

SANRAL
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD



Reg.No.1998/009584/30
BUILDING SOUTH AFRICA
THROUGH BETTER ROADS

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL N.011-130-2010/1R

**THE REHABILITATION OF NATIONAL ROUTE
N11 SECTION 13 FROM R518 INTERSECTION
(km 8,345) TO GROOTSANDSLOOT RIVER
(km 24,0)**

PROJECT DOCUMENT

DATE: FEBRUARY 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
VAL DE GRACE
PRETORIA, 0184**

NAME OF TENDERER:

Set sequential number



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FOR

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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 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 drawings.
- Volume 5: The structural drawings.
- Volume 6: Materials investigation and utilisation.
- Volume 7: Environmental Management Plan report.

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.**
3. **Volume 3 is issued at tender stage in electronic format downloaded from the SANRAL's website link**

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.

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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
lane.km.hr	=	lane kilometre hour
m	=	metre
m.month	=	metre.month
mm	=	millimetre
mnth.device	=	month.device
No.month	=	number.month
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
pers.month	=	person.month
Prov sum	=	Provisional sum
PC Sum	=	Prime Cost sum
R/only	=	Rate only
sum	=	lump sum
t	=	ton (1000kg)
W/day	=	Work day

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

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

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

C2.1.5 It will be assumed that prices included in the Pricing Schedule are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that

were published 28 days before the closing date for tenders. (Refer to www.sabs.co.za for information standards)

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

C2.2 PRICING SCHEDULE (INCORPORATING SBD3)

SCHEDULE A1

ROADWORKS: ROAD UPGRADING

SCHEDULE A2

ROADWORKS: SHORT-TERM REHABILITATION

SCHEDULE B1

BRIDGE No. B1170: DITHOKENG RIVER

SCHEDULE B2
MAJOR CULVERTS

SCHEDULE D

**SMALL CONTRACTOR DEVELOPMENT,
TRAINING AND COMMUNITY LIAISON**

CALCULATION OF TENDER SUM

C2.3 SUMMARY OF PRICING SCHEDULE

SCHEDULE A1: ROADWORKS: ROAD UPGRADING R
(from page)

SCHEDULE A2: ROADWORKS: SHORT_TERM REHABILITATION..... R
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SCHEDULE B1: BRIDGE No. B1170: DITHOKENG RIVER R
(from page)

SCHEDULE B2: MAJOR CULVERTS..... R
(from page)

SCHEDULE D: SMALL CONTRACTOR DEVELOPMENT,
TRAINING AND COMMUNITY
LIAISON R
(from page)

SUBTOTAL A R

CONTRACT SKILLS DEVELOPMENT GOAL:
0.25% of Subtotal A R

SUBTOTAL B R

VALUE ADDED TAX:

15% of Subtotal B R

TOTAL CARRIED TO C.1.1.1: FORM OF OFFER R

SIGNED BY TENDERER:

PART C3: SCOPE OF WORKS

PART C3: SCOPE OF WORKS

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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 January 2024 no amendments have been issued by COTO.

**CONTRACT SANRAL N.011-130-2010/1R
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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).”

Add the following new subclauses:

“A1.2.7.6 Fire Breaks

Fire breaks shall be provided at the following areas used by the contractor for this contract:

- (i) Borrow pits
- (ii) Hard rock quarry
- (iii) Temporary plant parking areas
- (iv) All plant maintenance areas
- (v) Temporary long term traffic control facilities
- (vi) All personnel accommodation and equipment camps
- (vii) Any other area where the spreading of fire is a risk and fire breaks are deemed necessary by the engineer.

The width of a fire break shall be 4,0m minimum. Under no circumstances will the contractor be allowed to burn fire breaks without the permission of the engineer and without the appropriate equipment and personnel to control fires. Fire breaks shall be maintained to such a standard that no vegetation that could transfer a fire across a fire break shall be allowed on the fire break strip. Should a fire break not be maintained, the engineer reserves the right to suspend work from/in that area until the fire break has been maintained according to the specifications. Any additional cost due to such a suspension shall be for the contractor's own account. The contractor shall inspect fire breaks monthly and the condition thereof shall be recorded on site.

The contractor shall consult with the land-owner regarding his intentions to burn fire breaks and shall agree the time and date on which the fire breaks will be burned with the land owner.

A1.2.7.7 Street Lighting

The installation of street lighting on sections of the N11-13 where the road is crossing built-up areas, forms part of the contract and include the works described below.

Part of the works for street lighting will be carried out by sub-contractors to be appointed by the main contractor, in co-operation with the main contractor, while some other works will have to be done by the main contractor himself. The design of the street lighting and associated works are included in the scope of works of the professional service provider appointed by SANRAL for the construction supervision of the contract.

The sub-contractors will be responsible for the following works:

- All cable work including excavation, backfilling and connections to the streetlights, mini substations and other as required, but excluding sleeves.
- Construction of manholes for the electrical cables where required.
- The supply, delivery and installation of mini substations complete.
- The supply, delivery, installation and commissioning of lighting poles and masts.
- Removal of existing light fittings and poles as well as existing overhead line poles, and delivery to stores of the relevant municipality where required.
- Termination of existing overhead lines and delivery of redundant material to stores of the relevant municipality where required.

The main contractor will be responsible for:

- Installation of sleeves as required at all road crossings by excavating and backfilling and proofing.
- Installation of sleeves by drilling underneath existing roads (where required) and proofing.
- Provision of draw wires in all sleeves,
- Accommodation of traffic where required, including the provision and erection of temporary road signs.

The sub-contractors will be paid according to rates in their sub-contracts, for which a provisional sum has been provided in the Pricing Schedule. The main contractor will be paid an overhead charge on the cost of Electrical Works completed by the sub-contractors.

Works relating to the Electrical Works to be constructed by the main contractor, will be paid for under relevant payment items that have been included for this purpose in the Pricing Schedule of the main contract.

A1.2.7.8 Relocation of Land-Owners

The relocation of land-owners affected by the new road reserve of the N11-13 (including the main line and cross roads, but **excluding** land owners affected by the local access roads forming part of the separate CD contract) forms part of this contract and include the works described below.

New housing with associated infrastructure for the relocation of property owners will be constructed by sub-contractors to be appointed by the main contractor, in co-operation with the main contractor, while some other works will have to be done by the main contractor himself. The construction of housing will be done on land to be made available by the Local Traditional Leaders and/or the Mogalakwena Local Municipality as negotiated by SANRAL with these authorities. New houses shall be similar to the structures that must be replaced, but at least comply with RDP housing standards. The appointment of suitably qualified architects and other professional service providers to prepare the required plans and specifications of new housing, services, etc. is the responsibility of SANRAL.

The main contractor will be responsible for the Project Management of the overall project for the construction of the new housing and services and the relocation of property owners, including, but not limited to the following:

- Arrangements for provision of new services to stands by the local authority.
- Logistics for moving households after completion of new housing.

The sub-contractors will be responsible for the following works as required:

- Preparation of building sites and temporary works.
- Construction of access roads to sites and internal streets.
- Construction of new houses complete according to plans provided.
- Service connections of new housing, such as electricity, water reticulation and sewerage (where applicable).
- Moving of households after completion of housing and services on new sites.

The sub-contractors will be paid according to rates in their sub-contracts, for which a provisional sum has been provided in the Pricing Schedule. The main contractor will be paid an overhead charge on the cost of relevant works completed by the sub-contractor. The overhead charge must include the project management for the relocation of property owners in total.

Where required, works relating to the new housing with associated infrastructure to be constructed by the main contractor, will be paid for under the Provisional Sum in accordance with relevant payment items in the Pricing Schedule. The Works Authorization procedure will be followed where rates are not available."

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.

C1.2.11 Relocation of land-owners affected by new road reserve:

C1.2.11.1 Construction of new houses, installation of services,
providing access roads and moving householdsprovisional (Prov) sum

C1.2.11.2 Handling costs and profit in respect of
sub-item C1.2.11.1percentage (%)

The provisional sum allowed under item C1.2.11.1 shall provide for all costs approved by the Employer and the Engineer in connection with the works as specified in subclause A1.2.7.8. The provisional sum shall be paid in accordance with the provisions of the Contract Documentation.

The percentage under item C1.2.11.2 is a percentage of the amount spent under item C1.2.11.1 which shall include full compensation to the main contractor on the cost of relevant works completed by the sub-contractors. The overhead charge must include the project management for the relocation of property owners in total.

C1.2.12 Installation of new services

C1.2.12.1 Street lighting provisional (Prov) sum

C1.2.12.2 Handling costs and profit in respect of
sub-item C1.2.12.1percentage (%)

The provisional sum allowed under item C1.2.12.1 shall provide for all costs approved by the Employer and the Engineer in connection with the works as specified in subclause A1.2.7.7. The provisional sum shall be paid in accordance with the provisions of the Contract Documentation.

The percentage under item C1.2.12.2 is a percentage of the amount spent under item C1.2.12.1 which shall include full compensation for all handling costs, profit and all other charges in connection with the cost of works completed by the sub-contractors.

PC1.2.13 Fire breaks:

C1.2.13.1 Provision of fire breaks (4,0m wide)kilometre (km)

C1.2.13.2 Maintenance of fire breaks including
grass cutting (4,0m wide)month

The unit of measurement for sub-item C1.2.13.1 shall be the length in kilometres of the fire break provided measured in the centre of the fire break strip.

The unit of measurement for sub-item C1.2.13.2 shall be the number of months fire breaks are maintained.

The tendered rate for sub-item C1.2.13.1 shall include full compensation for all labour, construction plant and materials required to clear a fire break strip according to the specifications in subclause A1.2.7.6.

The tendered rate of sub-item C1.2.13.2 shall include full compensation for all labour, construction plant and materials required to maintain a fire break as specified in subclause A1.2.7.6.

Separate payments shall only be made for the provision and maintenance of fire breaks at borrow pits, rock quarries and other areas deemed necessary by the engineer. The provision and maintenance of fire breaks at temporary plant parking areas, plant maintenance areas, long-term traffic control facilities and personnel accommodation and equipment camps shall be included in the rates."

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 Cost 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 1.5: 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”.

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

SECTION 2.1: GENERAL REQUIREMENTS AND TRENCHING FOR SERVICES

PART C: MEASUREMENT AND PAYMENT

Item	Description	Unit
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C2.1.1 Location, identification, protection and relocation of existing services

Replace pay sub-item C2.1.1.2 with the following:

“C2.1.1.2 Permanent services relocation or protection work by others:

- (a) The removal, protection and replacement of CTO, SMD and
WIM installationsprime cost (PC) sum
- (b) The removal, protection and replacement of utility servicesprime cost (PC) sum”

COTO CHAPTER 3: DRAINAGE

SECTION 3.2: CULVERTS

PART C: MEASUREMENT AND PAYMENT

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

In sub-item (b), delete "of 3% cement".

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

C3.2.13	Removing and relaying existing culverts	
----------------	--	--

*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,"*

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

A5.3.5.2 Pavement layer thickness and compaction requirements

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

Change the 2nd sentence to read:

“The density of the compacted crushed stone base layers shall be tested at depths of 50 mm, 100 mm and 150 mm to determine the compaction gradient throughout the layer. The density measured for each depth shall conform to the minimum compaction densities for crushed stone pavement layers as per Table A5.3.5-2.”

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 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
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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."

COTO CHAPTER 10: SURFACE TREATMENTS

SECTION 10.1: GENERAL REQUIREMENTS FOR SURFACE TREATMENTS

PART A: SPECIFICATION

A10.1.3 GENERAL

A10.1.3.2 Weather limitations

Delete the 1st sentence of the 2nd paragraph, and replace with the following:
“No seal work will be allowed in the Seal Embargo Period defined in the Contract Documentation, unless otherwise specified in the Contract Documentation.”.

A10.1.3.14 Nominal rates of application for tender purposes

In the 1st sentence of the 2nd paragraph, after the wording: “...used in the various types of seals”, add the following: “,as specified in the Contract Documentation”.

e) Nominal binder application and aggregate spread rates for Cape seals (Slurry component)

In Table A10.1.3-7 in the last row of the 1st column, delete “1” and replace with “10”.

g) Cover sprays

Replace the 1st paragraph with the following: “The nominal application rate of a diluted emulsion cover spray (50/50) as specified, shall for tender purposes be 0,8 l/m² residual cold bitumen.”.

A10.1.5 MATERIALS

A10.1.5.7 Precoating fluid

Add the following new paragraph: “The precoating fluid shall be a low viscosity bitumen-based product containing petroleum cutters and a chemical adhesion agent. It shall comply with the specifications as provided in the SABITA Manual 30: Requirements for stone precoating fluids.”.

A10.1.6 CONSTRUCTION EQUIPMENT

A10.1.6.1 Binder distributor

In the last paragraph replace the 1st sentence with the following: “The transverse distribution of spray flares shall be field verified according to SANS 3001-BT25 and Clause A20.1.5.9 of Chapter 20 and by visual observations to ensure a uniform transverse distribution of binder.”.

A10.1.6.2 Chip spreaders

In the last paragraph delete the 2nd bullet and replace with the following:
“- of spreading Grade C aggregate, Graded aggregate and Sand- or Grit seals.”.

PART C: MEASUREMENT AND PAYMENT

Item	Description	Unit
C10.1.2	Single seals including a cover spray, if specified (indicate grade of aggregate and type of binder) spreading the aggregate by (state: walk behind spreader or by hand):	

Replace the 1st two item description paragraphs with the following:

“The unit of measurement for item C10.1.1 and C10.1.2 shall be square metre of completed and accepted seal in accordance with the approved method statement and additional instructions.

The nominal rates for single seals indicated in A10.1.3.14(a) and for cover sprays indicated in A10.1.3.14(g), shall apply.”.

C10.1.3 Multiple stone seals including a cover spray, if specified using:

Replace the 1st sentence of the 2nd paragraph of the item description, with the following:
“The nominal rates for multiple stone seals indicated in A10.1.3.14(b) and for cover sprays indicated in A10.1.3.14(g), shall apply.

C10.1.4 Embargo period effects

In the 1st paragraph of the item description, delete reference to: “C10.1.6.1”, and replace with: “C10.1.4.1”.

In the 2nd paragraph of the item description, delete reference to: “C10.1.6.2”, and replace with: “C10.1.4.2”.

C10.1.6 Sand or Grit seals using (state: walk behind spreader or by hand):

Replace the 1st two item description paragraphs with the following:
“The unit of measurement for item C10.1.5 and C10.1.6 shall be square metre of completed and accepted seal in accordance with the approved method statement and additional instructions.

The nominal rates for sand or Grit seals indicated in A10.1.3.14(c) shall apply.”.

C10.1.11 Application of cover spray

In the 2nd paragraph of the item description, delete reference to: “A10.1.3.15”, and replace with: “A10.1.3.14”.

C10.1.12 Application of cover spray by hand

In the 2nd paragraph of the item description, delete reference to: “A10.1.3.15”, and replace with: “A10.1.3.14”.

PART D: GUARANTEES AND COMPLIANCE CERTIFICATES

D10.1.5 VISUALLY ASSESSED PROPERTIES

D10.1.5.4 Acceptance criteria

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

COTO CHAPTER 11: ANCILLARY ROAD WORKS

SECTION 11.2: NON-STRUCTURAL GABIONS

PART C: MEASUREMENT AND PAYMENT

Add the following new pay item:

“Item	Unit
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C11.2.5 Mortar grouting of gabion mattresses	cubic metre (m³)
---	------------------------------------

The unit of measurement shall be the cubic metre of mortar grouting (6:1 sand:cement) actually used in the gabion mattresses at drainage structure outlets to secure anchors/tie-bars extruding from the concrete structure into the gabions, all as shown on SANRAL Typical Dwg. No.TD-D-EC-1002. The mortar grouting shall be applied as specified for grouted stone pitching in section A11.1.

The tendered rate shall include full compensation for supplying all materials, labour, equipment, etc. to grout the gabion mattresses according to the specifications and drawings.”

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	
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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 new pay item:

“Item	Unit
-------	------

C11.5.1.12 Welded steel mesh 100mm x 50mm x 2,5mm dia. (1800mm height), fully galvanized	square metre (m²)
---	-------------------------------------

The unit of measurement shall be the square metre of welded steel mesh, the quantity of which shall be calculated according to the prescribed width and the length between straining posts or gate posts, or the length of strips used for covering openings under fences, or the length used for covering gates, all as shown on SANRAL Typical Dwg. No. TD-R-FG-1007. Posts, stays, standards, etc. are measured separately.

The tendered rate for each square metre of welded steel mesh shall include full compensation for providing all the materials, including galvanizing, tying wire, etc. and the complete erection of the welded steel mesh as specified in subclause A11.5.7.7. The tendered rate shall also include for the clearing of the site upon completion.”

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:

Add the following new pay item:

“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.”

Change the title of the following pay item and add the following new pay sub-items:

“Item	Unit
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C11.6.8 Danger plates at culverts/structures/sharp curves

C11.6.8.4 Size 450 x 450 mm (state post type and reflective material) number (No)
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C11.6.8.5 Size 600 x 600 mm (state post type and reflective material) number (No)”
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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

Amend the retro-reflective luminance unit to be “mcd/m²/lux”.

COTO CHAPTER 12: GEOTECHNICAL APPLICATIONS

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.”

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

PART A: SPECIFICATION

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

Replace all references to “TMH5” in this section with: “SABITA Manual 37 / TMH5 (latest edition).”

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.”

A20.1.3 TESTING METHODS

A20.1.3.2 Standard Methods

Add the following to the last paragraph:

“Replace all references to “TMH5” in this section with: “SABITA Manual 37 / TMH5 (latest edition).”

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
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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 N.011-130-2010/1R
FOR THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM R518
INTERSECTION (km 8,345) TO GROOTSANDSLOOT RIVER (km 24,0)**

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 Part C4: Project Information and also shown on the Layout Plans Dwg. No.'s 251020/PPO/001 to 024/LP.
	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 17 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 (Also refer to Appendix B1 at end of Section B) As the construction periods on this Conventional N11-13 Road contract and a separate CD contract for the construction of Local Access Roads (to facilitate the closing of direct access from individual properties onto Road N11-13) will overlap, close liaison is required in planning the sequence of construction work on the two contracts respectively. b) Temporary deviations (Also refer to Appendix B2 at end of Section B) c) Half or partial width sections <ul style="list-style-type: none"> Two-way traffic to be accommodated on one half of the existing road and shoulder of N11-13 as shown on the Accommodation of Traffic Plans Dwg. No.'s 251020/PPO/002 & 003/AT. A max. of two (2) such temporary deviations allowed at a time, each with a maximum length of 4,0 km. A minimum length of 4,0 km unrestricted road sections to be kept open between work areas on N11-13.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA								
				<ul style="list-style-type: none">One half width section with STOP/GO control/traffic signals and maximum length of 0,3 km will be allowed at a time during construction of the bridge approaches at the Groot Sandsloot River (km 24,25), as well as for the Short-term Rehabilitation of the road section between km 19,171 and km 20,204 (forming part of the N11-13X Bypass Project). <p>d) Other Land acquisition by SANRAL for the construction of Local Access Roads forming part of a separate CD Contract, may continue during the construction period of the Conventional N11-13 Road contract. A max. period of 6 months after the Start of this N11-13 Road Contract (km 8,345 to km 24,0) shall be allowed for this process to be completed from Mokopane (km 1,310) up to the End of the Project (km 24,0). Also refer to (a) above.</p>								
			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)								
			A1.2.3.10 Notices, signs and advertisements	Details of the contract sign board is provided in Drawing No. 251020/PPO/001/TP.								
			A1.2.3.12 Ownership of assets and disposal of non-usable assets	<p>The Non-usable assets to be disposed by the Contractor is listed in the following disposal plan:</p> <p>Disposal plan</p> <table><tr><td>Asset description</td><td>Estimated quantity</td><td>Disposal requirement</td></tr><tr><td>Road signs</td><td rowspan="3">To be determined during construction</td><td rowspan="3">Arrange with RRM</td></tr><tr><td>Guardrails</td></tr><tr><td>Fencing</td></tr></table>	Asset description	Estimated quantity	Disposal requirement	Road signs	To be determined during construction	Arrange with RRM	Guardrails	Fencing
Asset description	Estimated quantity	Disposal requirement										
Road signs	To be determined during construction	Arrange with RRM										
Guardrails												
Fencing												
			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><td>Structure</td><td>Type</td><td>Location</td></tr><tr><td>Buildings</td><td>Business & Residential</td><td>To be determined during construction</td></tr></table>	Structure	Type	Location	Buildings	Business & Residential	To be determined during construction		
Structure	Type	Location										
Buildings	Business & Residential	To be determined during construction										
			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, Section 8.8. Any potholes or other failures which occur on the road surface shall be repaired within 24 hours after first being noted.</p>								
			A1.2.3.18 Stakeholder liaison	Additional requirements related to structured engagement with project Stakeholders and affected Communities, as well as guidance on								

