable within the road reserve of the National Road R573, as well as the within the median barrier, including all joints, terminations and testing.
- Standard roadway lighting luminaires, poles, supply cables and earth conductors.
- Roadway lighting luminaires, high masts, scissor masts, foundations, supply cables and earth conductors.
- Luminaires and accompanied calculation sheets to support prescribed pole spacing.
- All excavations, bedding, backfilling and compaction of trenches for all MV, LV and Earthing cabling as required.
- Testing and certification of all parts of this works.
- Labelling and as-built drawings.
- Compliance with all aspects of the Main Contract in respect of programming, traffic accommodation and safety measures.

The aspects as detailed above should be viewed as a brief summary of the scope of the work and not necessarily an exhaustive list.

Where reference is made to the roadway lighting installation it shall include all the aspects of the Works as summarised above.

All components, mounting brackets, cabling, wiring, mounting and aiming of luminaires, spares and accessories, and all other electrical and civil works required to complete the Works to get it in a fully operational state prior to handover, shall be deemed to be included in the tendered rates and prices, albeit some items may not be listed separately in the schedule of quantities. No claims whatsoever in this regard shall be considered after the Contract has been awarded.

F1002 MAIN AND ALTERNATIVE OFFER

The main offer shall be based on the provided parameters and pole spacing. This would be the first considered offer owing to the fact that the aim would be to keep to the same pole spacing as the adjacent packages.

The Contractor may select to offer the Client an alternative lighting solution to further reduce the project cost, and in turn, increasing the Tender offer competitiveness. The Contractor however must, as a main offer, complete the schedule of quantities as is, and comply with the electrical specification.

The alternative offer may only deviate from the main offer in the form of lighting pole spacing, offering a more economical solution taking into account all the associated parameters (number of poles, masts, luminaires, kiosks etc. and the effect the change in quantity will have on the electrical distribution network to suit).

Both the main and alternative offer shall be accompanied by the associated lighting simulations and electrical calculation to indicate compliance with all relative standards. The simulations and calculation shall include, but not be limited to, the following:

- Lighting simulation in Dialux, Relux, ElumTools or similar. (native files to be included)
- All LV electrical distribution calculations (circuit loading, volt drop, fault levels, normal and earthing cable sizing, taking into account all parameters - installation depth, material etc.). Distribution routes shall be as shown on the layout drawings.

Failure to provide the above-mentioned documentation in native electronic format (on CD or USB flash disk) will render the tender offer non-responsive.

F1003 EXISTING SERVICES

The Contractor shall take note of the extent of all existing services, which he shall obtain from the Main Contractor. The Contractor shall, where applicable, work under the wayleaves issued to the Main Contractor and shall adhere to all conditions as detailed therein.

The Contractor shall make no claim against the Main Contractor, Employer or Engineer for any damages or losses arising out of its negligence to comply with the requirements of the wayleave conditions.

Drawings showing the extent of all existing services are available for scrutiny at the Office of the Main Contractor and will be made available upon request.

F1004 DRAWINGS

The following A0 size drawings are issued with and form part of this document. The layout drawings as provided for,

FOR THE UPGRADING OF NATIONAL ROAD R573 SECTION 2: WORK PACKAGE E FROM KM 13.00 TO 24.70.

60487450-10-1-E-AF-101	:	Roadway Lighting Layout From KM 8.600 to 10.800
60487450-10-1-E-AF-102	:	Roadway Lighting Layout From KM 10.800 to 13.000
60487450-10-1-E-FC-001	:	Roadway Lighting Distribution Details, Single Line and Schematic Details
60487450-10-1-E-FC-002	:	Roadway Lighting Kiosks Single Line Diagrams

F1005 GENERAL

a) General Information

The final design and specification of the roadway and intersection roundabout lighting installation shall be based on the latest revision of the SANS 10098 Part 1 and Part 2 codes of practice and other standard specifications, and shall generally comply with the following conditions.

Median Barrier Mounted Arrangement

- Roadway classification : A1 median >900 vehicles/hour/lane.
- Mounting height : 20.5m (20m galvanised steel scissor mast with double single luminaire arrangement – single luminaires per side, but with dual built-in redundancy).
- Mounting position : Median Barrier mounted (as per the associated layout drawing).
- Luminaire type : Type A
- Location : Median Barriers
- Spacing : Luminaires to be spaced to comply with SANS requirements.

Median Island Plinth Mounted Arrangement (at the approach to Roundabouts and Intersection)

- Roadway classification : A1 median >900 vehicles/hour/lane.
- Mounting height : 20.5m (20m galvanised steel scissor mast with Twin Central luminaire arrangement – single luminaires per side, but with dual built-in redundancy).
- Mounting position : Raised plinth mounted (as per the associated layout drawing).
- Luminaire type : Type A
- Location : Centre of roundabout approach islands, turn-off approach islands.
- Spacing : Refer to drawing numbers: 60487450-10-1-E-AF-101-102

Centre of Roundabout Plinth Mounted Arrangement

- Roadway classification : A1 median >900 vehicles/hour/lane.
- Mounting height : 31.5m (30m galvanised steel winch mast with luminaire mounting ring).
- Mounting position : Raised plinth mounted (as per the associated layout drawing).
- Luminaire type : Type B
- Location : Centre of roundabout island.

Secondary Roads Joining Roundabouts and Intersections Side Ground Mounted Arrangement

- Roadway classification : A3 median >600 vehicles/hour/lane.
- Mounting height : 12m (galvanised steel pole).
- Mounting position : Ground outside mounted (3 000mm setback).
- Luminaire type : Type C
- Location : Outside mounting of secondary roads
- Spacing : Luminaires to be spaced to comply with SANS requirements.

Apart from the drawings included with this tender document, civil engineering, accommodation of traffic, existing services, pavement structures, etc. will be made available for scrutiny at the Engineer's offices.

b) Site and System Conditions

Unless otherwise specified the following site and system conditions may prevail:

- Ambient temperature : -5 to +40°C.
- Altitude : Approximately 1 370m.
- Lightning and hail : High
- Pollution : Moderate.
- Power supply : 400Vac, nominal $\pm 6\%$, three phase, plus neutral.
- Frequency : 50Hz.
- Fault Level : Minimum 5kA at 415V, depending on the location and transformer size at the respective point of supply.

c) Supply Authority

The Contractor shall liaise closely with the supply authority to ensure that all the work is completed timeously and to ensure co-operation between the different contractors.

The Contractor shall make arrangements with the supply authority for any shutdowns required for the supply points for the roadway lighting installation.

d) Traffic Accommodation

Should any scaffolding and/or lifting machines be required for the execution of the lighting installation it shall be provided by the Contractor and the price thereof shall be included in the tender price. No claims arising out of the use or hire of scaffolding or plant will be considered after tender stage.

It may be necessary for the Contractor to work within confined areas, on tapers, and within close proximity of other structures. Except where provided for in the specifications, no additional payment will be made for work executed in restricted areas or close to existing structures. 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.

F1006 EQUIPMENT AND INSTALLATION WORK BY OTHERS

The following does not form part of this contract:

- All civil work, except cable trenching and high mast excavations and foundation installations not forming part of the median barrier.

F1007 DRAWINGS AND DOCUMENTATION

The Contractor shall produce detailed shop drawings of the lighting masts, poles and roadway lighting control kiosks (RLCKs complete with enclosure details) to be issued to the Engineer for approval. These drawings shall include mechanical/structural details, dimensions, electrical wiring diagrams and connection diagrams.

Any drawings submitted for approval to the Engineer shall be checked and bear the Contractor's own in-house approval stamp before approval will be considered by the Engineer. In addition to this, drawings of purpose made equipment for this installation, shall be designed, checked and signed by a Professional Engineer (on behalf of the Contractor or the Supplier). Drawings not complying with this requirement will summarily be returned to the Contractor.

It is the responsibility of the Contractor to obtain the Engineer's approval before commencement of any relevant manufacture or installation work and to stay within the time-constraints of the contract. The Contractor shall submit two sets of paper prints of workshop drawings for approval of which one set shall be returned with comments or approvals given. The Contractor shall allow sufficient time for the Engineer to scrutinise and approve the designs. Delays to the project due to late submission of, or insufficient time allocation for approvals, shall be for the Contractor's account.

F1008 SERVICE DUCTS/SLEEVES

The bulk of the median LV reticulation cables shall be installed in the median barrier sleeve network constructed by the Main Contractor.

Service ducts/sleeves of nominal 110mm or 160mm diameter shall be installed by the Contractor at all roadway crossings, crossings onto the roundabout islands and crossings to the median barriers and shall be used, as far as practicably possible, for the accommodation of the new roadway lighting installation cables.

All new service ducts/sleeves shall be of the Class 6 solid wall heavy duty uPVC type, and be fitted with 1.6mm diameter galvanised steel draw wires.

The Contractor shall render all service ducts vermin-proof after installation of the cables. Sealing off of service ducts shall be done with a non-hardening compound to the approval of the Engineer or a weak sand/cement mix.

The Contractor shall carefully hand excavate at the roadway crossing points indicated on the drawing for location of any existing service ducts/sleeves.

Should existing sleeves be unusable, an allowance for the directional drilling (mole boring) of sleeves under existing roadways has been made available within the Schedule of Quantities.

F1009 ROADWAY LIGHTING INSTALLATION

GENERAL

The roadway lighting installation shall be designed and installed complete as per the latest requirements of the South African National Roads Agency SOC Ltd as well as that parts 1 and 2 of SANS 10098.

All luminaires for this project shall be of the LED type.

The Contractor's attention is drawn to the returnable schedules to be completed with the tender submission, as well as the Conditions of Contract associated with the submission of alternative offers.

The new roadway lighting supply cables shall be supplied and installed in the ground or in sleeves as may be required and as depicted on the layout drawings.

The roadway lighting cable shall rise up into the pole for termination within the access hatch located in the roadway lighting pole. Where the main supply cable is too large to terminate directly into the single pole of the miniature circuit breaker, the incoming and outgoing phases shall be crimped together with a 10mm² single core PVC insulated conductor extending to the line side of the local circuit breaker within the lighting pole. The colour of the aforementioned "looping" conductor shall be representative of the phase colour on which the luminaire is connected.

Each crimp shall be insulated using heatshrink material; no insulation tape shall be permitted.

No joints within the roadway lighting cables shall be permitted.

LUMINAIRES

The tenderer shall clearly state the types of luminaires offered in the tender, which shall be supported with the compliant roadway lighting design and simulation reports as described under clause F1009.

Luminaires shall be aimed after installation by the Contractor in accordance with the recommendations of the luminaire supplier. The tendered rates and prices shall allow for additional aiming of luminaires and re-adjustment three months after handing over. No claims for extra payment in this regard will be considered.

All luminaires shall be equipped with an earth terminal, which shall be properly earthed to the earth stud located in the pole using a 2.5mm² insulated earth wire.

All luminaires, associated equipment and control gear shall be new and unused and shall be complete with lamps, drivers and associated control gear, visors/refractor bowls as applicable, mounting brackets and all other accessories to make the luminaires fully operative. The luminaires shall be delivered to site in a protective covering.

All luminaires shall be mounted in accordance with the manufacturer's requirements and as specified. In addition, the Tenderer's attention is drawn to the requirement of a safety chain or stainless steel wire rope to attach the luminaire to the pole.