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				<p>the selection and the enhanced utilisation and development of Targeted Labour and Targeted Enterprises is provided in Section D1000.</p> <p>The provision of housing and associated infrastructure on site(s) negotiated by SANRAL with the local Municipality and / or traditional leaders to be made available for the relocation of property owners affected by the new N11-13 main road and cross roads, including the moving of households to these sites.</p>
			A1.2.3.20 Road safety audits	A Work zone traffic management audit as well as a Pre-opening stage road safety audit, shall be carried out.
			A1.2.3.22 Wayleaves/Agreements and Permits	<p>The Contractor shall be responsible for applying for the following wayleaves:</p> <p>None.</p>
		A1.2.7	EXECUTION OF THE WORKS	
			PA1.2.7.1 Programme of work	
			a) General	A scheme 2 programme shall apply. Also see Appendix B1 at end of Section B.
			b) Scheme 2	<p>The programme shall be drawn up or be compatible with MSPProject.</p> <p>Additional schedules, other than required in terms of Conditions of Contract Clause 8.3, to be provided are none.</p>
			A1.2.7.4 Work on, over, under or adjacent to utilities	Also see Appendix B3 at end of Section B.
	A1.3		CONTRACTOR'S SITE ESTABLISHMENT AND GENERAL OBLIGATIONS	
		A1.3.3	GENERAL	
			A1.3.3.1 Construction camps	SANRAL-owned land is not available for the use of the contractor for his construction camps, offices, stores, workshops and/or testing facilities, and the contractor shall make his own arrangements in this regard.
	A1.4		FACILITIES FOR THE ENGINEER	
		A1.4.3	GENERAL	Site facilities to be provided by Contractor as specified and agreed with the Engineer.
		A1.4.7	EXECUTION OF THE WORKS	
			A1.4.7.1 Offices and laboratories	The site shall be fenced with a 2,4m high security fence with a razor-cut wire being used as strands or with a brick wall. Refer to Pay item C1.4.8.1.
			a) General	The site laboratory shall be supplied with three-phase electricity.
			b) Offices	As specified and agreed with the Engineer.
			c) Laboratories	As specified and agreed with the Engineer.
			f) Ablution unit	As specified and agreed with the Engineer.
			A1.4.7.2 Housing	
			a) Prefabricated houses	No additional requirements.
			A1.4.7.3 Services	
			b) Water, electricity and gas	An on-site generator shall supply electricity when power from a recognized power-supply

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				authority is not available to the Engineer's offices, laboratories and housing.
			A1.4.7.5 Office staff	None to be provided.
	A1.5		ACCOMMODATION OF TRAFFIC	
		A1.5.3	GENERAL	
			A1.5.3.2 General requirements	See Appendix B2 at end of Section B.
			A1.5.3.3 Lane width	Two-way traffic to be accommodated on existing road and shoulder with 3,2m lane widths for accommodation of traffic.
		A1.5.6	CONSTRUCTION EQUIPMENT	
			A1.5.6.1 Traffic control facilities	
			A1.5.6.2 Illuminated traffic signs and safety devices	
			d) Sign mounted flashing lights	Two amber flashing lights shall be vertically mounted on top of the traffic signs at each end of each traffic accommodation section as shown on the drawings. The lights shall be operated during the hours of darkness.
		A1.5.7	EXECUTION OF THE WORKS	
			A1.5.7.3 Accommodation of traffic where the road is constructed in half or partial widths	<p>The length of the half or partial width construction sections where the traffic can only pass in one direction at a time shall not exceed 0,5 km.</p> <p>The number of one-ways sections under construction at any one time shall not exceed two (2).</p> <p>No STOP/GO one-way traffic sections shall be in operation and two-way traffic shall be accommodated safely within the contract limits during the following additional periods: The annual Christmas/New-year shut-down period in December and January.</p>
			A1.5.7.10 Construction of temporary deviations	
			d) Earthworks and pavement layers for temporary deviations	<p><u>Base:</u> 150mm stabilized natural gravel (C3) compacted to 97% of Max. Dry Density (MDD).</p> <p><u>Sub-base:</u> 150mm natural gravel (G6) compacted to 97% of Max. Dry Density (MDD). (See Note).</p> <p><u>Note:</u> The sub-base layer is only to be constructed in areas indicated by the Engineer.</p>
			e) Surfacing of temporary deviations	Bituminous single seal (14mm aggregate) with slurry (Cape Seal).
	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	See Layout Plans, Dwg. No's. 251020/PPO/008 to 024/LP.
		A2.1.3	GENERAL	
			A2.1.3.2 Location, identification, protection and relocation of existing services	
			a) Existing as-built records	Incorporated in construction drawings.
			b) Location of existing services	See Layout Plans, Dwg. No's. 251020/PPO/008 to 024/LP.
			d) Protection of services	
			<i>(i) Service owners</i>	Within the mobilization period (3 months), acquire from the service providers the lead times required to make the necessary arrangements for the protection, removal or relocation of services.
			<i>(ii) Protection</i>	Also see Appendix B3 at end of Section B.
			<i>(iv) Relocation</i>	No negotiations concluded at tender stage.
		A2.1.7	EXECUTION OF THE WORKS	
			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.
	A2.2		DRY SERVICES	
		A2.2.1	SCOPE	Service ducts to be installed for existing and/or new services at all road crossings forming part of project, as shown on Layout Plans, Dwg. No.'s. 251020/PPO/008 to 024/LP and Typical Detail, Plan No. 251020/PPO/006/TP.
			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	Ducts to be uPVC pipes and/or precast concrete pipes as shown on drawings or instructed by the Engineer.
			A2.2.5.1 Ducts and sleeves	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			b) High Density Polyethylene (HDPE) ducts	
			<i>(i) HDPE ducts installed by trenching</i>	Corrugated HDPE cable ducts complying with the requirements of SANS IEC 61386-24: 2005 for sleeves to be laid in trenches.
			<i>(ii) HDPE ducts installed by drilling</i>	HDPE pipes for drilling shall be manufactured from PE63 – PN4 and shall comply with the requirements of SANS 427.
			g) End caps or plugs	Tapered wooden plugs to be used with approval of Engineer where end plugs or caps are not available for specific duct types.
			h) Draw wires and marker tapes	Draw wires to be 2,5mm galvanized steel wire.
		A2.2.7	EXECUTION OF THE WORKS	
			A2.2.7.4 Duct markers	
			c) Road crossing markers	Refer to Typical Detail, Dwg. No. 251020/PPO/006/TP.

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	The pipes shall be uPVC, 150mm ID.
		A3.1.7	EXECUTION OF THE WORKS	
			A3.1.7.5 Manholes, outlet structures and cleaning eyes	Refer to SANRAL Typical Detail for Subsurface Drainage, Dwg. No.'s TD-D-SD-1001 to 1003/V1. The end of each subsoil outlet shall be marked with a 300mm x 300mm perspex plate fixed to the top portion of the fence line opposite each subsoil outlet structure in accordance with the detail on the drawings.
	A3.2		CULVERTS	
		A3.2.7	EXECUTION OF THE WORKS	
			A3.2.7.4 Unsuitable founding conditions	Where the in-situ material is found to be unsuitable, it shall be removed to a depth as instructed by the engineer and then replaced with an approved selected material compacted to at least 93% Max. Dry Density (MDD) in layers not exceeding 150mm thickness.
	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	
			b) Prefabricated concrete kerbing and channelling	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS and SANRAL Typical Detail Dwg. No. TD-D-RD-1001. This section also covers the construction of a prefabricated concrete side kerb/channel combination at paved sidewalks and medians where specified.

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	The following borrow pits as shown on drawings to be used for operations on this contract: Borrow Pits 4 & 5 and Hard Rock Quarry: See Dwg. No.'s 251020/PPO/002 to 004/SD. The acquisition and compensation for land from which borrow material is obtained shall be negotiated and paid for by the Employer.
			A4.1.3.4 Contractor prepared plans for borrow materials	Refer to Borrow Pit Plans and Test Pit information.
		A4.1.7	EXECUTION OF WORKS	
			A4.1.7.2 Borrow pit and Quarry operations	
			a) General control at the borrow pits and quarries	Part time Materials Manager required: Senior General Foreman with min. 10 years experience in borrow pit and quarry operations. Fire breaks shall be provided around all borrow pits, quarries and spoil sites used by the contractor for this contract. Also see subclause A1.2.7.6.
			b) Classes of excavations	
			<i>(i) Soft excavation</i>	The reference construction equipment shall be as specified in the Standard Specifications.
			<i>(iv) Hard excavation</i>	The reference construction equipment shall be as specified in the Standard Specifications.
			g) Selection and excavation of material in borrow pits	Part time Excavation Controller required: Senior General Foreman with min. 10 years experience in borrow pit and quarry operations.
			h) Selection and excavation of material in quarries	Part time Materials Manager required: As specified in subclause A4.1.7.2(a) above.
			l) Use of the borrow material	Refer to Volume 6.
			m) Closing of the borrow pits and quarries	Any construction material spoiled within borrow pit sites shall be buried to a depth of not less than 300mm below the surface soil. No construction material of any nature shall be left visible after topsoiling. The engineer shall confirm this before grassing commences.
			A4.1.7.3 Stockpiles	
			b) Stockpiling of the material	Part time Stock-pile Controller required: Senior General Foreman with min. 10 years experience in borrow pit and quarry operations.
	A4.2		CUT MATERIALS	
		A4.2.7	EXECUTION OF WORKS	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A4.2.7.1 Excavation operations	
			a) Control at the cuttings, designated excavations and box cuts	Part time Materials Manager required: Senior General Foreman with min. 10 years experience in earthworks operations.
			h) Excavation of material in cuttings	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS. Part time Excavation Controller required: Senior General Foreman with min. 10 years experience in earthworks operations.
			i) Excavation of material in box cuts	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			j) Excavation of material in designated excavations	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			k) Selection and the use of the cut material	Refer to Volume 6.
			n) Finishing of the side slopes of cuttings and designated excavations (<i>para 1</i>)	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
	A4.3		EXISTING ROAD MATERIALS	
		A4.3.3	GENERAL	
			A4.3.3.1 Employer identified existing road materials	Refer to Volume 6. Refer to Typical Cross Sections and Pavement Design Plans, Dwg. No.'s 251020/PPO/001 to 004/CS for use of existing road materials.
		A4.3.7	EXECUTION OF THE WORKS	
			A4.3.7.4 Milling	Engineer to instruct remedial measures for loose local areas.
	A4.4		COMMERCIAL MATERIALS	
		A4.4.3	GENERAL	
			A4.4.3.1 Employer identified commercial materials	
			a) Materials from commercial suppliers	Refer to Part C4: Section C4-12(d) for some available commercial sources in the area that may be used as alternative to supply crushed stone material which are not available from the Hard Rock Quarry or not complying with specifications. The Contractor shall submit proof of compliance of materials from the commercial sources he intends to use.
		A4.4.5	MATERIALS	
			A4.4.5.1 Earthworks and pavement layer materials	Material must be stockpiled separately with clear signage indicating for use by SANRAL.

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	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
		A5.1.3	GENERAL	
			A5.1.3.1 Roadbed material Investigation	Refer to Volume 6.
		A5.1.5	MATERIALS	
			A5.1.5.2 Topsoil	To be obtained from road reserve and/or borrow pits or commercial sources, if required.
			A5.1.5.3 Collapsing soil material	Not encountered.
		A5.1.7	EXECUTION OF WORKS	
			A5.1.7.1 Clearing and grubbing	Material obtained from clearing and grubbing to be removed from site.
			A5.1.7.2 Removal and conservation of topsoil from roadbed	Topsoil shall be removed to either windrows alongside the construction area or to stockpile. Where ordered by the engineer, any topsoil that shall be required for the topsoiling of new banks and cuts, but which cannot be accommodated within the construction site, shall be loaded and hauled to the designated stockpile area where it shall be placed in temporary stockpiles for later use in the rehabilitation of the site affected by construction activities.
			A5.1.7.3 Normal roadbed treatment	
			a) Construction overview	Conventional roadbed preparation procedures must be followed. Refer to Roadbed drawings, Dwg. No.'s 251020/PPO/001 to 004/RB
			b) Removal of unsuitable roadbed material	To be spoiled in approved areas of borrow pits.
			c) Percentage of Max Dry density (MDD)	All roadbed materials shall be scarified to a depth of at least 150mm and compacted to 93% of MDD.
			g) Inactive clay and normal clay	Refer to Roadbed drawings, Dwg. No.'s 251020/PPO/001 to 004/RB. Should such materials be encountered, it must be removed as per Standard Specifications.
			<i>(iii) Removal of material</i>	Max. depth of 450mm.
			h) Active Clay	Refer to Roadbed drawings, Dwg. No.'s 251020/PPO/001 to 004/RB. Should such materials be encountered, it must be removed as per Standard Specifications, Alternative 2. Moisture content fluctuations shall be restricted as documented in the standard specifications, by constructing a flattened side batter, 1 (vertical):3 (horizontal).

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			<i>(ii) Alternative 2 – Roadbed construction by removal of active clay</i>	Active clay shall be removed to the bottom of the clay layer, or to a min. depth of 750mm below NGL. The removed material shall be replaced with compliant material (G7) and be compacted to 93% of MDD.
			i) Construction of a pioneer layer	As specified and instructed by the Engineer.
		A5.1.8	WORKMANSHIP	
			A5.1.8.2 Compaction requirements	Refer to Roadbed Preparation drawings, Dwg. No.'s 251020/PPO/001 to 004/RB.
	C5.1		ROADBED PART C: MEASUREMENT AND PAYMENT	
		C5.1.13	Construction of a levelling layer	Measurement to be done by cross sections.
	A5.2		FILL	
		A5.2.3	GENERAL	
			A5.2.3.1 Fill Dimensions and shape	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			A5.2.3.2 Fill adjacent to existing fill	Where existing embankments are to be widened, or where new embankments are to be constructed adjacent to existing embankments, the existing side slopes shall be benched as shown on the drawings or indicated by the Engineer.
			A5.2.3.3 Fill layer thickness	Compacted fill layer thickness shall be 200mm or less.
			A5.2.3.4 Fill compaction classification	
			a) MDD compaction	
			<i>(ii) Normal fill and Coarse Fill</i>	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
		A5.2.7	EXECUTION OF THE WORKS	
			A5.2.7.4 Widening of fills	Method A applicable for widening of fills. Refer to sub-clause A5.2.7.3.
		A5.2.8	WORKMANSHIP	
			Table A5.2.8-1	Normal fill: 93% of MDD. Coarse fill: 93% of MDD.
	A5.3		ROAD PAVEMENT LAYERS	
		A5.3.3	GENERAL	
			A5.3.3.4 Compaction of pavement layer material	Refer to pavement specifications on Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS. Subbase layers constructed as one 300mm thick layer shall be tested as two layers of 150mm each, consisting of the upper 150mm and the lower 150mm of the specified 300mm layer thickness.
			A5.3.3.7 Joints between pavement layers	
			a) Location of joints	Longitudinal joints in surfacing to coincide with road marking line positions.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
				Joints in lower layers to be located as specified in the COTO Standard Specifications.
			b) Longitudinal joints	Saw cut depth to be determined based on layer thicknesses. Refer to the Materials Investigation (Volume 6) or as instructed by the Engineer on site.
			A5.3.3.8 Pavement Layer Drainage	Subsoil drainage not specified in pavement layers.
		A5.3.5	MATERIALS	
			A5.3.5.1 Material information	Refer to pavement specifications on Typical Cross Sections, Dwg. No's 251020/PPO/001 to 004/CS.
			A5.3.5.2 Pavement Layer thickness and compaction requirements	
			a) Pavement layer thickness requirements	Refer to Typical Cross Sections, Dwg. No's 251020/PPO/001 to 004/CS.
			c) Crushed stone pavement layer compaction requirements (G1 to G4A and G5A material)	G1 compacted to 88% of Apparent Density.
		A5.3.7	EXECUTION OF WORKS	
			A5.3.7.3 Construction of gravel pavement layers	
			a) Construction	Position of longitudinal joints to be determined in accordance with requirements of clause A5.3.3.7.
		A5.3.8	WORKMANSHIP	
			PA5.3.8.4 Construction tolerances for pavement layers	Minimum pavement layer thickness = 150mm
			d) Width tolerances	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			PA5.3.8.5 Surface regularity	To be assessed by using a profiler.
			c) By using a profiler	The payment items for adjustment shall be: C5.3.2.1(aa).
	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 M&U plan to be prepared for each of the layers as per Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
	A5.4		STABILISATION	
		A5.4.3	GENERAL	
			A5.4.3.2 Work in restricted areas	No e.o. payment for work in restricted areas.
			A5.4.3.3 Construction limitations	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			e) Traffic limitations	No vehicles other than required for construction of the pavement layers will be allowed on a stabilised layer.
		A5.4.5	MATERIALS	
			A5.4.5.1 General	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS for materials to be stabilised.
			A5.4.5.3 Cementitious stabilising agents	CEM II (A-L) 32.5N (bags) shall be used for stabilization purposes.
		A5.4.6	CONSTRUCTION EQUIPMENT	Recycler to be used for chemical stabilization. Side spraying tankers to be used for water curing.
		A5.4.7	EXECUTION OF THE WORKS	
			A5.4.7.1 Construction of a trial section	No additional requirements.
			A5.4.7.7: Protection and curing of chemically stabilised layers	Water curing or Damp protective layer curing.
	A5.5		RECONSTRUCTION OF PAVEMENT LAYERS	
		A5.5.2	DEFINITIONS	
			Rehabilitation	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			Uniform pavement sections	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
		A5.5.3	GENERAL	
			A5.5.3.1 Traffic accommodation	Refer to Accommodation of Traffic Plans, Dwg. No.'s 251020/PPO/002 & 003/AT.
			A5.5.3.2 Material selection	Refer to detail notes on Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS, for utilization of reclaimed material.
			A5.5.3.4 Existing bituminous seal and/or asphalt layers	The existing asphalt/seal, the crushed stone base, sub-base and shoulder material, which shall be re-used in the sub-base and selected layers, shall first be broken down by means of effective methods and pulverized if required.
		A5.5.5	MATERIALS	
			A5.5.5.1 Existing crushed stone pavement materials	The existing crushed stone base shall be processed as a gravel material for the construction of the new C3 subbase.
			A5.5.5.5 Materials shortfall and make-up material	Make-up material shall be obtained from borrow pits.
		A5.5.7	EXECUTION OF THE WORKS	A portion of the N11-13 between km 19,171 and km 20,204 will form part of the proposed new Mokopane Ring Road project (design undertaken by Royal Haskoning DHV). Short-term rehabilitation measures of this section of the road are included in this contract to serve as a holding action until the Bypass is constructed.
			A5.5.7.1 Patching	
			a) Patch demarcation	Surface patching and base patching required.
			c) Backfilling patch excavations	Surface patching with asphalt surfacing material and base patching with asphalt base material.

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A5.5.7.2 Edge break repairs	Asphalt surfacing material to be used.
			A5.5.7.3 Treatment of exposed pavement layer	As per Standard Specifications and as instructed by the Engineer on site.
			A5.5.7.4 In situ pavement layer reconstruction preparation	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			c) Pre-milling the seal or asphalt surfacing	Pre-milling required; material to be re-used.
			d) Preparation of the road surface	Surfacing to be removed where it cannot be reworked with layer.
			e) Pre-pulverising existing pavement layer material	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS. Pre-pulverising to be done by means of recycler, unless otherwise instructed by the Engineer. Material to be utilized in situ. Cross-mixing allowed.
			A5.5.7.5 In situ pavement layer reconstruction	Refer to Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS. The sub-base material shall be stabilized and mixed by means of a recycler.
	C5.5		RECONSTRUCTION OF PAVEMENT LAYERS PART C: MEASUREMENT AND PAYMENT	
		C5.5.5	Construction of a trial section using a recycler	150/300mm deep as per uniform section and 3,7m wide.
		C5.5.10	Roller-pass compaction of an exposed pavement layer	Three roller-passes compaction to be applied. Refer to Schedule of Quantities for roller types and mass.
		C5.5.13	Cross mixing of material	150mm deep or as specified by the Engineer.
		C5.5.20	Material shortfall or make-up material	Quantity shall be determined by measurement of cross sections.

COTO CHAPTER 6: CONCRETE LAYERS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
6			CONCRETE LAYERS	
	A6.2		SEGMENTAL BLOCK PAVING LAYERS	
		A6.2.5	MATERIALS	
			A6.2.5.1 Paving blocks	The paving blocks shall be precast, of class 25 MPa, type S-A and thickness 60mm for pedestrian areas.
			A6.2.5.4 Concrete beams, kerbs and channelling	Prefabricated kerbing and channelling shall comply with the requirements of Section A3.3 / B3.3 of Chapter 3.
		A6.2.7	EXECUTION OF THE WORKS	
			A6.2.7.1 Preparing the underlying layers.	See detail and material specifications on Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS.
			A6.2.7.4 Laying of the blocks.	The laying pattern and dimensions is indicated on the following Drawings: Layout Plans: Dwg. No.'s 251021/PPO/008 to 024/LP and the Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS. Interlocking paving blocks to be laid in a herringbone pattern.

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 less than 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 cut-back bitumen <u>or</u> Inverted bitumen emulsion.
		A8.1.7	EXECUTION OF THE WORKS	
			A8.1.7.5 Opening to traffic	A blinding layer is not specified on the drawings, but will be directed by the Engineer where required.
	A8.5		STANDARD CRACK SEALING	
		A8.5.7	EXECUTION OF THE WORKS	
			A8.5.7.1 Preparation and execution	The cracks shall be blown out with cold compressed air. Cracks to be primed with MSP/1 primer.
	A8.8		PATCHING AND EDGE BREAK REPAIR	
		A8.8.5	MATERIALS	
			A8.8.5.3 Backfill material	Refer to Chapter 9 for asphalt backfill material.
	C8.8		PATCHING AND EDGE BREAK REPAIR PART C: MEASUREMENT AND PAYMENT	
		C8.8.2	Excavation in existing pavements for patching (non-milling)	
			C8.8.2.3 Other layers (specify type)	Granular Layers.

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><u>Asphalt wearing course at intersections:</u> Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).</p> <p><u>Asphalt surface patching:</u> Sand skeletal mix; continuous grading; NMPS 10mm; PG64H-16; Design Level IB; minimum 30mm thickness.</p> <p><u>Asphalt base patching:</u> Sand skeletal mix; continuous grading; NMPS 20mm; PG64H-16; Design Level IB; minimum 80mm thickness.</p>
			Aggregate	Refer to Standard Specifications.
		A9.1.3	GENERAL	
			Table A9.1.3-2: Nominal Mix Proportions of Sand Skeletal Mixes for Tender Purposes Bitumen (type and grade according to Contract Documentation) (%)	<p>Asphalt wearing course at intersections: PG64E-16 (EMB).</p> <p>Asphalt surface patching: PG64H-16</p> <p>Asphalt base patching: PG64H-16</p>
			Table A9.1.3-2: Nominal Mix Proportions of Sand Skeletal Mixes for Tender Purposes	Reclaimed asphalt will not be used.
			Table A9.1.3-2 *Note 2:	Reclaimed asphalt will not be used.
		A9.1.4	DESIGN BY THE CONTRACTOR	
			A9.1.4.1 Mix Designs	<p><u>Asphalt wearing course at intersections:</u> Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).</p> <p><u>Asphalt surface patching:</u> Sand skeletal mix; continuous grading; NMPS 10mm; PG64H-16; Design Level IB; minimum 30mm thickness</p> <p><u>Asphalt base patching:</u> Sand skeletal mix; continuous grading; NMPS 20mm PG64H-16; Design Level IB; minimum 80mm thickness.</p>

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A9.1.4.2 Mix design requirements	<p><u>Asphalt wearing course at intersections:</u> Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).</p> <p><u>Asphalt surface patching:</u> Sand skeletal mix; continuous grading; NMPS 10mm; PG64H-16; Design Level IB; minimum 30mm thickness</p> <p><u>Asphalt base patching:</u> Sand skeletal mix; continuous grading; NMPS 20mm PG64H-16; Design Level IB; minimum 80mm thickness.</p>
		A9.1.5	MATERIALS	
			A9.1.5.2 Bituminous binders for asphalt mixes	<p><u>Asphalt wearing course at intersections:</u> PG64E-16</p> <p><u>Asphalt surface patching:</u> PG64H-16</p> <p><u>Asphalt base patching:</u> PG64H-16. Maximum pavement Design temperature: Tmax = 64°C Minimum grading temperature = -16°C Traffic Speed >80 km/h E80 Axles = 3 - 10 million</p>
			A9.1.5.5 Fillers	Filler shall be hydrated lime.
			A9.1.5.8 Mix properties	<p><u>Asphalt wearing course at intersections:</u> Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).</p> <p><u>Asphalt surface patching:</u> Sand skeletal mix; continuous grading; NMPS 10mm; PG64H-16; Design Level IB; minimum 30mm thickness</p> <p><u>Asphalt base patching:</u> Sand skeletal mix; continuous grading; NMPS 20mm PG64H-16; Design Level IB; minimum 80mm thickness</p>
		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	
			A9.1.7.8 Applying rolled-in chippings	10mm precoated rolled-in chippings to be applied (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m ²).

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
			A9.1.7.11 Surfacing of bridge decks	Same as: <u>Asphalt wearing course at intersections:</u> Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m ²).
		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, as required.

COTO CHAPTER 10: SURFACE TREATMENTS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
10			SURFACE TREATMENTS	
	A10.1		GENERAL REQUIREMENTS FOR SURFACE TREATMENTS	
		A10.1.3	GENERAL	
			PA10.1.3.2 Weather limitations	The Seal Embargo Period is the period during the months of May, June, July and August. Allowance has been made for cold applied binder during embargo period.
			PA10.1.3.14 Nominal rates of application for tender purposes	The following Seal types are to be utilised: 1. Cape Seal (14mm aggregate) 2. Cape Seal (20mm aggregate)
		A10.1.5	MATERIALS	
			A10.1.5.10 Single sized aggregate	
			a) Grading	The Aggregate Grade is indicated in the Pricing Schedule

COTO CHAPTER 11: ANCILLARY ROAD WORKS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
11			ANCILLARY ROAD WORKS	
	A11.1		PITCHING, STONework, CAST IN SITU CONCRETE FOR PROTECTION AGAINST EROSION	
		A11.1.5	MATERIALS	
			A11.1.5.6 Geotextiles	Non-woven, synthetic-fibre filter fabric Grade 2, where required.
	A11.2		NON-STRUCTURAL GABIONS	
		A11.2.7	EXECUTION OF WORKS	
			A11.2.7.2 Constructing gabion boxes and mattresses	
			g) Assembly	Refer to SANRAL Typical Detail, Dwg. No. TD-D-EC-1002.
		A11.3.5	MATERIALS	
			A11.3.5.5 Alternative materials	Standard materials to be used.
	A11.4		ROAD RESTRAINT SYSTEMS	
		A11.4.5	MATERIALS	
			A11.4.5.2 Materials	
			c) Guardrail posts	Timber posts to be treated with creosote.
		A11.4.7	EXECUTION OF THE WORKS	
			A11.4.7.2 Construction of guardrails on timber posts	Refer to SANRAL Typical Detail, Dwg. No.'s TD-R-GR-1001 & 1002, 1100 & 1101, 1201.
	A11.5		FENCING	
		A11.5.5	MATERIALS	
			A11.5.5.2 Straining posts, stays, standards and droppers	All posts in general to be steel as per SANRAL Typical Detail, Dwg. No.'s TD-R-FG-1001, 1002, 1004 to 1007, 1102 & 1103. Steel straining posts, stays, anchors & gates to be fully galvanised. Steel standards & droppers to have protective bitumen coating. Timber posts to be treated with creosote.
		A11.5.7	EXECUTION OF THE WORKS	
			A11.5.7.7 Erecting special purpose fencing	Welded mesh pedestrian fencing on steel posts shall be erected in built up residential areas in accordance with SANRAL's typical detail for this type of fencing as per SANRAL Typical Detail, Dwg. No. TD-R-FG-1007.
	A11.6		ROAD SIGNS	

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA															
		A11.6.7	EXECUTION OF THE WORKS																
			A11.6.7.2 Manufacturing of road signboards and supports	Refer to SANRAL Typical Detail, Dwg. No.'s TD-R-RS-001 & 002, 100 & 101, 200 to 202.															
			d) Galvanizing	Galvanized steel profiles of Road Sign Boards to be pre-painted.															
			PA11.6.7.5 Erecting road signs																
			a) Position	Refer to detail on Dwg. No.'s 251020/PPO/001, 006 to 012/RS.															
			A11.6.7.7 Dismantling, storing and re-erecting existing road signs	Dismantling, storing and re-use of road signs to be finalized during construction as approved by the Engineer.															
	C11.6		ROAD SIGNS PART C: MEASUREMENT AND PAYMENT																
			ii) Notes on measurement and pay items	Measurements for excavations to be taken from finished ground surface.															
			iii) Items that will not be measured separately	No separate payment will be made for backfilling excess excavations.															
	A11.7		ROAD MARKINGS AND ROAD STUDS																
		A11.7.5	MATERIALS																
			PA11.7.5.2 Materials																
			a) Marking materials																
			(ii) Retro-reflective road marking	Solvent borne road marking paint to be used.															
			(iii) Thermoplastic road marking material	Thermoplastic road marking paint to be applied at end of defects liability period.															
			b) Road studs	The road studs to be used shall be RSA-1, 2 and T as shown on the drawings and/or specified by the Engineer.															
	A11.8		LANDSCAPING AND PLANTING PLANTS																
		A11.8.5	MATERIALS																
			A11.8.5.2 Materials																
			b) Fertiliser/soil-improvement material	Refer to Schedule of Quantities.															
			d) Grass seeds	<div>The grass seed mixture shall be as follows: During summer:<table><tr><th>Latin Name</th><th>English Name</th><th>kg/ha</th></tr><tr><td>Eragrostis tef</td><td>Teff</td><td>2,0</td></tr><tr><td>Digitaria eriantha</td><td>Finger grass</td><td>5,0</td></tr><tr><td>Chloris guyana</td><td>Rhodes grass</td><td>4,0</td></tr><tr><td>Cenchrus ciliaris</td><td>Blue Buffalo grass</td><td>4,0</td></tr></table></div>	Latin Name	English Name	kg/ha	Eragrostis tef	Teff	2,0	Digitaria eriantha	Finger grass	5,0	Chloris guyana	Rhodes grass	4,0	Cenchrus ciliaris	Blue Buffalo grass	4,0
Latin Name	English Name	kg/ha																	
Eragrostis tef	Teff	2,0																	
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CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA																																				
				<table><tr><td>Cynodon dactylon</td><td>Couch grass</td><td>7,0</td></tr><tr><td>Aristada congesta</td><td>Three lawn grass</td><td>2,5</td></tr><tr><td>Melinis repens</td><td>Natal red top</td><td>2,5</td></tr><tr><td>Panicum coloratum</td><td>White Buffalo grass</td><td>2,5</td></tr><tr><td>Andropogum eucomus</td><td>Snowflake grass</td><td>2,5</td></tr><tr><td>Imperata cylindrica</td><td>Cottonwool grass</td><td>2,5</td></tr><tr><td></td><td>Others to be added</td><td>0,5</td></tr><tr><td colspan="2">Total</td><td>35,0</td></tr></table> <p>During winter, the following additional species shall be added</p> <table><tr><th>Latin Name</th><th>English Name</th><th>kg/ha</th></tr><tr><td>Lolium multiflorum tef</td><td>Rye grass</td><td>2,0</td></tr><tr><td>Lolium perenee</td><td>Perennial Rye grass</td><td>3,0</td></tr><tr><td colspan="2">Total</td><td>5,0</td></tr></table> <p>The following are potential seed suppliers:</p> <ul style="list-style-type: none">• North-West University, Potchefstroom.• Cradock Saad Verspreiders.• Andersons Seeds (East London).	Cynodon dactylon	Couch grass	7,0	Aristada congesta	Three lawn grass	2,5	Melinis repens	Natal red top	2,5	Panicum coloratum	White Buffalo grass	2,5	Andropogum eucomus	Snowflake grass	2,5	Imperata cylindrica	Cottonwool grass	2,5		Others to be added	0,5	Total		35,0	Latin Name	English Name	kg/ha	Lolium multiflorum tef	Rye grass	2,0	Lolium perenee	Perennial Rye grass	3,0	Total		5,0
Cynodon dactylon	Couch grass	7,0																																						
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	Others to be added	0,5																																						
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Lolium multiflorum tef	Rye grass	2,0																																						
Lolium perenee	Perennial Rye grass	3,0																																						
Total		5,0																																						
			Grass sods	Time limitation 48 hours.																																				
			Nursery grown sods	Refer to Schedule of Quantities.																																				
		A11.8.7	EXECUTION OF THE WORKS																																					
			A11.8.7.3 Grassing																																					
			c) Hydroseeding	Thickness of topsoil layer as specified on Typical Cross Sections, Dwg. No.'s 251020/PPO/001 to 004/CS. See Sub-clause A11.8.5.2(d) for seed mixture and application rate.																																				
			f) Sowing by hand	Seed mixture and application rate as specified for hydroseeding in Sub-clause A11.8.5.2(d).																																				
			A11.8.7.7 General																																					
			d) Proprietary brand materials used for erosion prevention	Anti-erosion compound of Cellulose Pulp and Surfisol to be mixed with hydroseeding mixture and be applied simultaneously.																																				

COTO CHAPTER 12: GEOTECHNICAL APPLICATIONS

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA																																			
12			GEOTECHNICAL APPLICATIONS																																				
	A12.11		GEOSYNTHETICS																																				
		A12.11.3	GENERAL	Refer to Standard Specifications.																																			
		A12.11.5	MATERIALS																																				
			A12.11.5.1 General	Geotextiles (non-woven) specified for the following applications: 1. Subsoil Drains 2. Gabion Boxes and Mattresses 3. Pavement Filter Layers 4. Geosynthetic Patching and Crack Sealing																																			
			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>9000</td><td>4400</td><td>3000</td><td>2400</td><td>1500</td></tr><tr><td>Puncture resistance (maximum), mm Test Method: SANS 13433: 2013</td><td>9</td><td>16</td><td>18</td><td>26</td><td>32</td></tr><tr><td>Water percolation (minimum), l/m²/s Test Method: SANS 11058: 2013</td><td>20</td><td>20</td><td>40</td><td>50</td><td>100</td></tr><tr><td>Tensile strength (minimum) kN/m Test Method: SANS 1525: 2013</td><td>50</td><td>25</td><td colspan="3">Not applicable</td></tr></table>	Property	GRADE					1A	1B	1C	2	3	Penetration load (CBR) (minimum), N Test Method: SANS 12236: 2013	9000	4400	3000	2400	1500	Puncture resistance (maximum), mm Test Method: SANS 13433: 2013	9	16	18	26	32	Water percolation (minimum), l/m ² /s Test Method: SANS 11058: 2013	20	20	40	50	100	Tensile strength (minimum) kN/m Test Method: SANS 1525: 2013	50	25	Not applicable		
Property	GRADE																																						
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Penetration load (CBR) (minimum), N Test Method: SANS 12236: 2013	9000	4400	3000	2400	1500																																		
Puncture resistance (maximum), mm Test Method: SANS 13433: 2013	9	16	18	26	32																																		
Water percolation (minimum), l/m ² /s Test Method: SANS 11058: 2013	20	20	40	50	100																																		
Tensile strength (minimum) kN/m Test Method: SANS 1525: 2013	50	25	Not applicable																																				

COTO CHAPTER 13: STRUCTURES

CH	SEC	CL	SUB-CLAUSE	SPECIFICATION DATA
13			STRUCTURES	
	A13.1		FOUNDATIONS	
		A13.1.3	GENERAL	
			A13.1.3.2 Channel preservation	
			a) Work on, over, in or adjacent to watercourses	
			<i>(i) General</i>	Flow of stream may only be disrupted for limited periods with approval of the Engineer and all affected parties.
			<i>(iv) Water quality requirements</i>	No water quality measurements are required.
			A13.1.3.4 Method Statements	No work to commence without the Engineer's approval.
			A13.1.3.5 Hold points	Before any concrete is cast.
	A13.2		FALSEWORK, FORMWORK AND CONCRETE FINISH	
		A13.2.3	GENERAL	
			A13.2.3.2 Hold points and approvals	Before any concrete is cast.
	A13.3		STEEL REINFORCEMENT	
		A13.3.3	GENERAL	
			A13.3.3.2 Hold points and approvals	Before any concrete is cast.

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.
	C1012	PROJECT SPECIFIC CONDITIONS	Refer to Part C3: Scope of Works, Section C: Environmental Management Plan, Clause C1012: Table 7/1. The Employer will consider monitoring and reporting in terms of a sustainability rating tool and the Contractor will be required to engage through its appointed DEO with the ECO to provide all the relevant information.
SECTION D		STAKEHOLDER AND COMMUNITY LIAISON AND TARGETED LABOUR AND TARGETED ENTERPRISES UTILISATION AND DEVELOPMENT	
	D1002	DEFINITIONS AND APPLICABLE LEGISLATION	
		D1002.01 Definitions	
		(r) Target Area(s)	For Targeted Labour: Mogalakwena 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. Targeted Labour appointed for the Community Development work shall not contribute towards the CPG for 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%) of 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 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	Refer to Section D (Part 1), clause D1009.
SECTION E		REQUIREMENTS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS	
	E1018	PROJECT SPECIFIC CONSTRUCTION REQUIREMENTS	<p>See Part C4, Site Information:</p> <ol style="list-style-type: none"> 1. Baseline Risk Assessment: Appendix 2. 2. Site Specific Health & Safety Specification: Appendix 3.

APPENDIX B1:

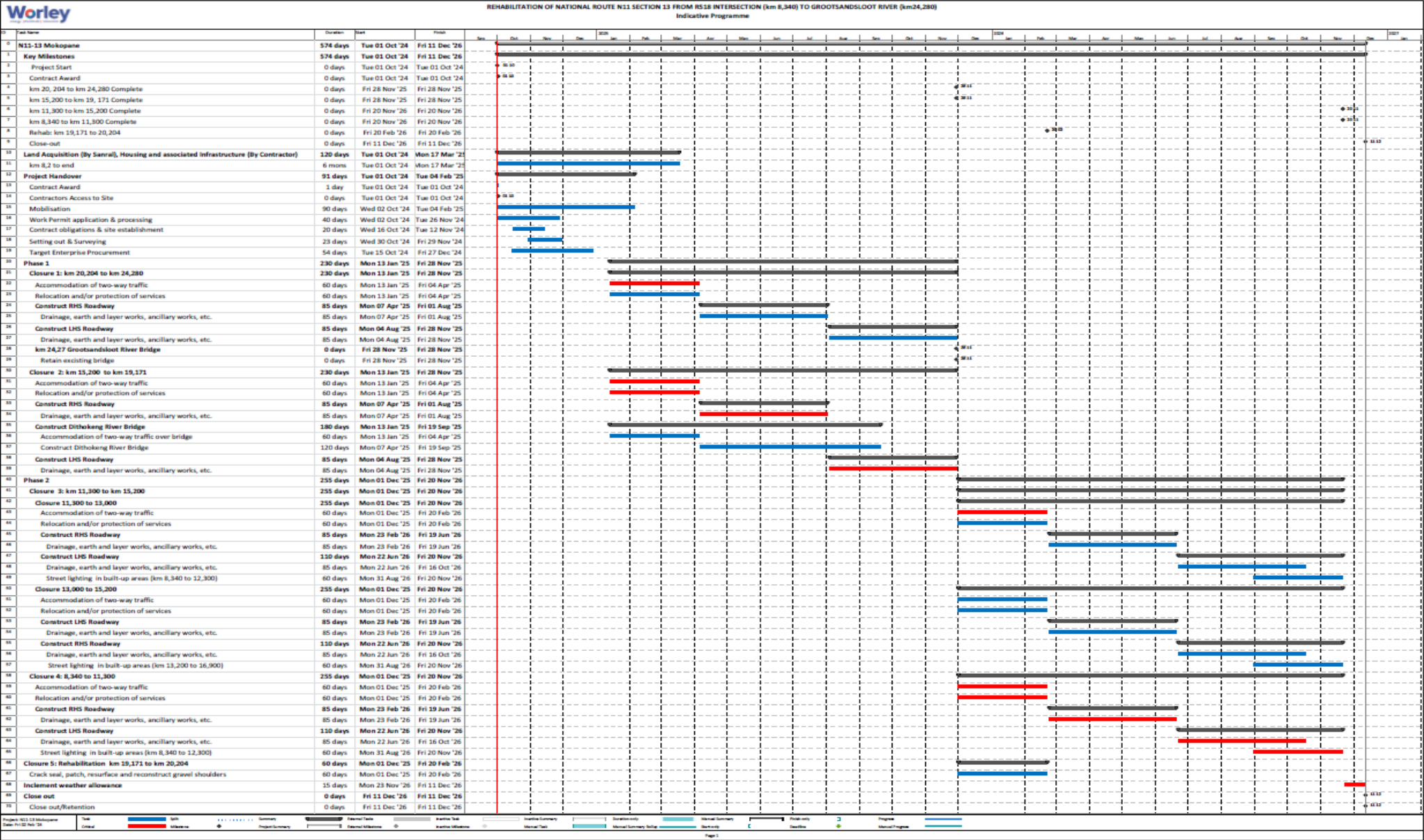
In drawing up the programme the contractor shall make allowance for the following:

- i) All special non-working days defined in the Contract Data.
- ii) The expected delays defined in clause A1.2.3.4: Extension of time resulting from inclement weather as a terminal float.
- iii) The following embargo hours and days:
 - Thursday before Easter Weekend and Tuesday after Easter Weekend.
 - Last working day of the building industry prior to the December holiday, and Christmas / New-year shut down period.
 - Day of school term closure in the Limpopo Province.
- iv) The following restricted working conditions:
 - Two-way traffic to be maintained at all times on Road N11-13 as shown on the Accommodation of Traffic Plans. One-way traffic with STOP/GO control/traffic signals will however be allowed during construction of the bridge approaches at the Grootlandsloot River (km 24,25), as well as for the Short-term Rehabilitation of the road section between km 19,171 and km 20,204 (forming part of the future N11-13X Bypass construction project).
 - Maintaining two-way traffic within the contract limits during the annual Christmas/New-year shut-down period in December and January.
 - Where construction work is carried out while two-way traffic is accommodated on one half of the road, construction work shall only be allowed on the other side of the roadway.
 - Work areas restricted to a maximum of two (2), each with a maximum length of 4,0 km and with 4,0 km minimum length between work areas. The minimum length between work areas may be relaxed by the Engineer to accommodate local conditions.
 - Full road width within a work area must be fully completed before a new work area can be occupied.
 - Stabilizing restrictions: Refer to clause A5.4.3.3.
 - Asphalt placing restrictions: Refer to clause A9.1.3.4.
 - Sealwork restrictions: Refer to clause A10.1.3.2.
 - Concrete placing restrictions: Refer to clause A13.4.7.11.
- v) Meeting the requirements of the Environmental Management Plan (EMPI).
- vi) The time needed for preparation and approval of the various mix designs specified in the relevant construction sections of the Scope of Works.
- vii) Close liaison in programming the works will be required with the contractor of a separate Community Development (CD) Contract for the construction of numerous local access roads in close proximity to the N11-13 main road over the total length of the N11-13 from Mokopane (km 1,310) to the Grootlandsloot River (km 24,280), of which construction will be overlapping with the N11-13 Road Contract. The purpose of these local access roads is to provide alternative access to properties currently having direct access onto the existing N11-13 and which access points will be closed with the upgrading of the N11-13 main road.
- viii) The following in connection with the separate CD Contract for the construction of the Local Access Roads mentioned in (vii) above, must be considered in drawing up the programme of work:
 - Local access roads are only situated up to approximately km 15,2 on this contract, as shown on the layout plans.
 - The main road (N11-13) shall preferably be constructed over the last section of the contract (km 15,2 to km 24,280) first to allow for the completion of the access roads between km 8,340 and km 15,2 under the CD contract, where it will not be affected by the main road construction at that stage.