(a) Luminaires identification

- Lighting outlets are numbered on the drawings.
- The numbering of the outlets defines the pole tag number, circuitry and control required.
- Each luminaire shall be furnished with the wattage and colour as specified or as implied by the catalogue number of the luminaires specified.
- The luminaire shall be manufactured by an ISO 9002 accredited company.
- The luminaires company shall be a SABS Marked Bearing Company or International Equivalent.

(b) Streetlight Luminaires

- All luminaires shall be supplied, installed, commissioned and aimed by the contractor. The Tenderer shall be responsible for installation of the fittings strictly according to the supplier's requirements.
- Any defective luminaires found after installation will be the responsibility of the contractor and shall be replaced at his cost.

- The Tenderer shall supply a copy of the LDT / IES files on Flash drive and a printed copy of the simulation report in a CIE compliant format of the proposed luminaires.
- It is vital that valid and readable LDT / IES files are submitted at time of tender. Valid and readable files will be used to carry out simulation reports to verify paper copy simulation reports submitted.
- LDT / IES files will also be tested by the client to verify that luminaires are compliant. The luminaire simulation report shall be done on the latest CIE compliant software and submitted in paper copy at time of tender. Only offered compliant luminaires will be further considered.

(c) Luminaires

- The Tenderer will be responsible for installation of the fittings strictly according to the supplier's requirements. Any defective luminaires found after installation will be the responsibility of the contractor and shall be replaced at his cost.
- All Luminaires must be supplied complete with components that are compatible and suitable for use with a Lighting Management System.
- Specific luminaire components to be supplied are a suitable dimmable 1-10V or other approved driver, 7-wire connector block, minimum 10kV/10kA surge protection and earth stud.
- All luminaires to be supplied complete with a Lighting Management system where specified.

NO	Requirements	Minimum requirements
1	Luminaire Type	LED Street light
2	Performance Requirements	CIE 121, The photometry and gonio photometry of luminaires. SANS 9227/ISO 9227:2007, Corrosion tests in artificial atmospheres – Salt spray tests. Amdt 2 SANS 10098-1, Public lighting – Part 1: The lighting of public thoroughfares. SANS 60529/IEC 60529, Degrees of protection provided by enclosures (IP Code). SANS 60598-1/IEC 60598-1, Luminaires – Part 1: General requirements and tests. SANS 60598-2-1/IEC 60598-2-1, Luminaires – Part 2: requirements – Section 1: Fixed general-purpose luminaires. SANS 60598-2-3/IEC 60598-2-3, Luminaires – Part 2-3: requirements – Luminaires for road and street lighting.
3	Luminaire efficacy	>100 lumens/watt
4	Colour Temperature	CCT maximum 4000K Neutral White CRI≥70
5	LED Engine	Modular (Tenderers to state number of LED's per module)
6	LED Driver Current	700mA to 1A (maximum)
7	LMS compatibility	Dimming 1 - 10V (flicker and noise free form 10 - 100%) Luminaires fitted with NEMA/ANSI C136.41 compliant 7-pin socket
8	Operating Voltage	150-270VAC
9	Frequency	50Hz
10	Electrical class	Class I (SANS 62262)
11	Power Factor	>0.9
12	Harmonic Distortion	THD shall not exceed 5% of the supply voltage and no single harmonic shall exceed 3%.
13	Surge Arrestor	Nominal discharge current: 10kA Voltage protection level: 2kV Response time: ≤25ns Luminaire cut-out
14	Lifetime at 25oC	>50 000 hrs (lumen depreciation not more than 30% - L70)
15	Operating Temperature	-5oC to +45oC No external part of luminaire shall exceed temperature of 70oC during or after operation
16	Thermal Management	Optimal external heat exchange surface Temperature sensor and cut out to prevent overheating

17	IP Rating: Control compartment gear Optical compartment	IP66 certified (SANS 60598)
18	Housing	Weather and corrosion proof. Marine grade die cast aluminium alloy grade AC-44300 or better in accordance with DIN EN 1706
19	Front Protector	Heat and Impact resistant. High impact clear glass, with sealed joint in housing
20	Impact resistance	Per SANS 62262 >IK 08
21	Screw, bolts and metal parts	Stainless steel S316
22	NEMA Socket	NEMA/ANSI C136.41 compliant 7-pin socket
23	Finish	Unpainted Aluminium

(d) Photo-Electric Switches

This unit must consist of a photocell, thermal starter and switch. The body of this unit must be manufactured from strong material to protect it against tampering, and it must also have good anti-weathering features; it must be capable of withstanding ultra-violet rays and long periods of exposure to the sun.

The unit must be a wall-mountable type and it must be fitted with a suitable mounting frame. The unit must be mounted over a 60mm (diameter) round draw-box of which the lid must be fitted with a grommet to protect conductors entering the draw-box. The unit must be installed in such a way that it is not activated by any of the other light fittings.

The unit must be pre-set in the factory so that it will switch on at an illumination level of approximately 54 Lux and switch off again at 108 Lux. A time delay of at least 15 seconds must be provided for to prevent the switch from being activated by lightning or other brief changes in the illumination level.

(e) Luminaire types, Construction and Installation

It is envisaged that only three types of luminaires shall be used under this contract and shall comply with the table below:

Roadway Lighting Luminaire Types	
Type A	<p>Standard LED type roadway lighting luminaire</p> <p>The luminaire housing shall non-corrosive high pressure die-cast aluminium. The luminaire shall consist of dual LED drivers and luminaire compartments for redundancy, dual surge protection, power supply and spigot compartment. The spigot base and housing shall be closed by means of a hinging mechanism and secured by stainless steel latches and an access screw. The LED photometrical engine shall have an IP 66 rating. The luminaire shall have a LED driver current 700mA to 1A (maximum) and colour rendering rating of between 2800K and 4000K. Luminaire shall have a NEMA socket installed for each luminaire / driver compartments and shall be IOT ready.</p>
Type B	<p>Standard LED type flood lighting luminaire</p> <p>The luminaire shall consist of an integrated electronic driver, suitable for 220-240V, 50/60hz AC power supply. The luminaire shall consist of dual LED drivers and luminaire compartments for redundancy, dual surge protection, power supply and spigot compartment. The luminaire housing shall be made of non-corrosive high pressure die-cast aluminium with a corrosion resistant powder coating. The luminaire shall be equipped with a thermally hardened 5mm-thick shatter-resistant front glass. The luminaire shall be equipped with</p>

	a high refractive lens and reflective layer to increase the lumen output. The luminaire shall be IP66 protected against water and dust, with a heat resistant gasket. The heat sink shall be die-cast aluminium. All clips shall be made of stainless steel. The mounting bracket shall be made of 5mm-thick galvanized steel and allow universal directional adjustment. The luminaire shall have a LED driver current 700mA to 1A (maximum) and colour rendering rating of between 2800K and 3400K. Luminaire shall have a NEMA socket installed for each luminaire / driver compartments and shall be IOT ready.
Type C	<p>Standard LED Type Roadway Lighting Luminaire</p> <p>The luminaire housing shall be non-corrosive high pressure die-cast aluminium. The luminaire shall consist of an LED engine, power supply and spigot compartment. The spigot base and housing shall be closed by means of a hinging mechanism and secured by stainless steel latches and an access screw, as per the lighting supplier's detail. The LED photometrical engine shall have an IP 66 rating. The fitting shall include the spigot. The luminaire shall have LED driver current 700mA to 1A (maximum) and colour rendering rating of between 2800K and 4000K. Luminaire shall have a NEMA socket installed for each luminaire / driver compartments and shall be IOT ready.</p>

The roadway lighting luminaires shall be installed in the positions as indicated on the layout drawings accompanying this tender document, except if an alternative was offered and approved. The final position shall be confirmed with the main contractor to be in line with the median barrier arrangement.

The housing, especially the lamp module and control gear compartment, shall be robustly constructed, weatherproof, hail proof, insect proof, corrosion proof, ultra-violet light resistant and vandal resistant.

Luminaires shall be suitable for operation at the specified rated ambient temperature (Ta) of 35°C.

Fixing devices, junctions, lips and the like shall be designed to shed water. Pockets and ledges in which condensation may accumulate, shall be avoided. An integrated vent (breather) shall be incorporated for rapid pressure equalisation and reduction of condensation.

LED luminaires shall incorporate 10kA Class II surge protection and have applicable thermal protection devices applicable to the region of installation, such that should the ambient temperature exceed the rated operating ambient temperature of 35°C, that the luminaire then either "switch-off" or lower its operating mode while remaining "switched-on".

The luminaires shall be constructed from light weight durable materials which for all parts shall be compatible and failure or deterioration shall not occur due to electrolytic action or by differential thermal expansion.

Where glass reinforced polyester (GRP) is used it shall comply with the requirements of SANS 141 for Type F laminate products.

Luminaires shall have successfully passed the accelerated ageing tests of SANS 475.

Luminaires made of dough moulding compound (DMC) are not acceptable.

Luminaires shall include a NEMA socket for each driver and shall be IOT ready.

Luminaires shall have separate lamp module, control gear and a spigot compartment, and shall have a minimum degree of protection of IP66 on the control gear and LED module compartment. The Engineer shall reserve the right to sample the luminaires for IP testing, prior to installation.

Luminaires with aluminium housings shall be of grade LM 6 (EN1706 AC-44100) (or higher) aluminium alloy and shall comply with BS 1490 or equivalent and shall not be powder coated or have any other coating applied. Tenderers offering aluminium housings shall submit a metallurgical report from an independent metallurgist confirming the grade of aluminium for all the luminaires offered or a letter from the supplier confirming the compliance of the luminaire. The Engineer reserves the right to submit luminaires for metallurgical testing.

Components that are manufactured from hot dip galvanised steel shall withstand the test specified in the current edition of SANS 121 for heavy duty application.

Small components (such as toggle clips, bolts, screws, nuts, washers) shall be manufactured from stainless steel (grade 304 or better).

Due attention shall be paid to the accessibility of parts and to other requirements necessary for efficient maintenance and cleaning.

Any paint and/or tape on the reflector or bowl to achieve cut-off distribution shall not be considered.

All internal wiring in all luminaires shall consist of heat resisting, non-deteriorating, insulated, flexible stranded copper conductors and shall terminate in a suitable marked terminal block. The insulation of the wiring shall be suitable for all normal operating conditions.

All installation positions according to the Tenderer's design shall be determined and confirmed on site before installation.

(f) Standards and Specification Requirements

Roadway lighting luminaires offered under this contract shall bear the SABS certification mark for approved performance shown by an 'A' enclosed by a diamond and shall be tested to the SANS 475 standard or international equivalent.

Luminaires shall be Class 1 of IEC 60598-1 and be of the totally enclosed type.

The luminaires shall bear the SANS 60598-2-3 and SANS 60598-2-5 safety mark or equivalent SANS or International rating specific to the luminaire type.

The luminaire shall be manufactured by an ISO 9002 accredited company.

The luminaire manufacturing company shall be a SANS mark bearing company.

The luminaires and its auxiliary components must carry a 10-year guarantee. Written confirmation of such must be provided by the Contractor to SANRAL.

(g) Lighting Design Parameters for Lighting Simulations

The lighting simulations submitted shall be based on the relevant requirements and criteria for the lighting of roadways as specified in the SANS 10098-1 and SANS 10098-2 standards or IEC equivalent.