- If the contractor of the N11-13 conventional road contract prefers that construction of the N11-13 main road be done simultaneously with the construction of access roads on the CD contract over certain sections, the first half of the main roadway shall be constructed on the opposite side of where the access roads are situated to keep existing direct access points from individual properties onto the N11-13 open until the access roads have been completed.
 - Construction on the CD contract may be affected by the requirement that land acquisition by SANRAL for construction of the local access roads over the total length of road from Mokopane (km 1,310) up to the Grootshoof River (km 24,280) may continue during the construction period of the N11-13 main road contract (from the R518 intersection to the Grootshoof River) for a maximum period of 6 months after the Start of this Contract.
- ix) The responsibility of the contractor for the provision of housing and associated infrastructure on site(s) negotiated by SANRAL with the local traditional leaders and / or the local municipality to be made available for the relocation of property owners affected by the new main road and cross-roads (excluding the local access roads), and the moving of affected households to the new site(s). (Also refer to clause A1.2.7.8).
- x) Installation of street lighting on sections of the N11-13 to be finalized on site where the road is crossing built-up areas, to be done by sub-contractors appointed by the main contractor, in co-operation with the main contractor. The design of the street lighting and associated works are included in the scope of works of the professional service provider appointed by SANRAL for the construction supervision of the contract. (Also refer to clause A1.2.7.7).

This initial programme shall realistically account for the forecast cashflow within the defined contract period as provided on Form D7: Schedule of Estimated Monthly Expenditure in Part T2 of Book 1. An illustrative programme is shown overleaf in **Figure 1/1**. The contractor shall not slavishly copy this programme, which is provided to illustrate that the required work can be realistically programmed within the contract period at the estimated cost. If an alternative contract period is offered, the contractor shall submit a separate programme with the alternative tender.

FIGURE 1/1: ILLUSTRATIVE PROGRAMME



APPENDIX B2:

1. Roadworks on the Main Road (N11-13)

Two-way traffic on Road N11-13 shall be maintained at all times during the duration of the project, with the exception of the roadworks required at the Grootssandsloot River Bridge (km 24,25) where the existing bridge is retained and Stop/Go or Traffic Light accommodation of traffic may be required. The same applies for the Short-term Rehabilitation of the section of road between km 19,171 and km 20,204 forming part of the future N11-13X Bypass construction. The existing road horizontal alignment (centre line) was off-set by approximately 2m to the right in order to accommodate two-way traffic on one existing lane and shoulder during the proposed phase 1 construction as described below. Construction of temporary deviations for the accommodation of traffic during the contract is not anticipated. The proposed construction sequence and accommodation of traffic in order to maintain two-way traffic on Road N11-13 at all times are shown on the Roadworks Drawings for the following situations:

- (a) Widening to single carriageway road with surfaced shoulders, without sidewalks, on both sides (km 10,000 to km 13,160 and km 16,620 to km 24,280):
 - a. Phase 1: Construct temporary shoulder widening on north-bound lane, including temporary lengthening of drainage structures. Construction of new south-bound lane and shoulder (including new drainage structures) while two-way traffic is accommodated on the existing north-bound lane and temporary shoulder widening.
Note: One-way Stop/Go traffic accommodation will be allowed at the Grootssandsloot River Bridge (km 24,25) during Phase 1.
 - b. Phase 2: Construction of new north-bound lane and shoulder (including new drainage structures) while traffic is accommodated on newly constructed south-bound lane.
 - c. One-way Stop/Go traffic accommodation will be allowed for the Short-term Rehabilitation of the section of existing road between km 19,171 and km 20,204 forming part of the future N11-13X Bypass construction.
- (b) Widening to single carriageway road with surfaced shoulder on both sides and paved sidewalks on one side (km 8,340 to km 10,000, km 13,160 to km 14,100 and km 15,820 to km 16,620) or paved sidewalks on both sides (km 14,100 to km 15,820):
 - (i) Phase 1: Construct temporary shoulder widening on north-bound lane, including temporary lengthening of drainage structures. Construction of new south-bound lane and shoulder or shoulder/sidewalk (including new drainage structures) while two-way traffic is accommodated on the existing north-bound lane and temporary shoulder widening.
Note: Between approximately km 13,0 and km 15,2 the new roadway is moved one lane width (3,7m) to the LHS to avoid a number of existing properties situated on the RHS of the existing road to be affected and owners to be relocated. Over this section the temporary shoulder widening for the accommodation of traffic must be constructed on the south-bound lane for the construction of the new north-bound lane and shoulder to be done first.
 - (ii) Phase 2: Construction of new north-bound lane and shoulder or shoulder/sidewalk (including new drainage structures) while traffic is accommodated on newly constructed south-bound lane, and vice versa for the section of road between km 13,0 and km 15,2 (see note in (i) above).

The following general conditions must be adhered to during construction:

- The number of entrances that may be provided into a working space shall be restricted to one, or as directed by the engineer.
- Construction vehicles will only be allowed to exit the construction area at the end of the section under construction, or as directed by the engineer.
- Flashing warning lights shall be erected at the start of a closure during night time for the entire construction period of each section.
- A flashing illuminated arrow board must be placed at the start of a closure at bridges for the construction of bridge balustrades and sidewalks.

2. Construction of Bridges on the Main Road (N11-13)

Two-way traffic shall be maintained at all times over the existing/new bridge structures during the construction of the bridges forming part of the project. The proposed construction sequence and accommodation of traffic in order to maintain two-way traffic over the following bridge at all times are shown on the Bridge Drawings and consist of the following:

a) Bridge 1170 over Dithokeng River (km 15,61): Demolish and replace existing:

- (i) Place temporary barrier and retain 2-way traffic over existing bridge. Refer to Dwg. No. BCD/B0270/14.
- (ii) Construct new culvert portion (11,2m wide) on southern side
- (iii) Place temporary barrier and relocate 2-way traffic over new culvert (top of concrete level)
- (iv) Demolish existing bridge
- (v) Construct balance of bridge
- (vi) Construct road fill over western side of bridge (excluding raised sidewalks)
- (vii) Place temporary barrier and relocate 2-way traffic over western side of bridge
- (viii) Place remainder of road fill
- (ix) Relocate 2-way traffic to centre of new bridge
- (x) Construct raised sidewalks and parapets
- (xi) Add asphalt over bridge; sequence to be determined by engineer on site

b) River Training and Scour Protection at Bridge 1170 over Dithokeng River (km 15,61):

As shown on drawings.

3. Works on Cross Roads/Streets

Whilst construction work on cross roads and streets are conducted, the following conditions must be adhered to:

Excavations shall be demarcated with temporary steel and/or concrete barriers at areas causing a safety hazard; else delineators can be used. At least one half of the road shall be kept open to accommodate traffic."

APPENDIX B3:

All reference to services in this clause shall also mean utility services as well as traffic monitoring devices such as Comprehensive Traffic Observation (CTO), Speed Measuring Device (SMD) and Weigh-in-Motion (WIM) stations.

Table 2/1 lists all known services on the site. Those requiring removal, realignment or temporary replacement **are indicated within the table**. However, before any work can commence the contractor shall verify the actual position of each service and bring to the attention of the engineer any service that is not recorded. As the contractor is not authorised to remove or replace these facilities he shall:

- i) Within the mobilization period (3 months), acquire from the service providers the lead times required to make the necessary arrangements for the protection, removal or relocation of services.
- ii) Give preliminary notice, in writing to the relevant service provider, that the services on the site will require removal or protection prior to works being carried out in the vicinity of each station. The contractor shall advise the service provider of
 - a) The number of services, their locations and station ID numbers and
 - b) The proposed dates when work will commence in the vicinity of each service.
- iii) In addition to the above preliminary notice, give the service provider 14 days written notice of the intention to commence work in the vicinity of each facility.
- iv) Upon completion of the work in the vicinity of each facility, the contractor shall notify the service provider, in writing, that work is complete, and the service may be reinstated.

Any delay resulting from the removal/replacement of a service shall not be the subject of a potential claim, unless the contractor can demonstrate that every effort has been made to timeously request and/or apply for the removal/replacement of the said service. In addition, the contractor shall be deemed to have employed the services of the service provider as a subcontractor for purposes of removing and/or replacing the relevant service.

TABLE 2/1: LIST OF KNOWN SERVICES

Chainage	Position	Service Type	Action	Service Provider
8.040 – 9.500	LHS	Overhead	Take notice of position, move if required	Telkom
9.500 – 9.600	LHS	Overhead	Take notice of position, move if required	Telkom
9.600 – 15.040	LHS	Overhead	Take notice of position	Telkom
13.240	Crossing	Overhead	Check minimum vertical clearance, raise if required	Telkom
15.450	Crossing	Overhead	Check minimum vertical clearance, raise if required	Telkom
15.720	LHS	Overhead	Move	Telkom
15.720 – 25.088	LHS	Overhead	Take notice of position	Telkom
18.760	Crossing	Overhead	Check minimum vertical clearance, raise if required	Telkom
9.860	Crossing	Overhead (MAD38/1)	Check minimum vertical clearance, raise if required	Eskom

10.100	Crossing	Overhead (MAD38)	Check minimum vertical clearance, raise if required	Eskom
13.260	Crossing	Overhead (STT143/8)	Check minimum vertical clearance, raise if required	Eskom
13.990	Crossing	Overhead (STT128/3)	Check minimum vertical clearance, raise if required	Eskom
14.250	Crossing	Overhead (STT125/1)	Check minimum vertical clearance, raise if required	Eskom
15.820	Crossing	Overhead (STT96)	Check minimum vertical clearance, raise if required	Eskom
18.230	Crossing	Overhead (POT/SND)	Check minimum vertical clearance, raise if required	Eskom
23.480	Crossing	Overhead	Check minimum vertical clearance, raise if required	Eskom
18.7	CTO	N1367	Take notice of position. Confirm on site.	Mikros Traffic Monitoring
13.220	1000 Ø Steel Pipe	Crossing N11	Take notice of depth	Mogalakwena Municipality
14.050	1000 Ø Steel Pipe	Crossing Intersection LHS	Take notice of depth	Mogalakwena Municipality
14.885	1000 Ø Steel Pipe	Crossing Intersection LHS	Take notice of depth	Mogalakwena Municipality
15.220	1000 Ø Steel Pipe	Crossing N11	Take notice of depth	Mogalakwena Municipality
15.740	600 Ø Steel Pipe	Crossing Intersection LHS	Take notice of depth	Mogalakwena Municipality
20.360	1000 Ø Steel Pipe	Crossing N11	Take notice of depth	Mogalakwena Municipality
12.130 – 12.160	Water Pipe 250mm Ø UPVC	Crossing Intersection	Take notice of position and depth.	Anglo Platinum
13.230 – 13.260	Water Pipe 250mm Ø UPVC	Crossing Intersection	Take notice of position and depth.	Anglo Platinum
14.860 – 14.890	Water Pipe 250mm Ø UPVC	Crossing Intersection	Take notice of position and depth.	Anglo Platinum
16.440 – 16.470	Water Pipe 250mm Ø UPVC	Crossing Intersection	Take notice of position and depth.	Anglo Platinum
18.305	Water Pipe 250mm Ø UPVC	Crossing N11	Take notice of position and depth.	Anglo Platinum
19.460 – 19.490	Water Pipe 250mm Ø UPVC	Crossing Intersection	Take notice of position and depth.	Anglo Platinum

The CTO service provider is:
Mikros Traffic Monitoring (Pty) Ltd
P O Box 6956
HALFWAY HOUSE
1685
Tel: (012) 804 1710 or 086 111 5393

Any cost of repairs, replacement and/or installation of the stations and equipment resulting from the contractor's negligence or unauthorised action shall be to the contractor's account.

The contact details for Telkom are as follows:

4 Beril Street
POLOKWANE
0699

Attention: Charles Badana
(Planning)
Cell: (081) 529 3955
Email: charlesb5@openseve.co.za

Attention: Martin Jansen van Vuuren
(Maintenance)
Cell: (081) 363 3231
Email: martinjvv@openseve.co.za

The contact details for Eskom are as follows:

43 Van Riebeck Road
MOKOPANE
0600

Attention: Collins Bopape
Cell: (083) 444 2153
Tel: (015) 491 6562

The contact details for Mogalakwena Municipality are as follows:

54 Retief Street
MOKOPANE
0600

Attention: Sydney Mofoko (Civil Services)
Tel: (015) 491 9603
(015) 491 9741

Attention: Enoch Manamela (Electric. Services)
Tel: (015) 491 9601

The contact details for Anglo American Platinum are as follows:

Attention: Bernard Meyer
Tel: (011) 373 6651
Cell: (083) 445 5605
Email: bernard.meyer@angloamerican.com

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. 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

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

COTO Section	Contents	Environmental Impacts				
		Pollution Type	Deformation of Landscape	Soil erosion	Alien Vegetation	Sensitive Areas
1.3	Contractor's Site Establishment and General Obligations	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland
1.4	Facilities for the Engineer	Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland
1.5	Accommodation of Traffic	Waste treatment Hazardous waste Water supply Spillage Storage Noise/lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland
1.6	Clearing and Grubbing	Waste treatment Hazardous waste Water supply Noise /lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Protection of indigenous vegetation Preserve topsoil	Within 200m of a watercourse or wetland
1.7	Loading and Hauling	Spillage Storage Noise/lights Dust control Exhaust fumes Washing waste	Turning circles Parking areas	Restrict access to sensitive areas	Protection of indigenous vegetation Preserve topsoil	Within 200m of a watercourse or wetland
3.1 -3.3	Drainage	Waste treatment Hazardous waste Water supply	Selection of site Preserve indigenous vegetation	Selection of site Preserve indigenous vegetation	Preserve indigenous vegetation Preserve topsoil	Within 200m of a watercourse or wetland

COTO Section	Contents	Environmental Impacts				
		Pollution Type	Deformation of Landscape	Soil erosion	Alien Vegetation	Sensitive Areas
		Spillage Storage	Preserve topsoil	Preserve topsoil	Management of weeds	
4.1 – 4.5	Earthworks and Pavement Layers: Materials	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland
5.1 – 5.5	Earthworks and Pavement Layers: Construction	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control	Selection of site Preserve indigenous vegetation Preserve topsoil Demarcate sensitive areas Maintenance of windrows	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland
8.1 – 8.9	Pre-treatment and Repair of Existing Layers	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control Storage of materials	Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil	Within 200m of a watercourse or wetland
9.1	Asphalt Layers	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control	Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil	Within 200m of a watercourse or wetland

COTO Section	Contents	Environmental Impacts				
		Pollution Type	Deformation of Landscape	Soil erosion	Alien Vegetation	Sensitive Areas
		Storage of materials				
10.1	Surface Treatments	Waste treatment Hazardous waste Water supply Spillage Storage Noise / lights Dust control Smoke control Storage of materials	Selection of site Preserve indigenous vegetation Preserve topsoil Turning circles Parking areas	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil	Within 200m of a watercourse or wetland
11.1 – 11.9	Ancillary Roadworks	Waste treatment Hazardous waste Water supply Spillage / Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland
13.1 – 13.14	Structures	Waste treatment Hazardous waste Water supply Spillage Storage	Selection of site Preserve indigenous vegetation Preserve topsoil	Selection of site Preserve indigenous vegetation Preserve topsoil	Preserve indigenous vegetation Preserve topsoil Management of weeds	Within 200m of a watercourse or wetland

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL N.011-130-2010/1R
FOR THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM R518
INTERSECTION (km 8,345) TO GROOTSANDSLOOT RIVER (km 24,0)

**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, subcontracting, 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 databases 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 the 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 subcontracting.

D1002.01 Definitions

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

a) Business Coaching

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

b) Community¹

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

c) Contract Participation

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

d) Contract Participation Goal (CPG)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, Subcontractors 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 10845-8:20SANS 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 6 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; or

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 Subcontractor in the performance of the Contract; and
- ii) who resides in the Target and Project Area(s); 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.

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

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.

- 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) Subcontractor

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 Enterprise

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

- i) an EME or QSE which is at least 51% owned by black people; or
- ii) an EME or QSE which is at least 51% owned by black people who are youth; or
- iii) an EME or QSE which is at least 51% owned by black people who are women; or
- iv) an EME or QSE which is at least 51% owned by black people with disabilities; or
- v) an EME or QSE which is at least 51% owned by black people who are military veterans; or
- vi) an EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships; or
- vii) a cooperative which is at least 51% owned by black people.

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 subcontract; and
- d. COIDA compliant prior to award of the subcontract 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.

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 subcontractors.

y) Target Group

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

z) Targeted Labour⁸

Persons:

- i) who are unemployed; and
- ii) who are then employed by the Contractor or a Subcontractor (including Targeted Enterprises) in the performance of the 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 Subcontractor'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 subcontracted 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.

cc) Training and Skills Development Programme

The programme which outlines how the Contractor intends to achieve the CSDG targets, as per Part C3, 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:

⁸ SANS 10845-7:2015, definition 2.12

- 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 subcontracting.

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) subcontract 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 and as agreed with the PLC to reflect new employment seekers in the labour market.

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

D1003.03 Targeted Enterprise Database

The Contractor shall, 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 agreed with the Contractor, and
- iii) for the PLC to alert prospective Targeted Enterprises that are not on the Preliminary Database of the opportunity.

Based on the market analysis and 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 subcontract tender or group of similar subcontract tenders are to be let for Targeted Enterprise work packages.

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

D1003.04 Contract Participation Goal (CPG)

Minimum of 30% of the Final Contract Value by the end of the contract to Targeted Enterprises.

The Final Contract Value for purposes of this clause, is defined in clause D1003.04.

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 (as defined in D1003.04). No bonus shall apply if either the Targeted Labour, Targeted Enterprises and/or any individual sub-targets for Target Groups are not reached.

b) CPP Penalties

Conversely, failure to reach either the CPG or any individual Target Group targets shall render the Contractor liable for a penalty as prescribed in clause 8.7 of the FIDIC Conditions of Contract unless there are compelling reasons why the target or sub-targets could not be achieved as stipulated in Section D1003.04 of the Specifications. Penalties for Targeted Labour and for Targeted Enterprises shall be calculated as follows:

$$\text{Penalty Targeted Labour} = 0.5 \times ((\text{TL} - \text{TG}) + \text{Sum} (\text{TL}_n - \text{TG}_n) - 1.2 \times \text{L dp})$$

Where:

n	=	Each lowest order subgroup of Targeted Labour stipulated in the Specification Data.
TL	=	Monetary value of the Targeted Labour calculated at the percentage stipulated in the Specification Data applied to the Final Contract Value (as defined in D1003.04).
TG	=	Cumulative monetary value of Targeted Labour employed on the contract by the Contractor and all Subcontractors.
L dp	=	Cumulative monetary value of black Disabled Persons employed on the Contract by the Contractor and all 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 subgroup 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 subclause 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 subclause 2.5 of the FIDIC Conditions of Contract.

Any Penalty payable shall be calculated on, and applied to, the Final Contract Value (as defined in D1003.04).

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 subcontracting, as well as its associated risks, shall remain the sole responsibility of the Contractor.

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

D1004 STAKEHOLDER AND COMMUNITY LIAISON AND SOCIAL FACILITATION

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

D1004.01 Purpose of Stakeholder and Community Liaison

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

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 7, 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 SANRAL 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 subcontracted 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's 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 maybe 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 subcontracting opportunities;
 - d. the project programme as it pertains to the employment of Targeted Labour and subcontracting of Targeted Enterprises;
 - e. Occupational Health and Safety precautions; and
 - f. any other information relevant to project Stakeholders and the affected Communities.
- (viii) Be well acquainted with the contractual requirements as it pertains to Targeted Labour employment and training.
 - (ix) Assist the PLC to establish and agree the criteria to be followed when selecting and employing Targeted Labour.
 - (x) Assist the Engineer and the Contractor in their resources and skills audits by providing a coordinating function between the Engineer, the Contractor, project Stakeholders, and the affected Communities.
 - (xi) Ensure that 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 into an employment contract which adheres to current and relevant Labour legislation.
 - (xiv) Ensure that each Targeted Labourer understands the conditions of his/her employment contract with an emphasis on the employment start date, end date and wages payable.
 - (xv) Identify and inform the Contractor of any relevant training required by the Targeted Labour.
 - (xvi) Attend all disciplinary proceedings to ensure that hearings are fair and conducted in accordance 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 into 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 6 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 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) Subcontracting of Targeted Enterprises

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

- i) Liaise with the Employer, Engineer and the PLC to structure and finalise the work packages to be subcontracted to Targeted Enterprises.
- ii) Liaise with the Employer, Engineer and PLC to determine the Targeted Enterprise Database criteria for the subcontracting of Targeted Enterprises.
- iii) Compile the Targeted Enterprise Database(s) for 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 subcontract 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 subcontracting.

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

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

D1006.01 Duties During the Design Phase

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

- a) obtain an understanding of the Community's skills, both academically and occupationally;
- b) obtain an understanding of the resources within the Community, i.e. Targeted Enterprise availability and capabilities;
- c) establish the CPG targets for Targeted Enterprises and Targeted Labour for inclusion of the 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 Subcontracting

- 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.

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 sub-contracted 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

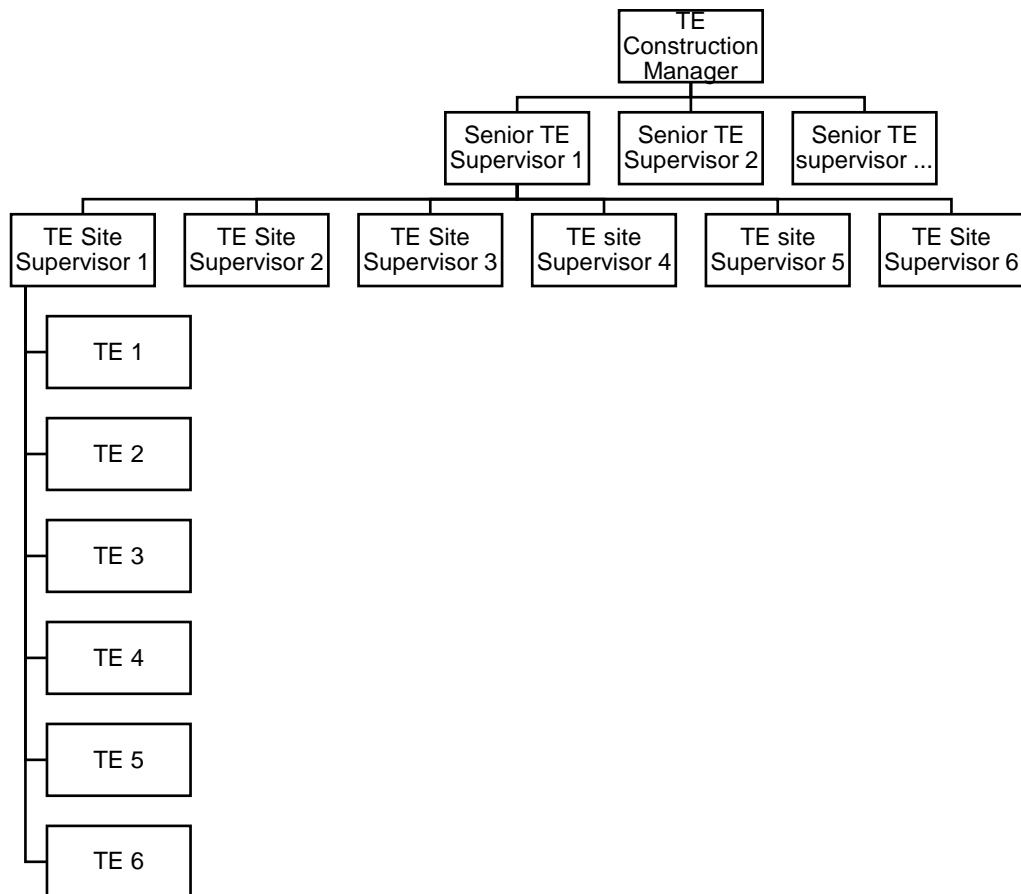
The TE Construction Manager shall have, as a minimum, a National Diploma: Management of Civil Engineering Construction Processes (NQF Level 5) or an equivalent qualification.

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 subcontracts;
- 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) 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 8), 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 6.8);
- 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 sub-contract 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 sub-contract agreements were entered into with the sub-contracted Targeted Enterprises. The PLC may also request insight into the Conditions of Sub-contract and Sub-contract Data.

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

A copy of each sub-contract 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 sub-contract 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 sub-contract work items.

Where the Contractor's sub-contract 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 sub-contract. 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 sub-contract applicable and shall be directed at enabling the Targeted Enterprise to achieve the successful execution and completion of its sub-contract.

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 sub-contract 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 sub-contract 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 have been given by the Contractor or the Engineer, within 21 calendar days after his 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) Removal of trees.
- d) Provision of traffic control facilities.
- e) Management of traffic control facilities and traffic safety as part of the accommodation of traffic.
- f) Construction and clearing of drains.
- g) Installation of prefabricated culverts including inlet and outlet structures.
- h) Concrete channelling and concrete linings for open drains.
- i) Construction of concrete paving, kerbs and channels.
- j) Construction of small concrete and other structures.
- k) Construction of concrete walkways.
- l) Pitching, stonework and protection against erosion.
- m) Construction of gabions.
- n) Patching and repairing edge breaks.
- o) Erection of guardrails.
- p) Landscaping.
- q) Fencing.
- r) Road signs.
- s) Road markings.
- t) Finishing the road and road reserve.
- u) Site Security Services.
- v) Haulage of materials
- w) Supply of plant.
- x) Supply of fuel.
- y) Specialised subcontract work such as:
 - i) Laying of asphalt using asphalt pavers.
 - ii) Structural concrete such as culvert and bridges.
 - iii) Crushing of materials.
 - iv) Precast manufacture.
 - v) Batch plant erection and operations.
 - 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. Side drains.
- b. Clearing and grubbing.
- c. Construction and clearing of drains.
- d. Slurry application.
- e. Raising of guardrails.
- f. Segmented concrete block paving.
- g. Kerb installation.

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.

c) Accreditation of the Training Service Provider

The Training Service Provider entity shall be accredited, and have in its employ Practitioners, Assessors and Moderators whom 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.

d) 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.saq.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 the affected Communities, the Engineer shall inform the PLC of the Contract's training limitations, as well as of the training that could be undertaken through the Contract. Trainees from the Community shall be identified through the Community structures, 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.

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 co-operate 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

A separate Community Development (CD) project was identified for the communities in the vicinity of Road N11-13, entailing the construction of Local Access Roads to restore access to properties currently having direct access onto the main Road N11-13 and which access points will be closed with the upgrading of the N11-13 main road. This CD contract will go out on tender as a separate contract to be executed in close liaison with the conventional N11-13 Road contract and with contract periods overlapping. No other CD projects will be applicable to the N11-13 conventional road contract.

D1013 MEASUREMENT AND PAYMENT

Item	Unit
D10.01 Target Group Participation	

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

Note:

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

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

(a)	Cost of liaison, social facilitation and PLC support	Prime Cost (PC) Sum
(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
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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 subitem 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 subitem 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 subcontractors 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 actually 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 subcontractors, which are not provided for in other pay items.

The Lump Sum tendered under sub-item D10.05(c) is for fluctuation of the Targeted Enterprise sub-contractor rates in excess of the contractor's tendered rates, for work not paid under items D10.05(a). Payment of the Lump Sum shall be on a pro-rata basis to provide compensation for the fluctuation between the tendered rates of the Main Contractor and that of the Targeted Enterprise subcontractors until the Lump Sum is depleted. Any costs incurred due to fluctuation in tendered rates more than that tendered for under sub-item D10.05(c) will be for the Contractor's account. Sub-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 subcontractors.

The Lump Sum tendered under sub-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 pro-rata 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 sub-item D10.05(d) will be for the contractor's account.

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

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 N.011-130-2010/1R
FOR THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM R518
INTERSECTION (km 8,345) TO GROOTSANDSLOOT RIVER (km 24,0)

**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)
COVID-19 Compliance Officer	SECTION 8(2)(i) & (j) Disaster Management Act
Health and Safety Representative	OHS Act 17(1)
Nominated Health and Safety Committee Member	OHS Act 19(3)
Contractor (Sub-contractor)	CR 7(1)(c)(v)
Construction Manager (must be registered with the SACPCMP)	CR 8(1)
Alternate Construction Manager	CR 8(1)
Assistant Construction Manager	CR 8(2)
Health and Safety Officer (must be registered with the SACPCMP)	CR 8(5)
Construction Supervisor	CR 8(7)
Assistant Construction Supervisor	CR 8(8)
Risk Assessor	CR 9(1)

Appointment	Legal Reference
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, SANRAL requires that a Traffic Safety Officer be appointed.

It is a requirement that The Principal Contractor shall provide SANRAL 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 an exit medical surveillance program, 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
- COVID-19 Management Plan.

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 SANRAL 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 **N.011-130-2010/1R FOR THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM R518 INTERSECTION (km 8,345) TO GROOTSANDSLOOT RIVER (km 24,0)**, which must be adhered to in addition to minimum legislative requirements. The **Site-Specific Health and Safety Specification** undertaken in terms of construction regulation 5(1)(f) is attached in Part C4: Project Information, Clause C4.14 as **APPENDIX 3**.

The **Baseline Risk Assessment** undertaken in terms of construction regulation 5(1)(a) to identify the operational risks to be addressed by the project specific health and safety specification is attached in Part C4: Project Information, Clause C4.14 as **APPENDIX 2**.

a) Site Specific Risks & Hazards

The following is a list of activities, hazards and risks identified which forms the Baseline Risk Assessment for the project prepared by the Client in terms of Construction Regulation 5(1) (a):

Risks associated for identified activities and hazards:

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	<u>Risk Rating</u> High Medium Low
Site establishment	Extreme temperatures; Pesticides, herbicides, dust. Snakes, bees, spiders, vermin (rats & mice); Portable electrical equipment;	Heat exhaustion; Dehydration; Poisoning; Fatality / Serious health effect; Silicosis; Electrical shock;	M

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	Risk Rating High Medium Low
	Electrical hand tools; Lifting equipment; Aggrieved members of the public.	Personal Injuries; Falling objects; Strikes / riots	
Security	Aggrieved members of the public; Uncontrolled people	Protest Riots Theft	M
Loading / Unloading of materials / plant & equipment from trucks	Lifting equipment; Inexperience operators; Inexperienced workers;	Material / plant falling from height; Operator losing control; Employees under/close to suspended loads.	M
Transportation of personnel / materials	Overloaded vehicles; Transportation of workers in vehicles not designed to transport people; Transporting vehicle defective / not roadworthy	Operator losing control of vehicle; Vehicle overturning; Vehicle accidents; Fatality; Serious injuries	H
Erection of temporary site offices / Laboratory	Extreme temperatures; Pesticides, herbicides, dust, cement; Snakes, bees, spiders, vermin (rats & mice); Portable electrical equipment; Electrical hand tools; Lifting equipment; Temporary works; Aggrieved members of the public.	Heat exhaustion; Poisoning; Fatality / Serious health effect; Silicosis; Electrical shock; Personal Injuries; Falling objects; Strikes / riots	M
Working with and handling of hazardous / flammable / toxic materials	Hazardous, flammable and toxic substances	Chemical burns; Fire; Serious injuries; Fatalities	M
Disposal of waste materials	Hazardous waste	Environmental pollution Re-use of containers can have serious health effect on people or fatal.	H
Traffic accommodation / calming	Public vehicles; Extreme temperatures Stop & Go	Employees run over by public vehicles – serious injuries / fatalities Heat exhaustion Public not adhering to stop & go signals / try to bypass stop & go – fatality / serious injuries / vehicle accidents.	H
Working in elevated positions - Working at heights, on slopes, next to excavations, on trucks.	Defective / Inadequate equipment; Improper use or non-use of fall protection equipment; Environmental conditions – rain / strong wind, lighting; Live electrical power lines; Suspension trauma.	Inadequate protection of employees against falls; Electrical Shock; Electrical arching; Slippery work surfaces; Fatality / serious injuries;	H

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	Risk Rating <div>High</div> <div>Medium</div> <div>Low</div>
Stockpiling	Material falling from stockpile	Serious personal injuries; Material damage	M
Operations involving Noise	Noise	Noise induced hearing loss	M
Operations involving Vibration	Vibration	Damage to joints, muscles, circulation and sensory nerves.	M
Working above / near water environments	Working at heights Water environment	Drowning	M
Working near existing services – overhead/underground power cables; telecommunication cables	Electricity	Electrical Shock; Electrical arching; Fire; Burns Fatality Serious injury	H
Working with portable electrical equipment – grinders, circular saws, generators	Electricity Electrical tools Portable electrical equipment	Electrical shock Cuts Personal injuries	M
Lifting / Lowering operations	Elevated objects Lifting machines Improper rigging Electrical cables	Lifting machine / crane overturning; Falling objects Dropped loads Strong winds Loads striking personnel, vehicles or equipment. People working underneath High voltage power lines may arch onto crane boom.	H
Driving and operation of construction vehicles and mobile plant	Distracted drivers; Recklessness; Impaired driving; Poor visibility; Poor road conditions; Unsecured loads; Uncontrolled vehicle entry; Equipment failure; Public vehicles; Uneven ground surfaces	Fatalities; Serious injuries; Crashes; Vehicles, plant and equipment damage; Workers not seen by operators; Workers working too close to mobile plant and vehicles; Construction vehicles & mobile plant not road worthy / defective; Roll over of construction vehicles / plant.	H
Excavation work	Unstable ground Underground electrical cables; Underground pipelines; Excavation equipment, construction vehicles & plant.	Cave-ins; People falling into excavation; Workers buried in excavation due to cave-ins; Construction vehicles / plant falling into excavation; Fatalities; Serious injuries	H

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	Risk Rating High Medium Low
Use of explosives	Explosives; Flying debris	Fatality; Serious Injuries	M
Gabion work	Manual handling Slopes Slippery Rocks	Personal injuries Trips, Slips & Falls	M
Work adjacent or in proximity of railway lines	Trains	Working too close to railway track can cause train draft to suck workers under trains. People falling onto or in front of trains while working above railway track.	H
Work adjacent or near traffic	Public vehicles	Workers not attentive to approaching vehicles. Drivers not slowing down to indicated speed limit. Drivers losing control of their vehicles.	H
Temporary works – Form work & support work	Temporary works	Falls from height; Collapse of temporary work overloading	H
Demolition work	Demolition equipment Flying debris Explosives;	Fatality; Serious Injuries; Damage to equipment; Damage to public assets	H
Work adjacent to public property	Construction plant and equipment; Excavation activities; Demolition activities;	Injury to public persons; Damage to public property and assets;	H
Protection of public H&S	Unprotected temporary works; Stockpiles; Incomplete structures.	Public persons accessing construction area, stockpiles and incomplete structures. Fatality / Serious injury to public persons	H
Welfare facilities – drinking water; eating facilities; sanitary facilities	Water not suitable for human consumption; Shortage of water; Hazardous substances; Environmental impact.	Serious health effects; Dehydration Environmental pollution	M
Working in the environment	Bees Snakes Spiders Lighting Strong winds Heavy rain Hot/cold conditions	Poisoning; Fatality / Serious health effect; Electrical shock / burns; Personal Injuries; Slips; Drowning; Heat exhaustion; Dehydration;	M
Working with compactor	Noise induced hearing loss Employees can be bumped and injured by machine Sprain and strain injuries	Serious health effects Personal Injuries	H

<u>Activity</u>	<u>Associated Hazards</u>	<u>Associated Risks</u>	<u>Risk Rating</u> <div>High</div> <div>Medium</div> <div>Low</div>
Employees in the workplace / work area	Hazardous biological agents	Serious health effects; Fatality; Pandemic; Epidemic Spread of the COVID-19 causing: Production loss, Severe respiratory infections, Pneumonia, Multi Organ failure, Fatality.	H
Infected work surfaces	Coughing Sneezing Communication between employees (spittle) Touching of shared work surfaces	Spread of the COVID-19 causing: Production loss, Severe respiratory Infections, Pneumonia, Multi Organ failure, Fatality.	H
Sick employees coming to work	Close contact Coughing Sneezing Communication between employees (spittle) Touching of shared work surfaces	Spread of the COVID-19 causing: Production loss , Severe respiratory Infections, Pneumonia, Multi Organ Failure, Fatality.	H
Transportation of staff with company transport	Close contact Coughing Sneezing Communication between employees (spittle) Touching of shared work surfaces	Spread of the COVID-19 causing: Production loss, Severe respiratory Infections, Pneumonia, Multi Organ Failure, Fatality.	H

b) **Daily Site Attendance Register**

The Principal Contractor shall keep a daily site register so as to be able to identify the entire Contractors personnel on site in case of an emergency or evacuation situation. The attendance register must include permanent as well as temporary workers working on the site.

All contractors shall report to security/reception upon arrival at site. The Principal Contractor will only grant first time access to work on the site if all required documentation has been provided by the contractor and has been approved by the Principal Contractor.

All site visitors, suppliers and any new contractors shall report to security/reception upon arrival at site. All visitors need to sign an attendance register when visiting the site. Visitors include all persons which are not permanently working on the site but excludes temporary site workers. Visitors must undergo site induction training before they are allowed on site to make them aware of the site dangers.

c) **Site Specific Organogram**

The Principal Contractor shall provide a site-specific organogram together with applicable legal appointments.

d) **Cost Base Estimate**

The Principal Contractor must prepare and submit a Cost Base Estimate for EHS aspects, these may include but not limited to the following:

- HSE Resourcing
- Medical Examinations - Medical certificate of fitness for each CONTRACTOR worker on the project, these medical can only be done by an Occupational Health Practitioner and cost vary
- Notices & Signs
- Competency training e.g. working at heights, working in confined spaces
- First aid kits and /or equipment
- Training & Awareness material & posters
- Ad hoc incident/accident investigations
- Personal Protective Ware & Equipment (risk based) for employees plus visitors
- Hard copies of latest Legislation
- Fines & penalties
- Site establishment
- Inductions
- COVID-19 Protocols & PPE
- Spill kits
- Storage for workers personal belongings
- Printers & Laptops
- Paper
- Confined Spaces (tools & equipment for monitoring and detection)
- Working at heights (rescue equipment and training)

e) **Site Inspections and Audits**

SANRAL reserves the right to carry out or have carried out by a third party any audits and/or inspections it considers necessary during the contract duration. These audits may take place at the Site or, where relevant, on the premises of the Principal Contractor.

All information regarding the deviation, the rectification and remedial actions resulting from inspections and audits shall be captured on a Deviation Register for tracking and close-out. The Principal Contractor is responsible for the project's Deviation Register and will require from Contractors Health and Safety personnel to provide or capture the necessary information accordingly.