The evaluation of the simulations will be based on SANS 10098-1 and SANS 10098-2, or IEC equivalent standards and evaluated using the latest versions of the DIALux, Relux, Elum Tools or similar lighting simulation software.

The lighting simulations shall be submitted in its native software format (DIALux) and must be included on the tender submission CD (or USB flash disk) and will form part of the tender evaluation.

Simulation reports shall be submitted in PDF format, with lighting simulation results at two decimal point accuracy. This must accompany the lighting simulations and must also be included on the tender submission CD (or USB flash disk) and will form part of the tender evaluation.

Failure to submit the simulation reports, lighting simulations and valid readable luminaire photometric files (IES format or equivalent) with certification letters from a reputable test facility (SABS, CSIR test facilities or similar) may render the tender non-responsive.

Tenderers are urged to use standard spigot lengths and a rake angle of zero degrees, where a favourable lighting design uses a fixed spigot length and zero-degree rake angle for all simulations, thus minimising maintenance costs.

Tenderers may be requested to submit samples of their proposed luminaires to the Engineer to verify compliance of the luminaires. Tests to be conducted, but not limited to, include verifying the photometric file to the actual luminaire, IP rating, metallurgical testing, operation at rated ambient temperature, etc. The luminaires shall be returned to the tenderers.

The Contractor shall supply a track record of previous installations of the type of luminaire offered by the Contractor should the Engineer not be familiar with the product. The record shall indicate that the luminaire performs as claimed by the manufacturer with regards to lighting output and lifespan.

Refer to the electrical and civil drawings for cross section designs of the roads and light pole placement.

Luminaires selected are to adhere to tender specifications.

Where the same luminaire type is used in several lighting simulations, the luminaire type must be compliant in all lighting simulations.

Spigot length excludes the mounting length of the luminaire.

The correct surface and associated reflectance values are to be used in the lighting simulations, e.g. R3 q0 0.070 tarmac for carriageway surfaces, etc.

Colour rendering and colour temperature of between 2800K and 4000K shall be used and the selected rating is to remain constant for all luminaires selected for this project.

The Tenderer shall provide a lighting installation that complies with the lighting designs as described below and in accordance with the latest SANS 10098-1 and SANS 10098-2 standards.

National Road R573							
Simulation n	Luminaire Type	* Pole Spacing (m)	Luminaire Mounting Height (MH) (m)	Maximum Outreach Length (mm)	Maximum Rake Angle (degrees)	Offset from Edge of Lane (Yellow Line) (mm)	SANS 10098 Lighting Category: A1 with Median 900Veh/hr/lane
1	Type A	58*	20.5	250	0	Centre (Median)	$L_n = 2\text{cd/m}^2$ $U_o = 0.4$ $U_L = 0.7$ TI = 15
2	Type B	NA	30	N/A	0	Centre of roundabout island	$L_n = 2\text{cd/m}^2$ $U_o = 0.4$ $U_L = 0.7$ TI = 15
3	Type C	To suit	12	N/A	0	3600	$L_n = 1\text{cd/m}^2$ $U_o = 0.4$ $U_L = 0.6$ TI = 20

*Note: As part of the alternative offer the Tenderer may adjust the pole spacing in order to optimise his design in terms of capex and life cycle costs, this to match the luminaire and associated photometric data chosen for the lighting simulation.

Luminaire maintenance factor is stated in the table below and shall be used accordingly in the simulations.

Luminaire Maintenance Factors

Luminaire Type	Luminaire Description	Maintenance Factor
Type A		0.8
Type B		0.8
Type C		0.8

(h) Life Cycle Cost Summary

The information provided by the Suppliers, for the three tables as requested below, shall be used by the evaluation panel to determine the life cycle cost over a fifteen-year period. The total for maintenance shall be added to the total for energy consumption.

All life cycle information shall be supplied for both the main and alternative offers.

These tables will be used as a determining factor in the final evaluation of the tenders.

Maintenance and energy costs are to be shown for the entire lighting installation for all luminaires, without the use of an energy management and monitoring control system.

The tables below are included on the tender CD in Excel format that are to be completed, signed hard and soft copies submitted and the electronic MS Excel format copy completed and submitted.

(i) Life Cycle Cost Summary of Luminaires for Installation

Life Cycle Cost Summary of entire Lighting Installation (15 year life cycle)

Section	Description (Note: Life Cycle based on 15 year period)	Amounts
1	SUM A – Initial Capital Cost of Luminaires for Installation	R
2	SUM B – Estimated Energy Consumption Cost of Luminaires for Installation	R
3	SUM C – Estimated Maintenance Cost of Luminaires for Installation	R
	TOTAL EXCL. VAT (1 + 2 + 3)	R

(j) Energy Cost Table

Energy Costs (Average R/kWh is estimated @ 10% increase per year over a 15 year life cycle)

Luminaire Type	Luminaire Description	Unit	QTY	Rate	Amount	Luminaire Lumens	Rated Luminaire Wattage (kW)	Power Factor	Total Power Per Luminaire	Average Burning Hours/Annum	Average R/kWh over 15 Years	Life Cycle	Energy Cost per Life Cycle
1	2	3	4	5	6 = 4 x 5	7	8	9	10 = 8 / 9	11	12	13	14 = 4 x 10 x 11 x 12 x 13
Type A		No	*	R	R					3 650	R 11.32	15	R
Type B		No	*	R	R					3 650	R 11.32	15	R
Type C		No	*	R	R					3 650	R 11.32	15	R
TOTAL INITIAL LUMINAIRE INSTALLATION COST				SUM A	R	TOTAL ESTIMATED ENERGY COST OVER LIFE CYCLE PERIOD						SUM B	R

*Note: With an alternative offer the quantity of luminaires may vary depending on the luminaire chosen by the Tenderer. The life cycle cost must reflect the actual quantity and rated wattage (connected load) of the luminaire selected.

(k) Maintenance Cost Table

Maintenance Costs (15 Year Life Cycle)

Luminaire Type	Luminaire Description	Unit	QTY	Cost of LED Module per Luminaire	Cost of Electronic Driver	Rated Average LED Module Life at Ta = 35°C	Rated Average Electronic Driver Life at Ta = 35°C	Average Burning Hours/Annum	Annual LED Module Replacement	Annual Electronic Driver Replacement	Life Cycle	Maintenance Cost per Life Cycle
1	2	3	4	5	6	7	8	9	10 = 9 / 7	11 = 9 / 8	12	13 = 12 x 3 x ((10 x 5) + (11 x 6))
Type A		No	*	R	R			3 650			15	R
Type B		No	*	R	R			3 650			15	R
Type C		No	*	R	R			3 650			15	R
TOTAL ESTIMATED MAINTENANCE COST OVER LIFE CYCLE											SUM C	R

* Note: With an alternative offer the quantity of luminaires may vary depending on the luminaire chosen by the Tenderer. The life cycle cost must reflect the actual quantity and rated wattage (connected load) of the luminaire selected.

MASTS AND POLES

- General:**

The lighting poles shall be hot dip galvanised in accordance with SANS 121.

The Contractor shall ensure that all the items as listed within the design standards and certification included with this document pertaining to the design and fabrication, corrosion protection, access openings, cover plates, base plates, are complied with in their entirety. The Contractor shall have no recourse or make no claim against the Employer or the Engineer with regards to the failure of any item as defined herein.

The lighting poles and masts shall be prewired with 2.5mm² (Cu) PVC insulated single core conductors and 2.5mm² PVC insulated earth conductor and fitted with a 10A SP, 5kA miniature circuit breaker.

The position of the lighting poles and masts shall be as indicated on the Layout Drawings (refer to drawing nos. 60487450-10-1-E-AF-101 to 102) accompanying this documentation except if an alternative offer was offered and approved. Where ground mounted, the exact pole/mast positions must be confirmed on site, in consultation with the Engineer and Main Contractor, prior to the installation thereof, this to ensure that the poles and masts are placed clear of all current and future construction works envisaged to take place under the main contract.

The lighting poles, masts and associated concrete bases shall be designed by a Professional Engineer (Structural) who shall duly sign off the masts confirming compliance with the relevant

design standards and specification. Furthermore, the design shall be accompanied with supporting documentation in respect of the calculation data of natural frequency and design life of the hot dipped galvanized poles and masts, this with particular reference to the median mounted masts. The mast design shall also consider the weight of the luminaire and the spigot.

The median barrier and median plinth mounted mast configurations shall be designed to mount 2 luminaires (one per side). A suitable spigot must match the fitting requirements.

The lighting poles and masts shall be designed to withstand wind velocities as per SANS specification.

The total wind area of the pole shall be calculated with a lantern wind area to suit the selected luminaire in addition to the tapering projected area of the pole.

No drilling, machining or welding shall be performed on the masts after galvanizing.

Each plinth mounted mast shall be supplied with foundation bolts and templates. The bolts shall be hot dip galvanized over their entire length in compliance with SANS (ISO 1461) 2000-1. Two galvanized nuts, two washers and one spring washer shall be supplied for each bolt. The number of foundation bolts shall be adequately allowed for. Calculations shall be submitted upon request.

All infrastructure installation positions shall be determined and confirmed on site before installation.

- **Mast Foundations:**

The bulk of the scissor masts are to be installed onto the median barrier. The design of these median barrier mast foundations shall be carried out by the Engineer and installed by the Main Contractor as part of the median barrier.

The remainder of the scissor masts and rope-winch masts are located in the centre of the roundabouts (traffic circles) and the median islands at the entrances and exits of the roundabouts. These mast foundations shall be designed and installed by the preferred Supplier of the appointed Electrical Contractor.

A foundation plan, adequately designed for the relevant mast specification, and based on a soil bearing capacity of 150kPa, giving details of the reinforcing required shall be submitted for review and acceptance by the Engineer. Soil pressure and overturning safety factor shall be stated.

The supplier of the mast shall appoint a responsible Pr. Eng./Pr. Tech Eng., registered with ECSA, for the complete design of the mast and its associated foundation. The design drawings shall be duly signed by the respective designer prior to the submission thereof to the office of the Engineer for review and acceptance.

The final foundation design shall be based on the soil conditions as nominated by the Contractor who shall be responsible for the soil/rock investigation and shall delegate this work to an experienced registered professional duly authorised to do so on behalf of the Contractor and, who shall accept the responsibility for all the foundation test pit investigations and the foundation type nominations for the corresponding soil profiles. The signed foundation type nomination list and soil profile log sheets shall be submitted to the Engineer for acceptance. All soil profiling investigations shall be done in the presence of the Site Representative.

The minimum soil investigation requirement shall be the excavation of a test pit next to each foundation position, to allow for the in-situ inspection of the soil, recording thereof on a soil profile log sheet and the soil type assessment. Soil profiling standards shall be in accordance with SANS 10161. The test pits shall be excavated outside the zone of influence of the appropriate foundation, and shall be taken down to a depth equal to the lesser of the depth of the foundation system to be constructed or 3m. In addition, appropriate soil tests shall be carried out where further clarification is required for the correct identification of a soil category. The soil/rock foundation type nominations based on the aforementioned procedures shall take place well in advance of actual foundation installation, so as not to disrupt construction activities, and to allow

for the possibility of having to conduct laboratory tests on border case or mix layer type soils and/or rocks.