	Conducted by	Construction Pre-Start	Daily	Weekly	Monthly
Contractors Site Inspection: Construction Manager/ Assistant Construction Manager, Safety Representatives and Health and Safety personal	Contractor		X	X	X
Engineer Inspections: Project Manager, Inspectors, Health and Safety staff	Contractor		X	X	
Contractor Audit:	Contractor				X
SANRAL OHS Agent Audits	Pr.CHSA				X
PTO			X		

			According to schedule		
Contractor Health and Safety Management Systems Audit: Contractor Safety Officer	SANRAL	X			

f) **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.

g) **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.

h) **Training and Competency Register**

The Principal Contractor will maintain a training and competency register (matrix) that will indicate all current information / competencies of all employees. This register is to be made available to the appointed competent person for audit and inspection purposes as required. Each employee will also have a personal dossier that will contain all relevant information such as:

- Copy of ID.
- Legal appointment letters with relevant proof of training and or competencies.
- Medical fitness certificate.
- Proof of other relevant training such as site-specific induction.
- Proof of PPE issued.

Records will be kept at the site office and will be available at all times.

i) **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.

j) **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.

k) **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.

l) Lifting Operations

The Principal Contractor must prepare a lifting plan, checked and submitted for authorization by the site appointed Construction Manager & Health and Safety Officer prior to any lifting operation and formally communicated to all persons undertaking the work.

The Principal Contractor must ensure that a competent operational leader is formally appointed to supervise each lifting operation. All lifting plans must clearly define the specific roles and responsibilities for each person involved (e.g.: crane drivers, lifting coordinators and riggers) and must be checked and issued prior to lifting operation. Clear communication channels must be formally established and maintained between everyone involved in a lift with only authorised person giving instruction to the operator.

All lifting equipment and accessories must have valid manufacturers certificates or thorough examination records and be uniquely identified, marked with the safe working load, listed in a register and subject to formal regular inspection and shall have valid certificates from a competent authority. Inspection before use by the operator is mandatory.

m) 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.

n) 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.

o) 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.

p) 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.

q) Cranes (When applicable)

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.

r) **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.

s) **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.

t) **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.

u) **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.

v) **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.

w) **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.

x) **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.

y) **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.

z) **Confined Space Work & Tunnelling (When applicable)**

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.

aa) **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.

bb) **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.

COVID-19 Specific Requirements

The Principal Contractor must focus on the following Pre-Construction Start-up

- a) The Principal Contractor must adapt the COVID-19 protocols required and taking into account the specific circumstances of the workplace.
- b) The Principal Contractor must focus on the identification of different exposure level, high contact activities and identification of vulnerable workers e.g. immunocompromised employees and employees 60 years and above and special measures for their protection, including protection against unfair discrimination or victimization
- c) The Principal Contractor must prepare a COVID-19 Management Plan and submit to SANRAL

Facilities

Principal Contractor must ensure that sanitizers must be one that has at least 70% alcohol content and is in accordance with the recommendations of the Department of Health. The Principal Contractor must ensure there are sufficient quantities of hand sanitizer based on the number of workers or other persons who access the workplace at the entrance of, and in, the workplace which the employees and other persons.

The Principal Contractor must ensure that there are:

- adequate facilities for the washing of hands with soap clean water available on site
- only paper towels are provided to dry hands after washing
- the use of fabric towelling is prohibited the workers are required to wash their hands and sanitize their hands regularly while at work
- the workers interacting with the public are instructed to sanitize their hands between each interaction with public surfaces that employees and teams come into contact with are routinely cleaned and disinfected.

Provision of such facilities for safekeeping to be accompanied with a procedure which includes:

- Employees should avoid bringing personal items to site.
- Food bought from home must be placed in an enclosed container, packet, and returned home for cleaning.
- Do not share any food or water.
- Training and awareness to address the importance of good hygiene practice.
- Apart from extra clean personal clothing no other personal belongings allowed on site except if kept in area provided by the Principal contractor or in the designated works area.
- Employees should also be required to stay on site once they have entered it and avoid using local shops.
- Consider increasing the number or size of facilities available on site if possible, especially depending on the amount of employees currently and taking into account the social distancing requirements of 1.5m
- The capacity of each rest area should be clearly identified at the entry to each facility, and where necessary attendants provided to supervise compliance with social distancing measures.
- Break times should be staggered to reduce congestion and contact at all times.
- Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced.
- Frequently clean surfaces that are touched regularly.
- Hand cleaning facilities or hand sanitizer should be available at the entrance to any facility where people eat and should be used by employees when entering and leaving the area.
- All rubbish should be put straight in the bin and not left for someone else to clear up.
- Tables should be cleaned between each use.
- Crockery, eating utensils, cups etc. should not be used unless they are disposable or are washed and dried between use.

Principal contractor must ensure that social distancing measures are implemented through supervision in common areas.

Accommodation Arrangements

Where accommodation is provided by the Principal Contractor/sub-contractor, factors to be considered in the procedure include, inter alia:

- Density of occupants to allow for adequate social distancing (minimum 1.5m) in sleeping and dining quarters;
- Restriction on the number of persons using the same sanitary/hygiene facilities;

- Provision of dedicated crockery and cutlery for each occupant, together with a procedure for effective cleaning and safe storage of same and a prohibition on the sharing of utensils;
- Dedicated facilities for safekeeping of personal belongings and abovementioned utensils for each person. Such facilities are to allow for total segregation of belongings and must be easy to sanitize. Provision of such facilities for safekeeping to be accompanied with a procedure for the use and sanitizing of the storage facility to reduce the risk of cross-contamination
- Facilities for accommodation provided by the contractor to have in place stringent procedures for personal hygiene, ongoing maintenance of sanitizing and social distancing, and
- Additional rules to include a prohibition on the sharing of clothing, towels and other personal belongings, as well as the laundering of clothing for multiple persons at the same time.
- Handwashing / Sanitizing stations to be available at contractor accommodation.
- Employees to ensure washing and disinfecting of hand before entering the accommodation.
- Sealable bags provided to each person for keeping PPE requiring laundering, such as gloves and overalls, to ensure each person's PPE is contained and not cross contaminate other employees PPE.

Deep Cleaning at Construction Site

The Principal Contractor must ensure that the construction site, particularly in communal areas such as security access control room, site office, working areas, ablution facilities, welfare facilities, eating facilities, hand washing facilities and confined spaces are disinfected and cleaned, regularly, in addition, this must include, all touch points such as taps, toilets flushers and seats, door handles and push plates, handrails, lift and hoist controls, machinery and equipment controls, eating area chairs, telephone equipment, keyboards, photocopiers and other office equipment.

Employees that are appointed to conduct deep cleaning must be trained on all the Health and Safety protocols, including the Handling of Hazardous Chemical Substances, the Material Safety Data sheet and must be provided with the correct PPE and supervision in accordance with Regulations for Hazardous Biological Agents 4 Information and Training.

Waste Disposal

Principal Contractor must ensure that all waste is disposed in the correct and required manner. All disposal masks and gloves are biological waste and must be disposed

- Separate waste bins (must be labeled) for used PPE (gloves, masks) must be supplied by the Principal Contractor.
- Dust masks and Gloves to be disposed as hazardous waste
- Waste must be disposed at a registered waste facility.
- Proof of waste disposal must be kept for record keeping.
- Employees handling waste must comply to the PPE requirements before handling such.

Personal Protective Equipment (PPE)

Principal Contractor must ensure that all accessing the Construction site will be required to sanitize or wash hands at the entry and exit point of the site. The Principal Contractor is responsible to issue the appropriate PPE as per the job description and according to HIRA critical task activities, with a minimum of two cloth masks which complies with the requirements set out in the Guidelines issued by the Department of Trade, Industry and Competition. Before construction, the Principal Contractor must ensure that he has made arrangements for PPE to be available at site with construction start-up. The Principal Contractor must enforce that:

- No employees are allowed to share any of their PPE.
- PPE must be worn at all times on site.
- PPE such as face masks is required for all employees or member entering the site, the said masks are to be worn on site.
- Masks should fit properly, completely covering the face from bridge of nose to chin.
- Always clean hand before putting on or removing face masks.
- Only touch the cord or elastic at the back when removing the masks.

- Principal Contractor must ensure that a PPE procedure are implemented for the usage and the disposing (if applicable) of PPE.
- Principal Contractor must ensure that the employees are informed, instructed, trained how to use the mask correctly.

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

**CONTRACT SANRAL N.011-130-2010/1R
FOR THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM R518
INTERSECTION (km 8,345) TO GROOTSANDSLOOT RIVER (km 24,0)**

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

SANRAL
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD



Reg No: 1998/000084-30
**BUILDING SOUTH AFRICA
THROUGH BETTER ROADS**

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

STANDARD ELECTRICAL SPECIFICATIONS

**REVISION 00
01 August 2022**

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PART C3: STANDARD ELECTRICAL SPECIFICATIONS

C3.1. REGULATIONS

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in the scope of works.

The supply and installation of the work shall be in agreement with the Conditions of the Contract with special attention to the following in particular:

- a) The Occupational Health and Safety Act no. 85 of 1993, as revised,
- b) SANS 10142-1, "The Wiring of Premises Part 1: Low Voltage Installations".
- c) SANS 10098-1 and 10098-2, "Public Lighting".
- d) Government notices.
- e) The local Municipal By-laws and any special requirements of the local supply authorities.
- f) The local Fire Office Regulations.
- g) Telkom Regulations
- h) Any special conditions specified in this specification.

It must be clearly understood that, where differences in the Generals occur as stated in (a), (b), (c), (d), (e) and (f) or where additional requirements are required, the higher General requirements shall apply.

In the event of any contradiction between (a), (b), (c), (d), (e) and (f), then (f) shall be accepted above the rest.

Where any required by-law or regulation, which applies or becomes applicable during the execution of the electrical installation, is in conflict with the stipulation of the document, the former must have preference in all cases. The contractor must immediately notify the Engineer of such discrepancies.

The contractor may not make any alterations to the installation before written sanction to do so is received from the Engineer or its representative.

NOTICES AND FEES

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

On production of the official account, only the net amount of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Client.

The Contractor shall issue all notices and make the necessary arrangements with the Supply Authority, the local municipality, SANRAL and any other authority as may be required with respect to the installation.

TESTS

After completion of the works and before first delivery is taken, a full test will be carried out on the installation for a period of 30 days to determine the satisfactory working thereof. During this period the installations will be inspected, and the contractor shall make good, to the satisfaction of the Engineer, any defects which may arise.

The contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

Tests as stipulated in the "Occupational Health and Safety Act no. 85 of 1993, as amended, and in the "Code of Practice for the Wiring of Premises" SANS 10142-1 (as amended), must be done. These test report forms must be filled in fully and correctly in ink, signed by the installation electrician and handed to the Engineer or its representative.

Tests must be conducted on site after the whole installation is complete, unless written the Engineer to the contrary grants permission. The tests must include a full-load test for an adequate period to ensure the satisfactory working of the installation. If negative test results are obtained, faults must be rectified and tests again done.

The contractor must supply all testing apparatus, correctly calibrated.

All tests shall be carried out in conjunction with and to the satisfaction of the Supply Authority and in the presence of the Engineer or his representative. The contractor shall make all arrangements for testing and inspection, the costs thereof being included in the Tender Price.

Each length of cable shall be tested for insulation and polarity by means of a 1000 Volt insulation tester designed for that purpose. In the case of underground cables this shall be done before back filling. In addition, the earth-loop impedance of each conductor earth electrode shall be measured. The earth resistance shall be tested by means of an approved instrument.

"Danger" notices shall be displayed at remote ends of cables under test.

The contractor shall ensure that the installation is completed in every respect and that there are no major defects prior to notifying the Engineer (in writing) for a first delivery inspection. The Engineer will accept zero minor defects during the final inspection. Should the number of defects be exceeded at the final inspection then the Engineer will terminate that inspection and request that the contractor arrange an additional final inspection.

MAINTENANCE OF INSTALLATIONS

With effect from the date of the First Delivery Certificate the contractor shall at his own expense undertake the regular servicing of the installation during the Defects Liability Period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installation is not in working order for any reason for which the contractor is responsible, or if the installation develops defects, the contractor shall immediately, upon being notified thereof, take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installation otherwise prove unsatisfactory during the said period the contractor shall, if called upon by the Engineer or the Employer, at his own expense replace the whole of the installation or such parts thereof as the Engineer or the Employer may deem necessary, with apparatus specified by the Engineer or the Employer.

SCHEDULE OF FITTINGS

In all instances where schedule of light, socket outlet and power points are attached to or included on the drawings, these schedules are to be regarded as forming part of the specification.

QUALITY OF MATERIALS

Only materials of first class quality shall be used and all materials shall be subject to the approval of the Employer. Specifications for various materials to be used on this Contract are attached to and form part of this specification.

Wherever applicable the material is to comply with the relevant South African National Standards, specifications, or to British Standard Specifications, where no SANS Specifications exist.

Materials wherever possible, must be of South African manufacture.

WORKMANSHIP AND STAFF

Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out.

The workmanship shall be of the highest grade and to the satisfaction of the Employer.

All inferior work shall, on indication by the Employer's inspecting officers, immediately be removed and rectified by and at the expense of the Contractor.

CERTIFICATE OF COMPLIANCE BY AN ACCREDITED PERSON

On completion of the electrical installation the contractor shall complete the Certificate of Compliance for the electrical Installation in the form of Annexure 1 as described in the Occupational Health and Safety Act no. 85 of 1993, as amended, and obtainable from the Department of Labour of South Africa. This form must be handed to the Engineer or its representative.

CABLE SLEEVE PIPES

Where cables cross under roadways, other services and where cables enter buildings, the cables shall be installed in high-density polyethylene pipes or heavy duty class 34 uPVC sleeves with a wall thickness of not less than 1,5mm thick and a smooth finish inside.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed with a draw wire inserted.

Cable sleeves shall be provided where shown on the drawings and wherever necessitated by installation conditions. Sleeves shall be of steel water pipe when traversing railways sidings, heavy duty tarmac, loading areas, etc.; they shall be of other approved materials where traffic loading is lighter. Cable sleeves shall not be less than 100mm internal diameter unless specifically noted otherwise in the Project Specification; they shall be of continuously smooth bore with no snags or hitches en route and shall encompass only easy sweeping bends permitting the easy passage of the heaviest cable involved. No cable sleeve shall exceed ten meters without a manhole draw position, unless authorized in writing by the Engineer.

Cable sleeves entering a floor cable duct shall be swept gently to the level of the bottom of the trench so that cables do not kink at entry to the trench. Cable sleeves brought to switchboards or distribution boards having no associated floor cable ducts, or brought to rising cable ducts shall be swept up easily so that the cable emerges vertically from the floor.

In cases where the emerging cable is exposed to view, wooden dams shall be fitted round the cable at the top of the sleeve, and the floor screeded completely round the cable. The outer ends of cable sleeves entering buildings shall, after drawing in the cables, be water proofed with cable compound of low melting point.

Sweeping bends shall be installed where sleeves enter distribution boards. Sharp sleeve bends are not acceptable.

Cables attached to external walls must be placed in a recessed galvanized pipe from 300mm below ground level into the meter box or into roof spaces complete with brass bushes at both ends.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

ELECTRICAL EQUIPMENT

All equipment and fittings supplied must be in accordance with the attached specifications, suitable for the relevant supply voltage, and frequency and must be approved by the Employer's representative.

DRAWINGS

The drawings generally show the scope and extent of the proposed work and shall not be held as showing every minute detail of the work to be executed.

The position of power points, switches and light points that may be influenced by built-in furniture must be established on site, prior to these items being built in.

BALANCING OF LOAD

The Contractor is required to balance the load as equally as possible over the multiphase supply.

SERVICE CONDITIONS

All plant and equipment shall be designed for the climatic conditions appertaining to the service.

LIGHT FITTINGS AND LAMPS

The installation and mounting of luminaires must conform to the manufacturer's requirements. All fittings to be supplied by the Contractor shall have the approval of the Engineer / Employer. The light fittings must be of the type specified in the Schedule of Light Fittings.

EARTHING AND BONDING

The Contractor will be responsible for all earthing and bonding of the building and installation. The earthing and bonding is to be carried out strictly as described this specification and to the satisfaction of the Employer's representative.

MAINTENANCE OF ELECTRICAL SUPPLY

All interruptions of the electrical supply that may be necessary for the execution of the work, will be subject to prior arrangement between the Contractor and the user Employer and the Employer's representative.

SUPPLY AND CONNECTION

The supply will be as specified in the Project Particular Specifications.

The Contractor must arrange in good time with the local supply authority for the installation of the Power Supply and meter point and submit the account to the Employer's Regional Office for payment.

The Contractor will be responsible for the supply and installation of the supply cable from the meter box to the main LV distribution board (MDB). The size and length of the cable is listed in the Schedule of Cables and measured in the Bills of Quantities.

CABLES

The Contractor shall supply and completely install all distribution cables as indicated on the drawings, and listed in the Schedule of Cables.

The storage, transportation, handling and laying of the cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operations.

The cable-trenches shall be excavated to a depth of 0,6m deep below ground level and shall be 450mm wide for one to three cables, and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run. The bottom of the trench shall be level and clean and the bottom and sides free from rocks or stones liable to cause damage to the cable.

The Contractor must take all necessary precautions to prevent the trenching work being in any way a hazard to the personnel and public and to safeguard all structures, roads, sewage works or other property on the site from any risk of subsidence and damage.

In the trenches the cables shall be laid on a 75mm thick bed of earth and be covered with a 150-mm layer of earth before the trench is filled in.

All joints in underground cables and terminations shall be made by means of approved epoxy-resin pressure type jointing kits. Epoxy-resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low voltage PVC cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make. Where cables are cut and not immediately made off, the ends are to be sealed without delay.

The laying of cables shall not be commenced until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused and must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Backfilling (after bedding) of the trenches is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150mm. The surface is to be made good as required.

On each completed section of the laid and jointed cable, the insulation resistance shall be tested to approval with an approved type instrument of not less than 500 V for low tension cables.

Earth continuity conductors are to be run with all underground cables constituting part of a low voltage distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live conductor of the cable, but

shall not be less than 4mm² or more than 70mm². A single earth wire may be used as earth continuity conductor for two or more cables run together, branch earth wires being brazed on where required.

The sizes and routes of low voltage cables are indicated on the drawings and in these documents.

Low voltage cables shall be PVC SWA ECC type with Copper conductors which shall comply with the requirements of SANS 1507 and those of the Standard Specification in all respects. All new cables shall be provided with enhanced armouring suitable for E.C.C. use and cable glands are to be provided complete with E.C.C. connection washers to allow for correct earthing techniques to be followed, as specified.

Tenderers must base their cost for trenching in earth. Payment for cable trenching having a greater volume than that specified for the purpose will not be considered except where extra excavations are necessary to by-pass obstacles such as water pipes, drains, large boulders etc. In all such instances the amount of the extra excavations must be agreed upon on site between the Engineer or his representative/agent and the contractor.

Cables shall be labelled, cable routes marked and terminated as per the requirements of the Standard Specification (Labels and Notices).

The electrical contractor shall determine the present cable routes of all existing underground cables as and when required for the contract work and shall allow for this requirement as part of his tender sum.

The dielectric shall consist of PVC suitable for general use, 600/1000V grade. It shall be distinctly coloured as detailed in Table I of SANS 1507 so as to identify the phase, neutral and earth conductors with the phase conductors being coloured red, white or blue, the neutral conductor black and the earth conductor green/yellow or green.

The whole of the dielectric shall be coloured - surface painting or a longitudinal coloured stripe is not acceptable.

CABLE MARKERS

The necessary number of cable markers must be installed so as to indicate the route of underground cables, as on the drawings. Where the direction of cables changes, this must be indicated on the surface by means of cable markers. Cable markers must be concrete pyramids, with measurements of 150mm x 150mm on the top and 250mm x 250mm at the bottom. Their height must be 300mm.

Brass plates must be cast into the tops of these pyramids in such a way that they cannot be removed easily. The words "ELECTRIC CABLE" must be punched onto these plates as well as the voltage of the cable and an arrow indicating the direction of the cable routes. The cable must be linked to the cable marker by a galvanized wire cast in the cable marker.

Cable markers must be placed on the surface above all underground cables and must stand out 35mm above ground level, unless they are a danger to pedestrians or traffic, in which case the tops of the markers must be flush with the level of the ground. Cable markers must be placed at the beginning and end of each cable route (e.g. where a cable goes into a cable kiosk or a building); at changes of direction; at all joints; above cable sleeve inlets and outlets, and along the whole cable route at distances not exceeding 50 meters.

Low voltage cables shall be laid at a depth of 600mm under final ground level.

TAPE ABOVE CABLE

For all cables, a coloured plastic-marking tape shall be installed 200mm above the cable. The tape shall be yellow, with red skull and crossbones with the words "ELECTRIC CABLE ". These markings shall not be more than 1m apart from centre to centre.

EXCAVATION

The contractor shall be responsible for all trenching excavations unless specified to the contrary.

LAYING, JOINTING AND MAKING OFF OF ELECTRICAL CABLES

1.The use of the term "Inspector", includes the engineer or inspector of the Employer or an empowered person of the concerned supervising consulting engineer's firm.

2.No cable is to be laid before the cable trench is approved and the soil qualification of the excavation is agreed upon by the Contractor and inspector.

3.After the cable has been laid and before the cable trench is back-filled the inspector must ensure that the cable is properly bedded and that there is no undesirable material included in the bedding layer.

4.All cable jointing and the making off of the cables must only be carried out by qualified experienced cable jointers. Helpers of the jointers may not saw, strip, cut, solder, etc. The cable and other work undertaken by them must be carried out under the strict and constant supervision of the jointer.

5.Before the Contractor allows the jointer to commence with the jointing work or making off of the cable (making off is recognized as half a joint) he must take care and ensure:

5.1that he has adequate and suitable material available to complete the joint properly and efficiently. Special attention must be given to ensure the cable furrules and cable lugs are of tinned copper and of sufficient size. The length of the jointing lugs must be at least six times the diameter of the conductor,

5.2that the joint pit is dry and that all loose stones and material are removed,

5.3that the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,

5.4that the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,

5.5that the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,

5.6that the necessary tents or sails are installed over the joint pit to effectively avert unexpected rainfall and that sufficient light or lighting is provided,

5.7that the necessary means are available to efficiently seal the jointing or cable end when an unexpected storm or cloudburst occurs, regardless of how far the work has progressed,

5.8that the cables and other materials are dry, undamaged and in all respects are suitable for the joint work or making off,

6.Before the paper-insulated cables are joined, they must be tested for the presence of moisture by the cable jointers test. This consists of the insertion of a piece of unhandled insulated impregnated paper tape in warm cable oil heated to a temperature of $130 \pm 5^{\circ}\text{C}$.

Froth on the surface of the oil is an indication that moisture is present in the impregnated insulation and the amount of the froth gives an indication of the moisture present.

7.If the cable contains moisture or is found to be otherwise unsuitable for jointing or making of the inspector is to be notified immediately and he will issue the necessary instruction to cope with the situation.

8.The joint or making off of paper insulated cables must not be commenced during rainy weather.

9.Once a joint is in progress the jointer must proceed with the joint until it is complete and before he leaves the site.

10.The jointer must ensure that the material and his tools are dry at all times, reasonably clean and absolutely free from soil.

11.Relating to the jointing of the cable the following requirements apply:

11.1All jointing must be carried out in accordance with recognized and tried techniques and comply strictly with the instructions given by the supplier of the jointing kit.

12.As far as cable end boxes are concerned the requirements as set out above are valid where applicable.

DISTRIBUTION KIOSKS

1. General

All distribution kiosks and equipment shall comply with the requirements of the Standard Specification.

Before the commencement of manufacture, detailed drawings of the proposed panels and boards are to be submitted to the Engineer or his representative/ agent for approval. Full schematic details of the layout and wiring of the boards are to be provided with these drawings.

Kiosks, constructed of sheet metal, shall be waterproof and spacious enough to accommodate all equipment as described in the schedules. Sheet metal shall be galvanized. Welding materials shall be of the same quality as the base metal.

Ventilation slots or louvers fitted with gauze wire shall be provided at the doors or sides of all kiosks. All vents shall be vermin proof.

Doors shall open 180° and shall be fitted with approved locks, which shall be of the 40mm approved by the Engineer with hardened brass hasps and rust resistant mechanisms. Access to the kiosk from the back shall be possible through doors.

All Kiosk doors shall be equipped with a covered, tamper free, lock system for padlock that cannot be cut by a bolt cutter.

The gland plate shall be manufactured of hot dipped, galvanised steel of 3mm minimum thickness. Sufficient holes shall be pre-punched for the number and sizes of cables specified.

The galvanized finish off all kiosks on the interior and exterior and on the panels on which switch gear is to be mounted shall be of a high quality and shall be suitable for exterior use. Galvanising shall be applied to surfaces prepared in accordance with SANS 121/ISO1461.

Mounting shall be on a concrete plinth of adequate size to provide a skirt of at least 50mm around the unit. The plinth shall be of adequate thickness to protrude 100mm above ground while installed to a minimum depth of 300mm below ground level. The earth shall be properly compacted to prevent the unit from tilting or subsiding.

All equipment in the kiosk, except for the meters, shall be flush-mounted on a panel. These panels shall be fixed by means of peg-and-hole fixing at the bottom and key-operated latches at the top.

Suitable handles or knobs shall be installed on the panels to facilitate removal.

A solid copper bus bar shall be provided for each phase and neutral and shall be mounted on appropriately coloured ceramic or similar insulators. The colours of insulators shall correspond with the phase colours that are red, yellow, blue and black for the neutral. Bus bars shall be easily reachable. Except where otherwise prescribed, the minimum dimensions of the Bus bars shall be 6mm x 25mm x 300mm long. A minimum clearance space of 100mm shall be maintained between bus bars.

Connection to bus bars shall be by using lugs, cadmium plated high tensile steel bolts, washers and nuts.

A 6mm x 25mm x 330mm solid copper-earthed bus bar shall be installed with a minimum of eight, 8mm bolts, complete with spring washers, brass washers and nuts. The bus bar shall be provided with internal thread and the heads of the bolts shall be soldered in position at the back.

The gland plate shall be bonded to the earth bar through a 70mm² stranded copper conductor.

The LV cables shall rise into the unit from below through a plinth opening and shall be fitted to the gland plate with suitable glands. The individual cores of the cables shall be equipped with lugs and connected to the bus bars.

Services shall be connected to the three phases to provide a balanced load as far as possible.

All wiring shall be neatly bundled with nylon ties and shall be arranged in horizontal and vertical directions only.

All meters and circuit breakers shall be labelled with engraved plastic labels at least 1mm thick with 12mm letter size labels and shall be fitted to slide in frames.

All kiosks shall be clearly marked to indicate the name and/or number of the kiosk and from where the kiosk is fed and the size of the feeder cable.

Danger notices type WS7 to SANS 1186 manufactured from plate aluminium, measuring approximately 150mm x 150mm, shall be fitted to each door in a central easily visible position.

Brass bolts and nuts shall be used to mount all ancillaries.

The technical specifications of the kiosk shall comply with all relevant SANS standards.

The Kiosk to be suitable for use and shall be a fully galvanised or 3CR12 unit. An anti-theft locking mechanism shall be included as part of the kiosk.

The kiosk must be earthed by means of an earth spike/s and 70mm² earth wire. Earthing to be carried out and tested in terms of SANS 10142. If earth resistivity is not achieved, further earth spikes and or earth wire to be installed to achieve the specified minimum readings.

Rails shall be mounted in the LV compartment to accommodate the following LV equipment. The circuit breakers and switchgear shall be included in the rate.

Each street light kiosk shall include the following equipment as per details on the drawings or schematic.

The contractor shall arrange for an inspection of the kiosk/s by the Engineer before delivery.

2. LV Distribution Kiosk Components

The kiosk must be earthed by means of an earth spike/s and 70mm² earth wire. Earthing to be carried out and tested in terms of SANS 10142. If earth resistivity is not achieved, further earth spikes and or earth wire to be installed to achieve the specified minimum readings.

Rails shall be mounted in the LV compartment to accommodate LV equipment. The circuit breakers and switchgear shall be included in the rate.

All kiosks to be standardized and manufactured for 3 phase supply and 3 phase circuits.

Each street light kiosk shall include the following equipment as per details on the drawings or schematic.

- 1 x 63amp 3 pole on-load main circuit breaker
- 1 x set 3P+N Surge arresters
- 9 x 32amp 1 Phase streetlight circuits.
- 1 x 32amp 3 Phase streetlight circuit.
- 1 x 20amp 3 pole spare circuit breaker
- 1 X 63amp 1 phase ELU, 3 x 20amp CB's + 1 x 16 amp SSO
- 1 x concrete base per kiosk manufacturer's approval
- 1 x daylight switch complete with control circuit to contactors
- 3 x 32amp 3 pole AC1 contactors
- 1 x 5amp 1 pole CB, 1 x bypass circuit breaker

The colour finish of the kiosk shall be Moss Green. RAL 6005

3. Anti-Vandal Kiosk

The anti-vandal LV kiosk shall be specified for use at areas where vandalism is deemed as MEDIUM risk.

The technical specifications of the kiosk shall comply with all relevant SANS standards.

The Kiosk to be minimum IP65 rated and suitable for use and shall be a fully 3CR12 stainless steel unit.

In addition to the standard equipment required in the LV Distribution kiosk, the anti-vandal kiosk must include:

- (i) 2 x keyed alike 61mm black all weather brass lock with a strength rating of >5,
- (ii) Security cage and fence around the kiosk.

Each Kiosk to be provided with 2 x locks and the cage to be provided with 4 x locks. All Locks provided for kiosks under this package to be of the Master lock and key alike type.

The entire enclosure (enclosure shell, roof, doors) shall be manufactured with 3mm (minimum thickness) 3CR12 (Corrosion Resistance Steel). Inner equipment mounting plates shall be 2mm 3CR12 steel.

The kiosk and cage must be earthed by means of an earth spike/s and 16mm² earth wire. Earthing to be carried out and tested in terms of SANS 10142. If earth resistivity is not achieved, further earth spikes and or earth wire to be installed to achieve the specified minimum readings.

Rails shall be mounted in the LV compartment to accommodate the LV equipment as per the kiosk schematic or with minimum requirements as noted. The circuit breakers and switchgear shall be included in the rate.

All set screws, nuts and spring washers for fitment of different parts or equipment inside the enclosure shall be stainless steel.

Enclosures shall be properly prepared in the correct manner and powder coated for protection against corrosion

The doors' surrounds shall incorporate a splash-proof sill around the inner border of the door opening of the kiosk.

The enclosure shall be weather proof and safe to operate in any weather condition.

Enclosures shall be adequately earthed.

The enclosures shall be manufactured from quality steel and capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity which are likely to be encountered in the services and at the same time ensuring the desired degree of safety.

The enclosure shall be free standing on the ground and properly mounted on an anti-vandal concrete plinth.

The Enclosures shall be adequately protected against rust, dust and corrosion both from inside and outside.

The fabrication of material shall be done in such a way that there is a good finish of fabricated /moulded material. The material shall be fabricated/moulded accurately to adhere to dimensions as per the drawings.

The enclosure shall be fabricated / welded such that the rain water does not enter the enclosure. A Danger notice shall be fitted on all doors. There shall be no external holes and the complete kiosk shall be robust and vandal proof. The unit shall be vermin and bug proof.

SANRAL ANTI-VANDAL KIOSK MINIMUM REQUIREMENTS		
DEPTH (mm)	WIDTH (mm)	HEIGHT (mm)
600	700	1280

(a) Construction material

Enclosure Material (shell, roof and doors) 3mm 3CR12

Gland Plates 2mm 3CR12

Inner electrical equipment mounting plates 2mm 3CR12

(b) Installation requirements

The enclosure should be fitted onto a suitable concrete plinth which is planted as specified.

The enclosure door/s should NOT face the road side to ensure that the field operator faces the road when working on the kiosk.

Kiosks should be visible from road to restrict opportunities of vandalism.

(c) Doors

Reinforced doors must be mounted and recessed inward by no less than 3mm.

The door shall be flush with the box frame.

Doors shall be manufactured with minimum 3.0mm 3CR12 and to be the same type of steel as the rest of the enclosure shell.

There shall be no external hinges or holes. Hinges and doors shall be robust and vandal proof

Doors shall be marked in the inside as well.

The door's surrounds shall incorporate a splash-proof sill around the inner border of the door opening of the kiosk.

The lock covers on the outside of the doors to be used for easy opening and closing the enclosure door

The doors shall be fitted to be vermin proof.

(d) Hinges (durable and vandal proof)

Hinges Holding Bracket: 2 x Internal hinges per door

Hinges Material: 3CR12

Hinge Load Capacity: ± 100 kg per hinge

(e) Sturdy door stays

Material: Stainless Steel

Door open stay position: 90° Minimum

(f) Roof: general requirements

The roof of the enclosure shall be sloping to allow water to run off.

The roof shall be manufactured with the same thickness of steel and steel type as the rest of the enclosure shell.

The roof shall be permanently secured onto the enclosure shell to form part of the enclosure as a complete unit.

The roof shall only have an overhang on the door sides, but should be fitted flush against the non-door sides

There shall be no external holes and the roof shall be robust and vandal proof.

The roof shall be vermin and bug proof.

(g) Ventilation slots / louvers

Ventilation slots / louvers shall be machine punched on the sides of the enclosure shell to prevent condensation build-up, provide cross flow venting for natural draft ventilation and to remove excess heat build-up.

The ventilation slots shall be covered in the inside of the enclosure with a corrosion proof stainless steel wire mesh screen.

The ventilation slots shall be robust and vandal proof.

The ventilation slots shall be designed to prevent the ingress of rain, bugs, debris and shall be vermin proof.

Ventilation shall be adequate to allow that all installed equipment inside the enclosure shall operate normally in temperatures between -10°C and 60°C.

The Enclosure shall be constructed to allow adequate dissipation of heat. Ventilation of the enclosure shall not compromise the security of the enclosure and the equipment housed there-in.

(h) Gland plates

Gland plates will be secured onto the chassis frame with the required stainless-steel bolts, nuts and washers

Knockout gland holes will be provided on the plates.

The knockouts shall be spot welded onto the gland plate and shall be easy removable during cable installation.

Gland Plates must not be powder coated.

(i) Lifting lugs / hooks

Lifting lugs shall be adequately welded on the sides of the roof of the enclosure to enable installation / removal of the enclosure with means of a lifting crane using relevant d-shackles and slings.

Enclosures shall only be moved into position safely and securely by means of lifting lugs

These lifting hooks shall be designed to hold twice the actual weight of the enclosure.

(j) Security cage

Cages to be constructed of a 50mm square tube frame with 20mm square tube frames with maximum openings of 100mm x 100mm. Access locks to be enclosed by means of vandal proof covers welded to the cage. All hinges and lock covers to be welded and installed in a way to prevent it being vandalised. The full frame to be hot dip galvanised to SANS 121 and painted.

Cages to be bolted to the concrete base in a way to prevent removal from outside of the fence.

Each security cage to have:

(i) 4 x keyed alike 61mm black all weather brass lock with a strength rating of >5,

(k) Security fence

Anti-vandal fencing is to be secured onto the cage frame on the outside. Fence type to be galvanised Razor Ripper Wire welded to the cage frame. Openings of the Razor Ripper Wire to be maximum 300mm high and 150mm wide.

4. Anti-Vandal Kiosk with Electronic Security

The anti-vandal LV kiosk with Electronic Security shall be specified for use at areas where vandalism is deemed as HIGH risk.

The technical specifications of the kiosk shall comply with all relevant SANS standards.

The Kiosk to be minimum IP65 rated and suitable for use and shall be a fully 3CR12 stainless steel unit with separate electrical and electronic sections.

In addition to the standard equipment required in the LV Distribution kiosk, the anti-vandal kiosk with electronic security must include:

- (i) 2 x Electronic locks on the kiosk
- (ii) Security cage and fence around the kiosk.
- (iii) 2 x electronic locks on the cage, including bypass
- (iv) 1 x Vibration sensor on the kiosk and 1 x vibration sensor on the cage,
- (v) UPS Backup – Minimum 2 Hrs for electronic equipment.

The entire enclosure (enclosure shell, roof, doors) shall be manufactured with minimum 3mm (minimum thickness) 3CR12 (Corrosion Resistant Steel). Inner equipment mounting plates shall be 2mm 3CR12 steel.

The kiosk and cage must be earthed by means of an earth spike/s and 16mm² earth wire. Earthing to be carried out and tested in terms of SANS 10142. If earth resistivity is not achieved, further earth spikes and or earth wire to be installed to achieve the specified minimum readings.

Rails shall be mounted in the LV compartment to accommodate the LV equipment as per the kiosk schematic or with minimum requirements as noted below. The circuit breakers and switchgear shall be included in the rate.

All set screws, nuts and spring washers for fitment of different parts or equipment inside the enclosure shall be stainless steel.

Enclosures shall be properly prepared in the correct manner and powder coated for protection against corrosion.

Each kiosk shall be provided with 2 x doors, one for the electrical equipment and other for the electronic equipment. The doors shall be on opposite sides of each other. A timber

backing board in the centre of the kiosk shall separate the electrical and electronic equipment.

The doors' surrounds shall incorporate a splash-proof sill around the inner border of the door opening of the kiosk.

The enclosure shall be weather proof and safe to operate in any weather condition

Enclosures shall be adequately earthed.

The enclosures shall be manufactured from quality steel and capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity which are likely to be encountered in the services and at the same time ensuring the desired degree of safety.

The enclosure shall be free standing on the ground and properly mounted on an anti-vandal concrete plinth.

The Enclosures shall be adequately protected against rust, dust and corrosion both from inside and outside.

The fabrication of material shall be done in such a way that there is a good finish of fabricated /moulded material. The material shall be fabricated/moulded accurately to adhere to dimensions as per the drawings.

The enclosure shall be fabricated / welded such that the rain water does not enter the enclosure. A Danger notice shall be fitted on all doors. There shall be no external holes and the complete kiosk shall be robust and vandal proof. The unit shall be vermin and bug proof.

SANRAL ANTI-VANDAL KIOSK MINIMUM REQUIREMENTS		
DEPTH (mm)	WIDTH (mm)	HEIGHT (mm)
600	700	1280

(a) Construction material

Enclosure Material (shell, roof and doors) 3mm 3CR12

Gland Plates 2mm 3CR12

Inner electrical equipment mounting plates 2mm 3CR12

(b) Installation requirements

The enclosure should be fitted onto a suitable concrete plinth which is planted as specified.

The enclosure door/s should NOT face the road side to ensure that the field operator does not have their back facing the road when working on the kiosk.

Kiosks should be visible from road to restrict opportunities of vandalism.

(c) Doors

Reinforced doors must be mounted and recessed inward by no less than 3mm.

The door shall be flush with the box frame.

Doors shall be manufactured with minimum 3.0mm 3CR12 and to be the same type of steel as the rest of the enclosure shell.

There shall be no external hinges or holes. Hinges and doors shall be robust and vandal proof

Doors shall be marked on the inside as well.

The door's surrounds shall incorporate a splash-proof sill around the inner border of the door opening of the kiosk.

A pull handle / knob shall be welded onto the outside of the doors on the opposite side of the hinges in the middle of the vertical dimension of the door for easy opening and closing the enclosure door

The doors shall be fitted to be vermin proof.

(d) Hinges (durable and vandal proof)

Hinges Holding Bracket: 2 x Internal hinges per door

Hinges Material: 3CR12

Hinge Load Capacity: ± 100 kg per hinge

(e) Sturdy door stays

Material: Stainless Steel

Door open stay position: 90° Minimum

(f) Roof: general requirements

The roof of the enclosure shall be sloping to allow water to run off.

The roof shall be manufactured with the same thickness of steel and steel type as the rest of the enclosure shell.

The roof shall be permanently secured onto the enclosure shell to form part of the enclosure as a complete unit.

The roof shall only have an overhang on the door sides, but should be fitted flush against the non-door sides

There shall be no external holes and the roof shall be robust and vandal proof.

The roof shall be vermin and bug proof.

(g) Ventilation slots / louvers

Ventilation slots / louvers shall be machine punched on the sides of the enclosure shell to prevent condensation build-up.

Cross flow venting for natural draft ventilation and to remove excess heat build-up.

The ventilation slots shall be covered in the inside of the enclosure with a corrosion proof stainless steel wire mesh screen.

The ventilation slots shall be robust and vandal proof.

The ventilation slots shall be designed to prevent the ingress of rain, bugs, debris and shall be vermin proof.

Ventilation shall be adequate to allow that all installed equipment inside the enclosure shall operate normally in temperatures between -10°C and 60°C.

The Enclosure shall be constructed to allow adequate dissipation of heat. Ventilation of the enclosure shall not compromise the security of the enclosure and the equipment housed there-in.

(h) Gland plates

Gland plates will be secured onto the chassis frame with the required stainless-steel bolts, nuts and washers.

Knockout gland holes will be provided on the plates.

The knockouts shall be spot welded onto the gland plate and shall be easy removable during cable installation.

Gland Plates must not be powder coated.

(i) Lifting lugs / hooks

Lifting lugs shall be adequately welded on the sides of the roof of the enclosure to enable installation / removal of the enclosure with means of a lifting crane using relevant d-shackles and slings.

Enclosures shall only be moved into position safely and securely by means of lifting lugs

These lifting hooks shall be designed to hold twice the actual weight of the enclosure.