The test pits shall be suitably backfilled and levelled immediately after the relevant inspections and tests have been completed.

The 28 days cure strength of the concrete shall be 25MPa.

All foundations shall have a circular flat base from which a square plinth shall rise to above the surrounding ground level.

Two Class B PVC cable sleeves shall be provided from the centre of the top of the foundation plinth, through the concrete to a point below ground level on the side of the plinth.

After casting of the foundation, the slab shall be covered by properly compacted earth. The area around the plinth shall be brought to the original level and shall be left neat and tidy.

- **Scissor Masts:**

The masts shall be polygonal in cross section and tapering uniformly to the top.

The lower half of the mast shall be divided into two fully enclosed half sections, which shall form a prolonged section in the operating position with no unsightly steps or protrusions.

The pivot shall be located approximately at the mid-point of the mast and shall consist of two full-length steel ducts and not a shaft and hinge plates. Provision shall be made to prevent damage to the trailing cable during raising and lowering operations.

The mast shall hinge in a direction parallel to the roadway. The hinged section shall be counterbalanced for the weight of the luminaires fitted to the top of the mast. All luminaires shall be easily accessible from ground level with the mast in the lowered position.

A special locking device (lockable with a padlock) shall prohibit unauthorised lowering of the mast. This locking device shall be robust and capable of withstanding all possible forces that might act onto the mast. The integrity of the locking device shall be maintained if the mast is hit by a vehicle. All padlocks shall use the same key.

All parts of the masts shall be hot dip galvanized to SANS 121 and ISO 1461 specifications after manufacture. No drilling, machining or welding shall be performed on the masts after galvanizing.

The mast shall be tapering uniformly to the top. All welds are to be carried out by coded welders, using both the CO₂ and submerged-arc welding processes, depending on plate thicknesses and weld positions. Sample testing, using the DPI weld test procedure, shall be carried out as required.

A full mast shaft design is to be submitted with the tender document. Failure to submit this documentation will result in a disqualification from the tender.

The mast shall have sufficient space to permit the mounting of electrical equipment such as circuit breakers and a multi-pin socket.

The mast shall be designed to carry the specified luminaires in strict accordance with SANS 10225 code of practice for the design and construction of lighting mast.

The high mast shall be earthed by means of two (2) x 1800mm long x 16mm diameter copper earth spikes. The earth spikes shall be connected to the foundation bolts via 70mm², 3m long copper conductors with brass clamps, and installed underneath the foundation.

The following design calculations shall be submitted:

- The mast in wind conditions

- **Scissor Masts: 20m Full Length, Median Raised Plinth Mounted**

The mast shall have a full length of 20m, mounted on a raised plinth as depicted on the associated layout drawings.

- **Rope-Winch Masts:**

The masts shall be polygonal in cross section and tapering uniformly to the top.
The masts shall be of one single assembly with no pivot points.

The luminaire ring shall be raised and lowered by means of a rope-winch system.

All parts of the masts shall be hot dip galvanized to SANS 121 and ISO 1461 specifications after manufacture. No drilling, machining or welding shall be performed on the masts after galvanizing.

The mast shall be tapering uniformly to the top. All welds are to be carried out by coded welders, using both the CO2 and submerged-arc welding processes, depending on plate thicknesses and weld positions. Sample testing, using the DPI weld test procedure, shall be carried out as required.

A full mast shaft design is to be submitted with the tender document. Failure to submit this documentation will result in a disqualification from the tender.

The mast shall have sufficient space to permit the mounting of electrical equipment such as circuit breakers and a multi-pin socket.

The mast shall be designed to carry the specified Luminaires in strict accordance with SANS 10225 code of practice for the design and construction of lighting mast.

The high mast shall be earthed by means of two (2) x 1800mm long x 16mm diameter copper earth spikes. The earth spikes shall be connected to the foundation bolts via 70mm², 3m long copper conductors with brass clamps, and installed underneath the foundation.

The following design calculations shall be submitted:

- The mast in wind conditions

- **Rope Winch Masts: 30m Full Length, Centre of Roundabout, Raised Plinth Mounted**

The mast shall have a full length of 30m, mounted on a raised plinth as depicted on the associated layout drawings.

- **Lighting Poles: 12m Mounting Height, Ground Mounted**

The poles shall have a full length of 14m.

The construction of the poles shall be from pre-formed steel pipe of various sizes welded together through swaging by means of continuous full strength butt welds, i.e. tubular stepped in sections.

The mast shall be designed to carry the specified Luminaires in strict accordance with SANS 10225 code of practice for the design and construction of lighting mast where applicable.

Steel used in the construction of the pole shall have an ultimate tensile strength of 300MPa.

The poles shall be supplied with a loose base plate, no smaller than 400 x 400 x 4mm thick, which is attached to the pole shaft by means of 2 x M16 hook bolts, or welded. For parapet/surface mounted poles, the size of the base plate shall vary to suit the height of the poles and luminaire configuration.

The pole access opening shall be of the vandal resistant type as to ensure that no access is obtained with normal tools. Door-locking methods shall encompass safety bolts, hexagonal nut or Allen cap screw.

F1010 ELECTRICAL WORK

a) Power Supply

Power for the roadway lighting installation shall in the form of a medium voltage (MV) supply, with the location and type indicated by the local Supply Authority. From this MV supply point the design allows for the installation of a MV cable to reticulate the length of the roadway terminating within miniature substations installed along the route, as indicated on the drawings.

In general, care shall be exercised to prevent damage to existing services along all cable routes for which the information of existing services will be available from the Engineer. The Contractor shall obtain the necessary wayleaves and pay the necessary deposits to the Supply Authority and Telkom prior to commencement of any work at the supply point or areas where underground cables are installed if necessary.

The Contractor shall co-ordinate with the Supply Authority, in order to program their work to coincide with that of the Main Contractor.

b) LV Cabling

LV cables shall comply with the following SABS specification:

SANS 1507:2002 Electric cables with extruded solid dielectric insulation for fixed installations (300/500V to 1900/3300V)

New underground low voltage (415V) distribution cables shall be supplied and installed within the road reserve of the National Road R573.

All low voltage cables shall be of the PVC/PVC/SWA/PVC type, 600/1000V rating. Supply and feeder cables shall be terminated using K-Clamps secured to "Unistrut" channel with the RLCKs. Furthermore, feeder and supply cables terminating within the RLCKs shall be fitted with PVC break-out boots.

Where cable ducts or sleeve pipes are not utilised, cables shall be laid in the ground as per trench detail.

Cables shall generally be laid in the position as indicated on the layout drawings. Should any major variation in the cable route be required, the Engineer is to be contacted for further instruction in that regard.

Orange plastic warning tape shall be installed 300mm below finished ground level (FGL), directly above all LV cables.

All roadway lighting control kiosk (RLCK) feeder cables shall be of the sizes as indicated on the single line schematic diagrams included with this tender document.

c) LV Cable Joints and Terminations

Cable connections throughout the system shall follow the same phase rotation, and all cores on the system shall follow the undernote identification:

Red Phase: Core No. 1

White Phase: Core No. 2

Blue Phase: Core No. 3

Suitable tinned lugs, terminals and other fittings shall be used to match the different sizes of stranded copper core or solid aluminium core cables. The correct type of hexagonal crimping tools shall be used to crimp the lugs, terminals and other fittings onto the copper or aluminium cores.

The costs for the supply of lugs, terminals and all other fittings shall be included in the prices for the terminations and joints.

Cable joints and cable terminations must be of an approved type, e.g. heat shrink or mechanical sealing type. All cable ends must be insulated via heat shrink.

All heat shrink terminations must be supplied as a unit, including all necessary parts. The termination must be designed for the specific cable and application. Outdoor terminations must be designed to prevent arcing under any pollution and weather conditions to which it may be subjected. The joints to be used must adhere to the supply authority specifications and requirements.

Cable glands shall be used in accordance with the manufacturer's recommendations. All cable glands shall be manufactured from nickel plated brass.

Cable shoes must be "hex"-crimped onto the cable ends with a purpose made tool. Cable shoes must be encased with a heat shrink sleeve of which the colour corresponds with the phase of each cable core.

One piece cable clamps with rear pressure shoes mounted on Unistrut P4000 can be used to clamp the cables. The armouring shall be bolted to earth bars by means of suitable lugs. No armouring may be cut off to reduce the volume thereof.

Steel wire armoured cable ends shall be made off in glands as prescribed by the manufacturer, of correct size and complete with neoprene shrouds. The armouring shall be clamped between substantial tapered sections, which form an integral part of the gland, secured by lock nuts to give a proper earth connection.

Glands shall be used for all cables to be terminated outdoors, with neoprene shrouds and suitable heat-shrink covers. Where the cable enters an outdoor box the gland shall be provided with a neoprene washer to seal off the hole.

Compression type glands shall be used where specified, for armoured cables where the armouring can be taken through the gland to be bolted to an earth bar.

Cable ends shall be made off in compression type glands as prescribed by the manufacturer, of correct size and complete with neoprene shrouds.

The armouring, together with the cable cores shall be brought through the gland and the cable shall be properly clamped by means of cable gland neoprene rings. The armouring of the cable shall be connected to an earth bar by means of a suitable tinned cable ring.

The compression type gland shall be used for all strip aluminium armoured cables.

Cable ends shall be long enough for the making off of cable ends into cable through joint boxes and/or cable end boxes. The Contractor shall avoid excessive waste.

Joints shall not be allowed in cable runs unless authorised by the Employer, or upon reaching the end of standard drum lengths.

Jointing shall be carried out strictly in accordance with the manufacturer's instructions and by personnel competent in jointing the types of cable used.

Cable joints shall be done by means of suitable ferrules which shall be properly sweated onto the conductors. Crimped ferrules will not be accepted.

Underground cable jointing shall not be allowed.

The joint will not impair the anti-electrolysis characteristics of the cable.

The Contractor shall notify the Engineer and Supply Authority timeously of the day on which jointing is to be carried out in order for an inspection to be arranged if required. Any cable joint

not inspected by the Engineer because of insufficient notice given, shall be opened for inspection and redone at the discretion of the Engineer and at the cost of the Contractor.

The Engineer reserves the right at any stage during the contract to instruct that any completed joint be opened for the purpose of carrying out an interior inspection. Should the workmanship of the joint be such that it fails an inspection, the remaking of the joint shall be carried out at full cost to the Contractor. If the workmanship passes the inspection the cost of making good the opened joint shall be the Employer's account.

Joints shall be fully water and airtight and shall be free of voids and air pockets.

The crossing of cores in joints will not be permitted under any circumstances.

d) Cable Trenches

The cable trenches for MV and LV cable installation shall be a minimum of 450mm wide x 1350mm deep for LV cables and 1550mm for MV cables and shall conform to typical trench details as indicated on the Layout Drawings (Refer to Drawing Nos.: 60487450-10-1-E-FC-001 to 002). The width shall be increased to accommodate multiple cables.

Cable separation shall be as follows:

- Between LV cables: 200mm
- Between MV and LV cables: 300mm

The trenches shall contain no stone or sharp objects and shall be inspected by the Engineer prior to backfilling. Backfilling shall be completed in 200mm deep soft sand layers, compacted to 90% MDD.

The Contractor shall be responsible for any damage to existing services on site and shall cover all costs incurred for the repair of any services which are damaged during the trench excavations.

Tenderers shall take cognisance of the fact that other services might be installed along the same routes as the cables. The Contractor shall, before starting any excavation, peg out the proposed cable route and confirm it with the Engineer. All safety measures shall be taken to prevent damage to other services.

The onus lies on the Contractor to ensure that all existing services have been adequately surveyed and recorded, and shall obtain all the necessary electrical, civil and Telkom wayleaves, which may be required for commencement of work in proximity to these services, prior to excavation.

All backfill material shall have enough moisture content so as to allow for adequate compaction. Backfill material shall be laid in layers to a depth of 200mm and then compacted by a compaction machine, suitable for the work at hand.

The Contractor shall also ensure that the cable trenches are properly fenced off at all times until the cables have been installed and the trenches backfilled.

The cable trench shall be shored with timber boards, where required, to ensure safety to workers and the public and facilitate ease of installation.

All trenching shall be inspected by the Engineer prior to backfilling.

The Contractor must note that 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. The tendered rates and amounts shall 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.

Subject to the approval of the Engineer, materials may be stockpiled within the road reserve at interchanges and on verges, provided there is a minimum 5m clearance between the limit of the

stockpile and the road shoulder. As existing material will be required for re-use, careful planning is needed, and approval for stockpile areas must be gained from the Engineer prior to the event.

e) Earthing, Bonding and Lightning Protection

The details for the LV earthing are given on the layout drawing forming part of the tender.

PRIOR TO ANY EARTHING COMMENCING: The Specialist will undertake soil resistivity tests at each of the proposed earth spike positions and issue to the Engineer the resultant graphs determined from such tests. Upon receipt of these tests an instruction will be issued to the Contractor on the final design requirements of the earthing.

The tests will enable the depth of the earthing to be determined and the resistivity will further be used to appraise the corrosiveness of the ground conditions. The comparison against Table 3 of SANS 10199 will then determine if the copper earth needs upgrading to stainless steel. (Note: In most cases copper will be sufficient)

A new MV and LV earthing system shall be supplied and installed under this Contract at each of the new miniature substations. Earthing conductor sizes shall be as indicated on the drawings.

A separate earth cable shall be installed between the miniature substation and the RLCK as per the layout drawing.

A separate earth conductor shall be installed with the roadway lighting feeder cables, and in addition the full cable armouring shall be used for earthing as well.

All cable armouring shall be terminated onto the earth stud within each roadway lighting pole. The armouring shall be neatly twisted and crimped with a suitably sized lug for ease of termination onto the earth stud provided.

The access door hatch covers shall be fitted with a 750mm long 2.5mm² green/yellow PVC insulated, multi-stranded copper conductor. This bonding conductor shall not be spiralled.

F1011 ROADWAY LIGHTING CONTROL KIOSKS (RLCKS)

(a) General

The Contractor shall supply and install the required roadway lighting control kiosks (RLCKs) in the positions as indicated on the layout drawings.

The RLCKs shall be equipped as per the single line schematic diagrams included with this tender document, complete with a tamper-proof locking system with a padlock, not cuttable by bolt-cutter. This will prevent the insertion of foreign objects into the locking mechanism causing the malfunction thereof and thus preventing authorised access. The RLCKs shall be able to be linked and monitored through a complementary Lighting Management System.

The electrical supplies to the RLCKs shall be obtained from the pole-mounted transformers as installed by Eskom and indicated on the layout drawings.

(b) Construction

The kiosk shall be manufactured from 4.5 mm 3CR12 stainless steel with high security lock points along the circumference of the door and vandalism protected lock barrels similar or equal to the *Interlock Systems* high security enclosure.

The entrance to the key slot shall be protected by means of a magnetic lock cover (MLC), manufactured from stainless steel (diameter 20 x 10mm) and shall be kept securely in place with strong magnets, thus protecting the locking mechanism against vandalism.

Basic Construction	Equal or similar to <i>Interlock Systems</i> high security enclosures
Mounting	Root mounted on concrete plinth
Access	Front
Material	4.5mm 3CR12 stainless steel
Frame	3CR12 stainless steel
Locking mechanisms	Equal and similar to <i>Interlock Systems</i> high security enclosures with magnetic lock cover (MLC)
Hinges	Concealed, 3CR12 stainless steel
Protection	IP65
Colour	Avocado C12
Sized	6 Way minimum (to suite)
Chassis	Standard

(c) Equipment

Busbars	Tinned copper for three phases and neutral
Breaker and contactor mounting	DIN mounted
Roadway lighting contactors	AC3
Programmable Timer Switch	10A, 24 Hour
Energy Meter	Schneider PM3250 electrical meter complete with 10VA 200:5 Class 0.2 CTs
Internal wiring	Suitably sized, copper PVC insulated colour coded tails between busbars and circuit breakers, and between circuit breakers and contactors
Shroud	Glass fibre shroud required over busbars and top of feeder breakers. Shroud must have "WARNING: BUSBARS ALIVE", Danger Sign and Kiosk No.
Unistrut to facilitate K-clamping of cables	Unistrut shall be connected to the earth bar with 35mm ² bare copper earth conductor.

(d) Earthing

Earth bolts	M10 brass bolt on gland plate sized to allow 50mm exposed thread to accommodate earth lugs, complete with nuts washers and locknuts.
Connections	35 mm ² copper green insulated PVC lugged connection between earth stud and neutral bus bar

(e) Labels and Notices

External designation label	On engraved Celeron or similar material 50mm black lettering on white background
Danger signs	Durable, non-corrosive "Electrical Flash" signs to OHS Act requirements.
Circuit breaker labels	On engraved Celeron or similar material 5 mm Black Lettering on white background.

(f) Installation Requirements

The roadway lighting control kiosk root shall be mounted on a 400mm thick concrete plinth, sized to accommodate the kiosk and must protrude 150mm above the surrounding ground level. Pre-cast plinths are the preferred option for these installations, however the Contractor may cast in situ if so preferred.

The Contractor shall ensure that the ground under the plinth is compacted to 90% MDD before the plinth is installed.

A 20mm thick wax impregnated polyurethane "Sondorband" foam gasket must be installed between the base of the kiosk and the concrete plinth.

The final position for the plinth shall be determined and approved in consultation with the Employer and the Engineer and pointed out to the Contractor on site.

On completion of all cable terminations the kiosk shall be vermin proofed with clean compacted sand and the top 5mm finished with cement slurry.

(g) Security Enclosure

The Roadway Lighting Control Kiosk shall be enclosed (on all sides and above) by a suitably sized galvanised steel frame, galvanised welded mesh fence panels, galvanised steel access gate, concrete bases and support footings.

The enclosure shall be 2,100mm high and have a 1,200 wide by 2,100mm high access gate complete with tamper proof locking mechanism. The enclosure shall be suitably sized and allow 1,000mm spacing all around the kiosk. Except for the enclosure's steel frame anchor footings, which shall consist of suitable sized, buried, concrete plinths, the rest of the enclosure shall be secured at ground level with a 300mm deep 1m wide apron all around the enclosure.

The access gate shall be lined up with the kiosk door to ensure uninterrupted access for doing maintenance or alteration to the kiosk installation. The enclosure shall comprise of a high security steel fencing system and be epoxy coated black in colour.

(h) Drawings for Approval

The kiosk manufacturer shall submit drawings for approval to the Contractor. The Contractor shall check drawings for compliance with all requirements of the specification and then submit three copies, signed off as checked, to the Engineer for approval.

F1012 EXISTING ROADWAY LIGHTING INSTALLATIONS

All redundant existing roadway lighting luminaires and poles which need to be removed during the construction of the new roadway lighting installation, shall be removed in their entirety along the roads covered by this contract. Obsolete and unusable roadway lighting poles, outreach arms and luminaires removed during construction of the new roadway lighting installation, shall be transported to the stores of the Supply Authority. Costing of this item shall be based on the fact that suitable stores are located at a distance of 50km from the point of removal.

F1013 TOOLS AND ACCESSORIES

All tools, special tools and accessories required for the normal operation and maintenance of all the equipment and systems supplied, shall be included in this contract.

Unless otherwise indicated elsewhere, all keys, tools and special tools shall be in duplicate and handed to the Engineer on hand-over date. The contract shall be deemed incomplete until this requirement is met.

F1014 PROGRAMMING AND PHASING OF WORK

The Contractor shall take cognisance of the Main Contractor's programme in so far as access to certain areas is required. The Contractor may be required to return to site.

F1015 APPROVAL OF SYSTEM INFORMATION

All information relating to structural, mechanical or electrical requirements, numbering of cables or cable cores, terminal numbers, plant schedules, grouping of system components, etc. shall be subject to the approval of the Engineer. Approval shall normally be given within 10 days from receipt of the relevant documentation, equipment or drawings, and items not complying with the specifications and subsequently causing delays shall not be regarded as a valid base for claims.

F1016 LABELLING AND NUMBERING

The rates shall include all permanent labelling and numbering on all switchgear, cables and equipment. The labelling shall be made from Traffolite (black writing on white background) as detailed in the general technical specification. All ends of cables shall be labelled.

All terminations shall be labelled with either a "L1", "L2", "L3", "N" or "E" designation to indicate connections to phase, neutral or earth conductors respectively.

The poles shall be numbered (black number) with yellow reflective stickers as indicated on the drawings. These numbers shall be readable from the direction of oncoming traffic.

F1017 QUALITY CONTROL AND QUALITY ASSURANCE

Tenderers shall submit a brief quality statement defining the broad outline of the Tenderer's quality assurance policy with their tenders.

The Contractor shall exercise effective quality control during the design, manufacture and installation phases of this contract.

The Contractor shall submit his quality assurance procedures for approval by the Engineer.

The Engineer will audit the Contractor's quality control procedures during the contract period and the Engineer reserves the right to inspect the Contractor's design and manufacturing facilities or the construction site at any stage during the contract to ascertain that the Contractor's quality assurance programme is adhered to.

F1018 HANDING OVER

The Contractor shall independently test and commission the system before confirming an official date of hand-over with the Engineer in writing. The Contractor shall state in writing that he is satisfied that the complete system has been installed according to specification and that it is fully operational and functioning.

As soon as the Engineer is satisfied that the system complies with the specifications, the Contractor shall hand the system over to the Employer in the presence of the Engineer. During this occasion, the correct functioning of the system shall be demonstrated to the Employer.

The Contractor shall be responsible for all test equipment, measuring equipment, personnel, two-way radios, etc. required for the above demonstrations. All equipment shall be calibrated and certified as such immediately before measurements are taken.

Performance testing of the lighting system will be proven by measurements taken on moonless, preferably overcast, nights.

The Contractor shall, at his own expense, make available the following calibrated instruments:

- Lux meter.
- Voltmeters and ammeters as required.

All other tests, as specified, shall be conducted in compliance with the requirements as specified elsewhere in this document or as required by the applicable national or international specifications and regulations.

Upon hand-over, the Contractor shall demonstrate to the representatives of the Employer and in the presence of the Engineer the following:

- All operational procedures and pre-switch-on checks.
- Switching on of the system for normal and maintenance purposes.

- Maintenance procedure including replacement of luminaires, lamps, drivers, etc.
- All preventative maintenance checks and procedures.

Emphasis on safety precautions and safety procedures for maintenance personnel as well as roadway users shall be given during the above demonstration and procedures.

F1019 MAINTENANCE AND GUARANTEES

All guarantees from manufacturers and suppliers shall be transferred to the Employer.

The Contractor shall submit full details of their maintenance and repair service facilities at all times, including statutory holidays, weekends, after hours and normal hours.

The Contractor shall provide all spare parts (including lamps, drivers and fuses) labour, travelling costs, etc. due to faulty workmanship or materials during the 12-month maintenance period free of charge. Renewals or repairs resulting from misuse or other causes outside the control of the Contractor (e.g., vehicles colliding with equipment), however, will not be made at the expense of the Contractor.

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 EMPLOYER'S OBJECTIVES

The overall objective of this project is to improve mobility and road safety along this Section of the R573.

This will be achieved by upgrading the road to a four-lane single carriageway road divided by a concrete median barrier. Informal accesses will be closed and primary accesses will be formalised by providing either roundabouts, butterfly intersections' and/or left in left out intersections, in accordance with the approved Access Management Plan.

Bus lay-bys, walkways, and formal pedestrian crossings will also be provided. The entire route will be illuminated through the provision of street lighting, located on the median barrier.

C4.1.2 GENERAL DESCRIPTION OF THE WORKS

The R573 is located north-east of Pretoria stretching from Pretoria to Marble Hall, while traversing through the Gauteng, Mpumalanga and Limpopo Provinces. Section 2 of the R573 is located in the Mpumalanga Province, starting at Moloto (km 0.000) and terminating at Moteti (km 48.557 at the intersection of the R567).

The route traverses flat to rolling terrain, mostly through built up areas, both formal and informal. The open land between the built-up areas is used mainly for informal farming activities.

For this contract, "Works Package D", works will only include the construction of the road upgrades for Section 2 of the R573 from km 8.60 to km 13.00.

This contract includes the upgrading of ten intersections, comprising of four roundabouts and six left-in-left-out intersections of which four left-in-left-outs are minor intersections upgrades.

C4.1.2.1 ROADWORKS

The existing single carriageway along the R573 generally consists of a 3.7m lane in each direction with 2.5m shoulder. The existing road will be upgraded to a four-lane single carriageway class 2 road with a 3.4m fast lane, a 3.6m slow lane and a 2.5m surfaced shoulder, divided by a 0.8m wide concrete median barrier with a 1.0m inner shoulder, resulting in a total width of road 21.8m. This configuration will continue through the roundabouts and left in left outs intersections but will temporarily taper back to the two-lane configuration at the start and end of this contract, depending on the status of the adjacent construction contracts.

Along certain sections of the route, collector/distributor roads will need to be constructed under this contract, which run parallel to the R573 and provide access to adjacent existing properties.

The horizontal alignment for the upgrading of the road section within this Contract typically follows the existing road alignment.

Typically, the vertical alignment for the upgrading of the road section within this Contract is to be constructed generally 260mm higher than the existing road level, however from KM 9.56 to KM 10.20, the new road profile will go into cut, up to a maximum of approximately 1.4m, in order to accommodate the new pedestrian bridge at KM 9.80.

Ancillary works include among others, erection of new guardrails, construction of new walkways, new fencing, the improvement of road signage and road markings, as well as the installation of street lightning on the median barrier over the full length of the Works. Median barriers will only start after the transition from the existing single carriageway to the upgraded four lane single carriageway at the beginning and end of the section, with a crash cushion. However, this may be dependent on the status of the adjacent construction contracts.

Storm water drainage will be upgraded to that for a Class 2 road, no closed system is currently in place and all storm water will be dealt with above ground (open system).

The extent of the works is summarised in Table i) below:

Table i: Extent of the Works

Route Section	Description of Section	Approx. Start (km)	Approx. End (km)	Approx. Length (km)	Description of Works
R573 Section 2	Peri-urban	8.60	9.70	1.10	Transition (dependent on status of adjacent contract) from existing two lane single carriageway to new four lane single carriageway. Road upgrade to a new four lane single carriageway, divided by a concrete median barrier and security fence with bus-laybys at intersections. 1 x new roundabout, with access roads on northern and southern approaches
R573 Section 2	Urban	9.70	12.50	2.80	Road upgrade to a new four lane single carriageway, divided by a concrete median barrier and security fence with bus-laybys at intersections. 3 x roundabouts 2 x major left-in left-out 4 x minor left-in left-out 1 x pedestrian bridge 2 x sign gantries
R573 Section 2	Peri-urban	12.50	13.00	0.50	Road upgrade to a new four lane single carriageway, divided by a concrete median barrier and security fence with bus-laybys at intersections. Transition (dependent on status of adjacent contract) from existing two lane single carriageway to new four lane single carriageway.

The site includes the full extent of the road reserve including all intersections, crossroads extents, areas used for approved stockpile sites, approved spoil sites, quarry and borrow areas, camps and establishment facilities including their respective access roads. Access to the site shall be from established intersections.

The site includes all intersections in Table ii) below:

Table ii: Intersections forming part of the Contract Works

No.	Approx. Chainage (km)	Intersection Type & Description	
7	9.85	Roundabout	4 legged with bus-layby and pedestrian crossings. Access road upgrades on the northern and southern approaches.
8	10.32	Left-in left-out	Eastbound with bus-layby and pedestrian crossings.
		Left-in left-out	Westbound with bus-layby and pedestrian crossings.
9	10.84	Roundabout	4 legged with bus-layby and pedestrian crossings. Access road upgrades on the northern and southern approaches.
	11.10	Minor left-in left-out	Eastbound
	11.27	Minor left-in left-out	Westbound
	11.50	Minor left-in left-out	Westbound
10	11.71	Roundabout	4 legged with bus-layby and pedestrian crossings. Access road upgrades on the northern and southern approaches.
	12.09	Minor left-in left-out	Westbound
12	12.40	Roundabout	4 legged with bus-layby and pedestrian crossings. Access road upgrades on the northern and southern approaches.

For detailed layout plans of the Works, refer to drawing number: 60487450-10-1-C-AD-101 to 104.

C4.1.2.2

PAVEMENT DESIGN FOR ALL PARTS OF THE VARIOUS ROADS

The existing road pavement consists of a centre section 7.4m wide of 190mm asphalt and surfaced shoulders 2.5m wide with 40mm asphalt and 150mm Macadam base.

The Macadam and the asphalt mixed with the existing subbase must be used with additional imported material (if needed) to construct the upper selected layer, as one layer across the existing and widening in a ratio as determined by testing on site.

The numbers indicated in brackets reference the layer numbers in the Pavement Design tables below.

a) R573 Road Pavement Design

Layer No.	Description of Layer
1	50mm asphalt, continuously graded surfacing (Sand skeletal, PG64E-16(EMB), 14mm NMPS, Level II design, paver placed with Material Transfer Vehicle with surface texture of 0.8mm
2	150mm G1 graded crushed stone base layer, compacted to 88% of apparent density
3	250mm C3 upper subbase stabilised layer, compacted to 97% of MDD
4	150mm G7 upper selected subgrade layer, compacted to 95% of MDD
5	150mm G9 lower selected subgrade layer, compacted to 93% of MDD
6	150mm G10 fill/roadbed preparation, compacted to 93% of MDD

*** Note**

- The widening must only be built up to layer (5) and with layer (4) constructed at the same time i.e., selected layers.

- Layers (3), (2) and (1) must be constructed over the complete carriageway section (existing and widening) i.e., the C3 subbase, G1 base and 50mm asphalt; and
- Pavement design to also be used for the horizontal re-alignment at the start and at the end of this Contract.

b) Pedestrian Refuge Area within Carriageway

Layer No.	Description of Layer
1	150mm concrete C20/25-20 concrete with expansion joints every 1.5m
2	190mm G7 upper selected subgrade layer, compacted to 95% of MDD
3	250mm C3 upper subbase stabilised layer, compacted to 97% of MDD
4	150mm G7 upper selected subgrade layer, compacted to 95% of MDD

c) Surfaced Shoulders

Layer No.	Description of Layer
1	50mm asphalt, continuously graded surfacing (Sand skeletal, PG64E-16(EMB), 14mm NMPS, Level II design, paver placed with Material Transfer Vehicle with surface texture of 0.8mm
2	150mm G1 graded crushed stone base layer, compacted to 88% of apparent density
3	250mm C3 upper subbase stabilised layer, compacted to 97% of MDD
4	150mm G7 upper selected subgrade layer, compacted to 95% of MDD
5	150mm G9 lower selected subgrade layer, compacted to 93% of MDD
6	150mm G10 fill/roadbed preparation, compacted to 93% of MDD

*Pavement design to also be used for the horizontal re-alignment at the start and at the end of this Contract.

d) Unsurfaced Shoulders

Layer No.	Description of Layer
1	Gravel shoulder compacted to 95% of MDD, in accordance with Table A4.1.5-10 of COTO
2	250mm C3 upper subbase stabilised layer, compacted to 97% of MDD
3	150mm G7 upper selected subgrade layer, compacted to 95% of MDD
4	150mm G9 lower selected subgrade layer, compacted to 93% of MDD
5	150mm G10 fill/roadbed preparation, compacted to 93% of MDD

e) Roundabout Pavement Design

For the construction of roundabouts, all existing layers, as well as in-situ material must be excavated to a level of 770mm below the final road level and removed for reuse in widenings. The roundabout pavement layers must be constructed as follows:

Layer No.	Description of Layer
1	50mm asphalt, continuously graded surfacing (Sand skeletal, PG64E-16(EMB), 14mm NMPS, Level II design, with surface texture of 0.8mm
2	120mm asphalt continuously graded base (Sand skeletal, PG64H-16, 20mm NMPS, Level II design, Paver placed in 60mm layers)
3	300mm C3 upper subbase stabilised layer, compacted to 97% of MDD (construct in one layer)

4	150mm G7 upper selected subgrade layer, compacted to 95% of MDD
5	150mm G9 lower selected subgrade layer, compacted to 93% of MDD
6	150mm G10 fill/roadbed preparation, compacted to 93% of MDD

f) **Apron Block Paving within Roundabouts**

Layer No.	Description of Layer
1	80mm concrete block paving Type S-A (Class 30/2.0 SANS 1058) laid in herringbone pattern on 20mm bedding sand
2	120mm C4 upper subbase stabilised layer, compacted to 97% of MDD
3	300mm C3 lower subbase stabilised layer, compacted to 97% of MDD
4	150mm G7 upper selected subgrade layer, compacted to 95% of MDD
5	150mm G9 lower selected subgrade layer, compacted to 93% of MDD
6	150mm G10 fill/roadbed preparation, compacted to 93% of MDD

g) **Cross-Roads at Roundabouts**

For the cross-roads connected to roundabouts, the existing pavement layers must be reworked to a depth of 300mm and reused to construct layers (3) and (4).

The numbers indicated in brackets reference the layer numbers in the Pavement Design tables below.

Layer No.	Description of Layer
1	50mm asphalt, continuously graded surfacing (Sand skeletal, PG64E-16(EMB), 14mm NMPS, Level II design, paver placed with Material Transfer Vehicle with surface texture of 0.8mm
2	120mm asphalt continuously graded base (Sand skeletal, PG64H-16, 20mm NMPS, Level II design, Paver placed in 60mm layers)
3	150mm C3 upper subbase stabilised layer, compacted to 97% of MDD
4	150mm – 210mm G7 levelling layer, compacted to 95% of MDD

h) **Cross-Roads at Left-in-Left-Outs**

For the cross-roads connected to left-in-left-outs, the existing pavement layers must also be reworked to a depth of 300mm and reused to construct layers (3) and (4).

The numbers indicated in brackets reference the layer numbers in the Pavement Design tables below.

Layer No.	Description of Layer
1	50mm asphalt, continuously graded surfacing (Sand skeletal, PG64E-16(EMB), 14mm NMPS, Level II design, paver placed with Material Transfer Vehicle with surface texture of 0.8mm
2	150mm G1 graded crushed stone base layer, compacted to 88% of apparent density
3	250mm C3 upper subbase stabilised layer, compacted to 97% of MDD (construct in one layer)
4	150mm G7 upper selected subgrade layer, compacted to 95% of MDD
5	150mm G9 lower selected subgrade layer, compacted to 93% of MDD
6	150mm G10 fill/roadbed preparation, compacted to 93% of MDD

i) **Bus Lay-by**

The bus lay-by should be constructed with a 200mm jointed concrete pavement With 4,5 flexural strength (at 28 days) on top of a 250mm C3 sub-base (constructed under R573 Road Pavement Design, in place of the G1 base and 50mm asphalt surfacing.

Slab shall be constructed with expansion joints @ 4.0m centres, together with 25mm dia. mild steel dowels, 450mm in length and spaced at 300mm centres, in the outside joints.

j) **Temporary Accommodation of Traffic Widening**

Layer No.	Description of Layer
1	30mm asphalt, continuously graded surfacing (Sand skeletal, PG64S-16, 7.1mm NMPS, Level IB design, Paver placed)
2	150mm C4 stabilised base layer, compacted to 97% of MDD
4	150mm gravel subbase/fill/roadbed preparation (minimum G10), compacted to 93% of MDD

3.0m wide gravel roads

Layer No.	Description of Layer
1	150mm gravel wearing course, compacted to 95% of MDD, in accordance with COTO Table A4.1.5-11
4	150mm roadbed preparation layer (minimum G10), compacted to 93% of MDD

k) **Pedestrian Walkways**

Layer No.	Description of Layer
1	60mm concrete block paving Type S-A (Class 30/2.0 SANS 1058) laid in herringbone pattern on 20mm bedding sand
2	150mm G7 gravel base layer, compacted to 95% of MDD
3	150mm roadbed preparation layer, compacted to 93% of MDD

C4.1.2.3

STRUCTURAL WORKS

(a) *Bridge*

A Bow String Tied Arch Walkthrough Steel Girder pedestrian bridge with access ramps is to be constructed at KM 9.80. The structure shall have a walkway width of 2.5m and a minimum vertical clearance of 6m to the road surface. The horizontal clearance of this bridge shall be a minimum of 7.50m from the inner edge to the shoulder of the R573 to the front face of the outside pier support.

Access stairs are to be provided along each access ramp, to provide access to and from the R573.

Due to the presence of shallow rock, the structure is to be founded on conventional spread footings.

(b) *Sign Gantries*

New sign gantries are to be constructed at KM 11.51, east-bound and KM 11.90, westbound, along the R573, just before the western approach to roundabout No.10.

C4.1.3 EXTENT OF THE WORKS

The upgrade improvements entail the following components:

- The Contractor's establishment on site and general obligations;
- The relocation and protection of services;
- Accommodation of engineers site personnel;
- Accommodation of traffic for the duration of the contract, including pedestrian, non-motorised and vehicular movements;
- Clearing and grubbing of vegetation on existing gravel shoulders, areas for widening, stockpile sites, existing drains;
- Excavation of open and side drains where required;
- Construction of subsoil drains where required;
- Installation of new minor pipe and box culverts including inlet and outlet structures;
- Lengthening of existing minor pipe and box culverts including new inlet and outlet structures;
- Construction of concrete lined side drains, down-chutes, concrete kerbing;
- Construction of bulk stormwater channel parallel to the R573, along with associated transition structures, drop structures and major culverts passing under cross-roads;
- Establishment of quarry and borrow areas for material utilisation as part of the construction works;
- Road upgrade to a four-lane single carriageway, divided by a concrete median barrier;
- Construction of a temporary widening;
- Breaking up existing pavement layers by milling (asphalt surfacing);
- Breaking up existing pavement layers by excavation and crush for reuse (waterbound macadam base)
- Construction of roadbed for widening
- Construction of selected layers utilising material obtained from existing pavement (asphalt surfacing and waterbound macadam), mixed with natural gravel;
- Construction of new C3 subbase layer over the full cross section width (widening and existing road)
- Construction of new G1 crushed stone base over the full cross section width (widening and existing road);
- Application of prime coat to base layer prior to surfacing;
- Asphalt base (PG64H-16 performance grade bitumen) continuously graded, placed in two equal layers (Roundabouts)
- Asphalt surfacing using coarse continuously graded asphalt (PG64E-16(EMB)) as a final surfacing;
- Construction of stone pitching in areas identified where drainage improvements are required;
- Construction of pedestrian walkways where required;
- Construction of new guardrails where required;
- Replacement of fencing where required;
- Replacement of road signs where required, including kilometre posts;
- Road-marking using water-based paint and thermo-plastic paint, including temporary and permanent line marking;
- Grassing of areas cleared for stockpile sites;
- Construction of new pedestrian bridge at KM 9.80
- Construction of a new sign gantries at KM 11.51 and KM 11.90;
- Construction of a median barrier over the full length of the route; and
- Installation of lighting on the median barrier over the full length of the route.

C4.1.4 MAINTENANCE WORKS

Maintenance of the Works during construction and defects notification periods.

The Routine Road Maintenance Engineer's details is as follows:

Comfort Mgiba
Zimile Consulting Engineers
Tel.: 011 466 8576
Cell: 072 551 5568

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

The traffic data that was used to develop the intersection layouts were based on seven-day electronic traffic counts, supplemented by manual traffic counts at strategic locations during 2015 and 2016. The estimated link traffic volumes for 2016 along the route are as follows:

Estimated Link Traffic Volumes, 2016

Section	Estimated Average Daily Traffic (ADT), 2016		
	Light Vehicles	Heavy Vehicles	Total Vehicles
Moloto to Kwamhlanga	11 156	1 491	12 647
Kwamhlanga to Vlaklaagte BB	9 712	984	10 696
Vlaklaagte BB to Kwaggafontein	10 586	1 085	11 671
Kwaggafontein to Mathys Zyn loop	7 396	874	8 270
Mathys Zyn loop to Moteti	5 935	637	6 572

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:

- (i) adherence to the policies of the Reconstruction and Development Programme and other similar Government initiatives,
- (ii) employment and/or creation of Targeted Enterprises,
- (iii) arrangement of generic skills, engineering skills and entrepreneurial skills training programmes for which provision has been made in the Pricing Schedule,
- (iv) construction using labour maximisation principles and,
- (v) 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

The weather station at Marble Hall is the closest station to the site. The climate here is classified as BSk by the Köppen-Geiger system. The average annual temperature is 20.2 °C and the average yearly rainfall is 793 mm. Refer to Volume 6: Materials Investigation and Utilisation report for additional information in terms of topography, drainage, vegetation typical geology and material sources.

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.

Refer to Section E of the Scope of Works for general requirements in terms of the OH&S requirements.

Refer to Volume 8 for Project Occupational Health and Safety Specification.

C4.10 SAFETY PROCEDURES

The contractor shall pay specific attention to the accommodation of pedestrian traffic along the cross roads, as well as crossing the main road where the safety of pedestrians may be compromised as a result of the works.

Where pedestrians have to cross the site, the contractor shall ensure that the pedestrians are safeguarded and able to cross the site without being endangered. The pedestrians should not be able to enter areas where works are taking place. The signage for the pedestrians must indicate clearly the movement around and through the construction area.

Should a walkway be required, it shall have a clear opening of at least 2m wide and 2,1m high, fence and shall be uniformly illuminated at all times. The surface of the walkway shall be free from obstructions and shall be clearly signposted to guide the pedestrians towards the walkway. If steps are required to reach the level of the walkway, these shall comply with the OHS act and have proper handrails. No ramps shall be steeper than 1 in 8.

C4.11 OTHER INFORMATION

Refer to Volume 6 for the Materials Investigation and Utilisation Report.

C4.12 AGREEMENT TO OCCUPY SANRAL'S PROPERTY

In the event that SANRAL-owned land will be made available for the use of the contractor for his construction camps, offices, stores, workshops and/or testing facilities, the use of such land will not be treated as a lease but will form part of the contract. In this regard the contractor shall complete the prescribed agreement and comply with all the conditions thereof as if it is part of the contract. The Employer's appointed service provider who administers and manages SANRAL owned land, will facilitate the process and the contractor shall liaise and co-operate with the service provider in this regard. The availability of land is indicated below.

C4.13 APPENDICES

Appendix 1:	Locality Plan
Appendix 2:	Weather Data
Appendix 3:	Traffic Data
Appendix 4:	SANRAL Project Liaison Committee Guidelines (see tender pack)
Appendix 5:	Agreement to Occupy SANRAL's Property
Appendix 6:	Dispute Adjudication Agreement
Appendix 7:	Imported content
Appendix 8:	CPG Plan (see tender pack)
Appendix 9:	SANRAL Project Liaison Committee and Project Liaison Officer Forms (ditto)
Appendix 10:	Checklist for PLC and PLO (ditto)

Appendix 11: appointment)	Proforma subcontract document (latest version will be shared upon
Appendix 12: request)	General Requirements for Community Development Projects (available on

[illegible]

APPENDIX 3: WEATHER DATA

To be obtained from the South African Weather Service for the nearest weather station i.e., Marble Hall, Limpopo

APPENDIX 3: TRAFFIC DATA

Refer to Traffic Engineering Study dated September 2017

APPENDIX 5: AGREEMENT TO OCCUPY SANRAL'S PROPERTY

1. Definitions

For the purpose of this clause, the following words, phrases and expressions shall have the respective meanings assigned to each of them as set out hereunder:

- 1.1 "Commencement Date" shall mean ***.
- 1.2 "Designated Person" shall mean an employee, director, agent, independent contractor and/or representative of SANRAL, as the case may be;
- 1.3 "the Property" shall mean the property delineated on the plan annexed hereto marked "Appendix A";
- 1.4 "Termination Date" shall mean ***.

2. Option to occupy the Property

- 2.1 SANRAL hereby grants the Contractor an option to occupy the Property for the purpose of:
 - 2.1.1 ***;
 - 2.1.2 ***.
- 2.2 The Contractor may exercise the option referred to above by notifying SANRAL, within 30 (thirty) days of the Tender Award that it intends to use the Property, failing which this option will lapse and be of no further force or effect.

3. Use of the Property

- 3.1 In the event that the Contractor exercises the option to occupy the Property, it may do so with effect from the Commencement Date,
- 3.2 The Property may not be used for any purpose other than that prescribed above without the prior written approval of SANRAL.
- 3.3 If SANRAL is unable to give the Contractor occupation of the Property on the Commencement Date for any reason whatsoever, whether or not occasioned by the negligence of SANRAL and/or the Designated Person, the Contractor shall have no claim of whatsoever nature against SANRAL or the Designated Person.
- 3.4 SANRAL does not warrant that the Property is or will be suitable for any of the purposes for which the Contractor requires the Property.
- 3.5 SANRAL does not warrant that the Contractor will be granted or provided with any licences, consents, authorities, services or permits in respect of the Property for the proposed use thereof by the Contractor.
- 3.6 The Contractor shall comply with all laws, by-laws and regulations (including but not limited to the requirements of the Occupational Health and Safety Act 85 of 1993) relating to the Property and shall not contravene or permit contravention of any of the conditions of title under which the Property is held by SANRAL or any of the provisions of the town planning scheme applicable to the Property, nor do or cause or permit to be done in or about the Property anything which may be or cause a nuisance or disturbance to occupiers of neighbouring properties.
- 3.7 The Contractor's right to occupy the Property shall terminate on completion of Contract No. ***.

4. Electricity, water and other services

- 4.1 The Contractor may not install or arrange for any services such as water and electricity to be installed on the Property without the prior written consent of SANRAL.
- 4.2 In the event that SANRAL grants the consent referred to above, the Contractor shall be liable for the payment of all amounts due for the consumption of such services on the Property.
- 4.3 The Contractor hereby indemnifies and holds SANRAL harmless against any claim for payment for the consumption of services on the Property or any claim of whatsoever nature arising therefrom.

5. Exclusion of claims

- 5.1 The Contractor shall have no remedy against SANRAL and/or the Designated Person:
 - 5.1.1 by reason of the Property or any part thereof or any improvement thereto being in a defective condition or in a state of disrepair;
 - 5.1.2 in respect of any damage caused to furniture, equipment or any assets of any nature whatsoever kept on the Property by the Contractor, its employees, invitees, agents, directors or representatives;
 - 5.1.3 in respect of any claim of whatsoever nature for loss or damages allegedly suffered by the Contractor, its servants, invitees, agents, directors, clients or representatives arising from loss of life and/or injury to persons on the Property.
- 5.2 The Contractor hereby indemnifies and holds harmless SANRAL and/or the Designated Person against any claim arising from the Contractor's occupation of the Property.

6. Sub-letting

The Contractor shall not be entitled, except with the prior written consent of SANRAL:

- 6.1 to cede all or any of the rights of occupation of the Property; or
- 6.2 to sublet or give up possession of the Property, in whole or part, to any third party.

7. SANRAL's Right of Entry

SANRAL and/or the Designated Person shall be entitled to enter the Property at all reasonable times for the purpose of inspecting it in order to determine that the Contractor is complying with the rights and obligations granted to it with respect to the Property.

8. Obligation to maintain the Property

- 8.1 Prior to the Contractor taking occupation of the Property, SANRAL and the Contractor shall jointly inspect the Property.
- 8.2 During such inspection, the Contractor shall record the condition of the Property and any improvements thereto on the Inspection Form attached hereto marked "Appendix B". In the event that the Contractor does not arrange for the completion of such form, the Contractor shall be deemed to have accepted the Property as being without defect and in good order and repair.
- 8.3 At all times during the Contractor's occupation of the Property, the Contractor shall care for and maintain the Property in good order and repair, including any improvements thereto.

- 8.4 On the Termination Date or the date of termination of the Contractor's occupation of the Property, as the case may be, the Contractor shall return the Property and any improvements thereto in good order, condition and repair, fair wear and tear excepted, provided that SANRAL shall not be obliged to compensate the Contractor for any expenditure incurred by the Contractor in complying with the Contractor's obligations of maintenance, repair and replacement provided for herein.
- 8.5 Prior to the date of termination of occupation of the Property by the Contractor, SANRAL and the Contractor shall arrange a joint inspection of the Property and improvements thereto. Such inspection is to take place within a period of 3 (three) days prior to the date of termination with a view to ascertain if there was any damage caused to the Property or improvements thereto before the Contractor vacates the Property. SANRAL and the Contractor shall record the result of their inspection on the Inspection Form annexed hereto marked "Appendix C".
- 8.6 SANRAL and the Contractor shall make reference to the initial Inspection Form attached hereto marked Appendix "B" when undertaking the inspection prior to termination of the Contractor's occupation and shall record any damages or lost items which shall be repaired or replaced by the Contractor before the Contractor vacates the Property.
- 8.7 Should the Contractor fail to repair such damages to the Property or improvements thereto or fail to replace any missing articles, SANRAL may attend thereto and recover the cost thereof from the Contractor.
- 8.8 Should the Contractor fail to respond to SANRAL's request for an inspection, SANRAL shall, on termination of the Contractor's occupation of the Property, inspect the Property within 7 (seven) days from such termination in order to assess any damages or loss which occurred during the Contractor's occupancy, and may recover such loss or damages from the Contractor.

9. The Contractor's Employees

- 9.1 The Contractor shall not allow any of its employees and/or their relatives to live on the Property.
- 9.2 The Contractor shall be held liable for all persons entering onto the Property and such persons shall be considered to be under the control of the Contractor.
- 9.3 On the termination of the Contractor's occupation of the Property, the Contractor shall ensure that the Property is returned to SANRAL vacant and free of any unlawful or lawful occupiers.
- 9.4 In the event that any person remains in occupation of the Property on termination of the Contractor's occupation of the Property, and SANRAL is obliged to obtain a Court Order to enable it to evict such person, the Contractor shall be liable for all and any costs in this respect, including but not limited to legal costs and costs for relocating such person.

10. Remedies for Breach and Cancellation

Should the Contractor:

- 10.1 fail to comply with any of the terms and conditions relating to its occupation of the Property, as provided for herein; or
- 10.2 abandon the Property,

then, after having received written notification to remedy such breach within 7 (seven) days and having failed to do so, SANRAL shall have the right, but not be obliged to either:

- immediately terminate the Contractor's right to occupy the Property further notice; and/or
- take possession of the Property and claim damages arising from such breaches.

11. Early Termination of the Right to Occupy

- 11.1 Notwithstanding the rights granted to the Contractor in terms hereof, the Contractor acknowledges that SANRAL may terminate such rights prematurely in the event that SANRAL requires the Property for anything related to the construction, maintenance or operation of a national road.
- 11.2 Should SANRAL be required to terminate the Contractor's right of use of the Property, SANRAL shall be required to give no more than 3 (three) months' written notice to the Contractor of the required premature termination, and the Contractor shall:
- 11.2.1 vacate the Property on the premature termination date required by SANRAL;
 - 11.2.2 have no remedy against SANRAL as a result of such premature termination or its relocation arising from such premature termination.

12. Alterations and Improvements

- 12.1 The Contractor shall not make any alterations or improvements to the Property without SANRAL'S prior written consent.
- 12.2 In the event that SANRAL grants approval for alternations or improvements, this shall not preclude the Contractor from having to obtain any consent or approval that may be necessary from any applicable authority.
- 12.3 SANRAL shall not be liable for compensating the Contractor for the value of any improvements or alterations to the Property.

13. Development of the Property and/or Underground Services

- 13.1 SANRAL shall be entitled at any and at all times during the currency of the Contractor's occupation of the Property to affect such alterations, improvements and/or additions to the Property as SANRAL may deem necessary.
- 13.2 The Contractor shall have no claim against SANRAL for compensation, damages or otherwise, by reason of any interference with its occupation of the Property occasioned by any such alterations, improvements and/or additions, or arising from any failure or interruption in the supply of water and/or electricity and/or other services to the Property.
- 13.3 Where relevant, the Contractor shall bear the onus of investigating, at its expense, the existence or otherwise of any live or defunct underground services on or adjacent to the Property by making appropriate enquiries from the local municipality or any other competent authority.
- 13.4 Save in circumstances where SANRAL has in writing agreed to assume specific obligations to deal with underground services, whether live or abandoned, existing on the Property, the Contractor agrees that it shall have no claim whatsoever against SANRAL for the removal and/or modification of any underground services or abandoned services that may exist on the Property, nor for any direct or consequential losses which may be suffered by the Contractor arising out of any removal and/or modification or failure to remove and/or modify any of the said underground services or abandoned services.
- 13.5 SANRAL shall have the right to lay and use or continue using underground services of any nature on or under the Property and may grant such right to any third party without being liable for any loss or damage suffered by the Contractor as a result thereof. The Contractor shall not in any way, directly or indirectly, interfere or obstruct the laying or using of such underground services. SANRAL and/or any third party shall at all reasonable times have free access of the Property for the purpose of construction, maintenance, repairs, replacement or removal of such services.

14. **General**

- 14.1 No amendment or consensual cancellation of any of the above terms and conditions shall be binding unless recorded in a written document signed by SANRAL and the Contractor.
- 14.2 No extension of time, waiver, indulgence or relaxation or suspension of any of the provisions or terms applicable to the Contractor's occupation of the Property shall be binding unless recorded in a written document signed by the parties. Any such extension, waiver or relaxation or suspension which is so given or made shall be strictly construed as relating strictly to the matter in respect whereof it was made or given.

APPENDIX 5.1: PLAN OF THE PROPERTY

APPENDIX 5.2: PRE-OCCUPATION INSPECTION FORM

Exterior of the Property:

EXTERIOR	Good	Fair	Poor	None Present
ROOF				
WALLS / FENCE				
GATE				
GUTTERS				
PAVING				
GARDEN (outside taps)				
Carport				
GARAGE				

List other exterior improvements or defects not indicated above:

Improvements on the Property:

EXTERIOR	Good	Fair	Poor	None Present
GUTTERS				
PAVING				
OUTSIDE TAPS				
Carport				
GARAGE				
ROOMS OR OFFICES				
PARTITIONING				
FLOOR COVERING				
WALL COVERING				
CEILING				
KITCHEN				
BATHROOM & TOILET				
SECURITY GATE				
BURGLAR PROOFING				
INTERIOR DOORS				
EXTERIOR DOORS				
LOCKS				
LIGHT FITTINGS				

Details of any other improvements:

Occupancy Status:

- ☐ Verified – No occupants found on the Property.
- ☐ Illegal occupants: *Full details of location and names (add page with details)*

SIGNED AT: ON THIS DAY OF 20

.....
SIGNATURE

.....
SIGNATURE

.....
FULL NAME OF SANRAL'S REPRESENTATIVE

.....
FULL NAME OF CONTRACTOR'S
REPRESENTATIVE

APPENDIX 5.3: PRE-TERMINATION INSPECTION

a. Verify if the status or condition of any of the items as listed during the Pre-occupation inspection have changed. If so, furnish full detail, costs to repair damages and/or replace lost keys, etc.

b. Results:

☐ Property inspected – No damages found

OR

☐ Damages found – The following must be repaired or replaced:

ITEM TO BE REPAIRED / REPLACED	REPAIR?	REPLACE?	COST

☐ Property inspected: Property vacant

OR

☐ Property inspected: Property not vacant:

Number of persons remaining on Property:

SIGNED AT: ON THIS DAY OF 20

.....
SIGNATURE

.....
SIGNATURE

.....
FULL NAME OF SANRAL'S REPRESENTATIVE

.....
FULL NAME OF CONTRACTOR'S
REPRESENTATIVE

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: ...

• • •

...

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.

ANNEXURE 2

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

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	
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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	
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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 RestrictError! Hyperlink reference not valid.ww.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.

ANNEXURE 3

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 7: SANRAL PROJECT LIAISON COMMITTEE GUIDELINES
Included in the Tender Pack