(j) Security cage

Cages to be constructed of a 50mm square tube frame with 20mm square tube screen with maximum openings of 100mm x 100mm. Access locks to be enclosed by means of vandal proof covers welded to the cage. All hinges and lock covers to be welded and installed in a way to prevent it being 197 galvanized. The full frame to be hot dip 197 galvanized to SANS 121 and painted.

Cages to be bolted to the concrete base in a way to prevent removal from outside of the fence.

Each security cage to have:

(i) 2 x vandal-proof, electronically controlled locks. A vandal resistant bypass system to be incorporated in case of electronic failure.

(k) Security fence

Anti-vandal fencing is to be secured onto the cage frame on the outside. Fence type to be galvanised Razor Ripper Wire welded to the cage frame. Openings of the Razor Ripper Wire to be maximum 300mm high and 150mm wide.

LABELLING AND ASSET TAGGING

All Luminaires, poles, Mini subs and Distribution kiosks shall be labelled as specified in the Standard Specification (Labels and Notices).

Labels must indicate the functions of equipment and components in the distribution boxes and/or distribution boards.

The terminology on the identification labels must be in English.

The contractor shall arrange for the labelling of all equipment, instruments, meters, relays, cables, etc., as indicated below.

Where identical items of equipment can be removed from their housings, e.g. MV circuit breaker carriages, plug-in relays etc., both the fixed and withdrawal portion are to be labelled identically.

All labels shall be of a non-corrosive material or other back engraved white on black labels of the sizes indicated. They are to be located in purpose made holders or otherwise are to be screwed or riveted into position. "Dymo" tape or similar labels will not be accepted nor will labels, which are glued in position only. Labels on light poles shall comprise a black on yellow PVC sticker with the designated number. These labels shall be stuck onto the pole 4.0m above ground level facing direction of vehicle travel to ensure easy identification by maintenance personnel.

Prior to any equipment being labelled, the contractor shall request the Engineer to provide a complete labelling schedule for all items of equipment. Under no circumstances is equipment to be labelled in accordance with the tender drawings since any description thereon is for identification purposed during construction only and is unlikely to apply to the completed Works.

This size shall be used to designate the conductor size and number of cores of each cable installed under this Contract. In addition, all feeder cables shall be labelled at both ends indicating from where/to cables are feeding.

All kiosks shall be provided with a label in both official languages reading "In case of leakage or accidental contact, put off main switch immediately".

All kiosks shall be provided with notices as required by the Occupational Health and Safety Act. All doors to such locations shall be fitted with the appropriate notices.

Where more than one similar item of equipment is fed from the same board or control panel, the item itself shall be labelled, this being fixed in a permanent position, i.e. not attached to motors, pumps, etc., but to bases or adjacent thereto. The lettering shall be 50mm high.

All poles, cables, Distribution kiosks, min-substations, transformers and equipment must be labelled and have the statutory labels as per SANS prominently visible.

All SANRAL poles, Distribution kiosks, min-substations and transformers must be labelled with an asset tag.

Every Lighting structure, Kiosk, Transformer, Mini-substation, Substation and cable on a project must be asset tagged with all components labelled as specified below.

All notices, labels or rating plates that are required in terms of SANS 10142 shall be durable and not removable except by determined and deliberate action. The inscriptions shall be legible and indelible.

Equipment not detailed below shall be labelled or tagged in a similar way as specified.

(a) Labelling

Labels must indicate the functions of equipment and components in the distribution boxes and/or distribution boards.

The terminology on the identification labels must be in English.

The contractor shall arrange for the labelling of all equipment, instruments, meters, relays, cables, etc., as per SANS 10142-1 with additional requirements as indicated below.

Where identical items of equipment can be removed from their housings, e.g. MV circuit breaker carriages, plug-in relays etc., both the fixed and withdrawal portion are to be labelled identically.

All labels shall be of a non-corrosive material or other back engraved white on black labels of the sizes indicated. They are to be located in purpose made holders or otherwise are to be screwed or riveted into position. "Dymo" tape or similar labels will not be accepted nor will labels, which are glued in position only.

Prior to any equipment being labelled, the contractor shall provide the Engineer a complete labelling schedule for all items of equipment for approval. Under no circumstances is equipment to be labelled in accordance with the tender drawings since any description thereon is for identification purposed during construction only and is unlikely to apply to the completed Works.

The following list indicates the general labelling requirements but does not limit the extent of labelling required, which shall encompass the full extent of the equipment supplied, or in the case of existing equipment, any such which is affected by this Contract.

50mm high lettering: -

- Substation and mini sub designation.
- Outdoor switch gear designation.
- Transformer designation.
- Distribution kiosk and fused feeder panel designation.
- Lighting Structures

20mm high lettering: -

- Main or sub-main board designation.
- Control panel designation.
- Indoor switch gear designation.

5mm high lettering: -

- Mini sub feeder breakers and isolators.
- Distribution kiosk feeder breakers and isolators.
- General distribution switchgear.

All meters and circuit breakers shall be labelled with engraved plastic labels at least 1mm thick with letter size labels specified and shall be fitted to slide in frames.

All kiosks shall be provided with notices as required by the Occupational Health and Safety Act. All doors to such locations shall be fitted with the appropriate notices.

An A4 copy of the Single Line Diagram (SLD) indicating all the circuits fed from the Kiosk shall be laminated and secured within a slide-in pocket on the inside of the kiosk door. This should be replaceable if the circuit information has changed.

Where more than one similar item of equipment is fed from the same board or control panel, the item itself shall be labelled, this being fixed in a permanent position, i.e. not attached to motors, pumps, etc., but to bases or adjacent thereto. The lettering shall be 50mm high.

(b) Asset Tagging

Every Lighting structure, Kiosk, Transformer, Mini-substation, Substation and cable on a project must be asset tagged with components labelled as indicated.

Asset tags to be yellow stick-on labels with black letters. Tag size to be 200mm x 200mm with letter size of 50mm. Where this tag cannot fit on the enclosure, smaller tags can be installed on the approval of the Engineer.

Asset tags must prominently display the road route (eg. N002 for N2), road section number (eg. 25N), and the equipment number.

Each item installed shall be considered as an asset item.

(i) Parent Asset: Major items e.g.:

Lighting Structure

Kiosk

Transformer

Mini-substation

Substation

Cables

(ii) Components within a parent Asset:

Lighting Structure: Mast / pole, Luminaire,

Kiosk: Enclosure, Circuit breakers, meters, control circuits.

Transformer: Transformer.

Minisub: Transformer, MV & LV circuit breakers, Meters, etc

Sub Station: Building or enclosure, MV Switchgear, DB's, Panels, transformer within substation.

Cables: All cables forming part of the distribution system.

(iii) Description of an Asset:

Lighting Structure: A lighting structure is any structure that has one or more luminaire.

Kiosk: Any street lighting control kiosk or distribution kiosk or meter box. All items within a kiosk will be classified as components of the kiosk.

Transformer: A stand alone transformer.

Mini substation: A complete mini substation including the MV switch, Transformer, LV circuit breakers and components enclosed as one unit.

Substation: The physical building together with its components within.

Cables: All MV and LV cables installed that forms part of the distribution network.

(iv) Tag Location

Luminaire: Tags shall be secured on the underside of the luminaire so that it is easily identifiable from the ground by maintenance staff.

Lighting Structure: Asset tags shall be stuck onto the pole 4.0m above ground level facing direction of vehicle travel to ensure easy identification by maintenance personnel.

Where structures are in the median, labels shall be in the direction of travel of increase of the road section numbering. Eg labels should face direction of travel from Route section 25N to 26N.

Kiosk / Transformer / Mini substation: Asset tags shall be stuck onto the equipment at the top half facing direction of vehicle travel to ensure easy identification by maintenance personnel.

Substations: Asset tags shall be stuck onto the top half of the substation door. A substation sign shall be mounted above the door of the substation. All tags to be facing direction of vehicle travel to ensure easy identification by maintenance personnel. Additional substation signage per OHS Act to be prominently displayed at the entrance.

(v) Tag Colours:

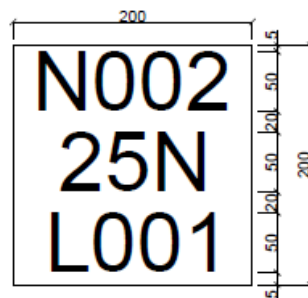
Lighting structures, Mini substation and kiosk tags shall comprise a black text on yellow PVC sticker with the designated number as per tag dimensions specified.

LED Luminaire shall be tagged with black text on white PVC sticker with the luminaire details as per tag dimensions specified or suitably scaled to fit under luminaire.

(vi) Tag Dimensions

Labels letters can be in a 3 tier or 1 tier configuration, dependent on the size of the surface area where the tag is installed. The critical item is a full view of the tag while driving to ensure easy identification by maintenance and security personnel.

XXXX_YYY_LZZZ => ROUTE_SECTION_L###



N002-25N-L001

DETAIL: ASSET
NUMBERING SYSTEM

3 TIER LABEL

1 TIER LABEL

(vii) Tag Description

ASSET TAG	PART 1	PART 2	PART 3*
	ROUTE	SECTION	ASSET NUMBER
N002-25N-L001	N002 - National Route 2	25N – Section 25 North Direction	L001 – Light mast number

N002-25N-K001	N002 - National Route 2	25N – Section 25 North Direction	K001 – Kiosk number
N002-25N-M001	N002 - National Route 2	25N – Section 25 North Direction	M001 – Minisub number

***Part 3 Asset Prefix description**

- L – Lighting structure
- K – Kiosk
- T – Transformers
- M – Mini-substation
- C – Cable

(viii) Lighting Structure Identification

Lighting structures to be numbered per circuit starting from Kiosk 1, Circuit 1 using consecutive numbers starting at L001. Next Circuit 2 in Kiosk 1 will commence on the next consecutive after the last number in Kiosk 1, circuit 1.

The last number on a lighting structure will indicate the total number of lighting assets on the particular project.

New or additional lights installed after final handover shall be numbered the next number after the last asset number of the system, no matter where or which circuit it is located.

(ix) Kiosks, Mini-substations and Transformers

Kiosks, Min-substations and transformers to be numbered using consecutive numbers starting at 001 with a prefix for each type of equipment

(x) Cable identification

Cables shall be tagged, cable routes marked and terminated as per the requirements.

All feeder cables shall be tagged at both ends indicating from where/to cables are feeding.

Cables shall be numbered with engraved or other approved tags, which are cable tied onto both ends of the cable. Cable tags must be visible when doors or panels are opened for maintenance or repairs. The label should indicate the source, destination and consecutive cable number. Eg: Cable fed from Kiosk 1, circuit 1 to Kiosk 7 will be K001-K007-C001.

The last cable number will indicate the total number of cable runs on the particular project. Each cable run will be considered as a cable Asset.

(xi) Luminaire identification

Lighting outlets are numbered on the drawings.

Each luminaire shall be tagged with the Type, Model and wattage as specified or as implied by the catalogue number of the luminaires specified.

LED Luminaire shall be tagged with black text on white PVC sticker with the luminaire details as per tag dimensions or suitably scaled to fit under the luminaire. The luminaire tag at the final mounted height must be visible from the ground.

LIAISON

The electrical contractor shall, in each case, provide the main contractor with all necessary information, dimensions, materials, etc., as called for in the specification, in good time.

It is essential that the electrical contractor work in close collaboration with the principal contractor to ensure that where his services run in proximity with other services, there are no clashes.

Failure to comply with the above may mean that corrective measures will have to be taken to correctly position the equipment. Any abortive work resulting will be entirely to the electrical contractor's account.

Where the electrical contractor is to provide electrical supplies to control panels forming part of other contract works, it is essential that the electrical contractor liaise fully with the particular contractor who must provide the electrical contractor with all information necessary so as to ensure that the supply cable terminates in the correct position and that the phase rotation complies with the equipment installed.

Failure to do so may result in the electrical contractor being held responsible for the cost of removing and replacing not only his own but also the equipment of the main contractor and other contractors.

SUPERVISORY STAFF AND IDENTIFICATION

All work done on site shall at all times be under the direct and full time supervision of a contract manager who shall be a qualified installation electrician who will sign the certificate of compliance.

Full particulars of the site organisation, complete with names of officials the Tenderer proposes to allocate to this project are to be submitted with this tender. For the duration of this contract the above detailed officials will be permanently assigned to this project and may only be relieved of their duties after prior agreement by the Engineer or his representative/agent.

Whilst on the site all staff and labourers employed by the electrical contractor shall wear distinctively marked clothing bearing the name of the electrical contractor or his identification logo.

SETTING OUT OF WORKS

The electrical contractor shall be responsible for marking out and setting out of all equipment and plant. The position of items of electrical equipment and plant indicated on the drawings are to be taken as approximate. The exact position for fixing shall be obtained by site measurements.

In case of doubt, decisions shall be obtained from the Engineer or his representative/agent.

ERECTION OF EQUIPMENT

The contractor shall be responsible for the erection and installation of all equipment supplied by him under this contract.

In addition, the contractor shall be responsible for the care and maintenance of all electrical equipment after erection is completed until the first delivery of the specific section of the works. He shall ensure that the proper enclosure of all equipment is maintained at all times, that access doors and covers are opened only when necessary to work on the equipment and replaced afterwards, that the paint finish on all items is effectively protected and that all unused cable and conduit entries are effectively sealed.

MATERIAL

Materials and equipment used in this installation must be of the best quality of their respective types, must meet the relative SANS or BSS specifications and must be installed to the satisfaction of the electrical Engineer or his representative.

The contractor will be informed in writing if any material or workmanship is not of the required quality. In such a case the contractor must replace the material concerned or repair the installation to the satisfaction of the Engineer or its representative.

If requested to do so, the contractor must provide samples of materials or equipment, for the approval by the electrical Engineer, before it may be installed. The samples will be kept for comparison with materials and equipment actually installed and will be returned after the contract has been satisfactorily completed.

DELIVERY AND COMPLETION

All contract materials shall be ordered timeously and delivered to site at dates suited to the agreed construction program.

The successful Tenderer for the installation will be required to commence work immediately following notification of tender acceptance and shall thereafter at all times maintain the progress required by the agreed completion program.

SHOP DRAWINGS

Submit to the Engineer prints of dimensioned general arrangement drawings of all switchboards, distribution boards, motor control centres, control boards and consoles, busbar trunking systems, rising mains systems, streetlights and poles, high masts, etc. Attend upon the Engineer, preferably with the manufacturers of the equipment, to discuss and agree any changes required in the drawings.

Modify shop drawing submissions as directed and, after approval by the Engineer, provide approved drawing prints of each for distribution to the parties to the contract.

On completion of the project, update the drawings with any changes made during the course of the contract works and furnish the Engineer with the necessary prints for record purposes

The contractor must submit one (1) hard copy or electronic copy of the following drawings to the Engineer for approval:

- Transformers
- Electrical equipment
- Electronic equipment
- Distribution Boards
- Distribution kiosks
- Luminaires
- Poles

High masts

The Engineer's approval of these drawings does not release the contractor from his responsibility to supply the distribution kiosks in terms of this contract.

LEVELLING AND PLUMBING

All equipment shall be carefully levelled and plumbed, checked with a spirit level. Should any equipment be unsatisfactorily installed in this respect it shall be dismantled and reinstalled, the costs of making good to damaged structures, plaster and paint will be for the account of the contractor.

It must be noted that boxes for imported accessories must be levelled and plumbed when installed, since the inserts cannot be levelled independently of the boxes.

INSTALLATION OF CABLES

(a) General

Trench excavations must comply with the requirements of SANS 1200 LC and SANS 1200 DA. No cables may be laid before the site is cleaned and the mass earthworks, which is done by others, is completed.

Every trench must be kept as straight as possible and must be dug to approved levels and measurements. The bottom must have an even contour.

Trenches dug close to railway lines, walls, roads, drains, pipes, cables, structures and on similar places where the danger of sagging exists, must be secured against such dangers and it must be done in such a way as to prevent possible injuries to construction personnel and the public. All these excavations must be done to the satisfaction of the Engineer and the public authorities concerned.

Bedding materials may not be laid until the trench has been approved by the Engineer. The Engineer might expect proof from the contractor that the minimum depth of bedding material is provided before giving authority for the cables to be laid.

(b) Guarding, Barricades, Lighting and Traffic Intersections

The contractor must arrange guarding, barricades, lighting and traffic intersections for work in public roads. This arrangement must comply with the applicable Road Traffic Ordinance, the requirements of the Occupational Health and Safety Act (Act 85: 1993), the project specification and the applicable requirements of sub clause 5.0 of SANS 1200 DA.

(c) Protection of Structures

In cases where work has to be done in the vicinity of buildings, bridges, tanks or other structures, the contractor must take all the necessary precautions as required by the Occupational Health and Safety Act (Act 85: 1993) and the Mines and Industries Act of 1956, (Act 27: 1956). These precautions shall include shoring where necessary, to ensure the safety of structures which is subject to danger during installation.

(d) Protection of Surface and Underground Services

The contractor must take all the necessary precautions to protect all existing services (meaning services on the site, which is shown on the drawings) and he will be held

responsible for all damages to these services, caused by his activities. All works and protection arrangements are subject to approval and it must only be done after consulting the owner(s) of the various services. Should a service be damaged, the contractor must immediately inform the Engineer and the authorities concerned. The contractor may not repair the damaged service, unless he is instructed to do so.

In cases where no underground services are shown on the drawings or recorded, but the possible presence thereof cannot be discarded, the contractor must, in conjunction with the Engineer, establish if any such services exist within the applicable site area. The contractor must in good time complete such investigation before construction may start on the area concerned. A report must be issued to the Engineer whom will make the necessary arrangements for the protection, removal or relaying of the services prior to the commencement of any construction work.

Upon the discovery an underground service previously not indicated on the drawings, this service will be classified as 'n known service and the contractor will be held responsible for any damages thereof during all further works. In cases where such service is damaged with the initial discovery, the Employer will cover the costs of repairing the service, except if the Employer can prove that the contractor did not take the necessary precautions and that the damage could have been prevented. Should the authorities concerned prefer to make the changes or arrangement for protection of services on their own expenses, the contractor must co-operate with such authorities, and give reasonable access, working area and time to complete the necessary work. Permanent changes to or permanent relaying of services which is necessary to complete the work and which is authorised, will be compensated for, there will be no compensation for work carried out and not previously investigated by the Engineer and for which no written instructions were issued.

(e) Conduct with Respect to Water on Site

The contractor must give proper attention to water and remove it to ensure that the works are kept dry enough so the work can be properly executed. For this purpose he must provide, use and keep in order, pump equipment, water sand pens, pipes and other equipment that might be needed. He must also provide fresh drains, trenches, coffer-dams and other temporary works that might be necessary to keep damages, inconveniences and disturbances at a minimum.

(f) Pollution

The contractor must take all reasonable precautions to the satisfaction of the Engineer to keep dust disturbance, pollution of streams and inconveniences or annoyances to the public (or others) because of the execution of the work, at a minimum.

(g) Safety

The contractor must at all times provide proper and adequate precaution and safety arrangements on site. Should the contractor fail to comply with this requirement, the Engineer will take the necessary steps to ensure that this requirement is met and any costs incurred will be for the contractor's account. Complying with this requirement does not exonerate the contractor of his responsibilities and duties in accordance with the Occupational Health and Safety Act (Act 85: 1993) and mines and Industries Act of 1956, (Act 27: 1956). Symbolic safety signs must comply with the applicable requirements of SANS 1186.

(h) Minimum Base Width of Trenches

The minimum base width of each trench must be wide enough for the cable spacing which is specified in the project specifications. Each trench must be excavated in a way that half the specified width will be left on both sides of the designated centre line of the cable or group of cables. The trench width must be adequate for the proper compacting of the fill materials when backfilling is done. (In the case of trenches for cable sleeves or -ducts, see sub clause 5.1.1 of SANS 1200 LC).

(i) Cleaning of Route

The contractor must clean an area wide enough to ensure that his inspection is not obstructed along the cable trench as specified in SANS 1200 C. In cases where the cable trench falls within a servitude or passage-way of specified width, the damage to the vegetation of the named servitude or passage-way must be limited.

BACKFILLING

(a) LV Cables

In trenches containing one or more low voltage cables, the approved fill material must be cautiously placed, in layers of 100mm un-compacted depth, throughout the width of the trench and then compacted to a minimum compacted depth of 150mm as specified in the Standard specification.

(b) Compaction

In areas subjected to road traffic and any other such area which is specified in the project specifications the trenches must be refilled in layers of maximum 150mm depth (after compaction) and in case of soil sticking together (clay material) it must be compacted up to 93% of the modified AASHTO-density or in the case of non-sticky soil (sandy material) up to 98% of the modified AASHTO-density.

Machine compaction will not be permitted directly above the cable(s) or sleeve(s) before a layer of 300mm depth fill material has been placed on top of the cable(s) or sleeve(s). The machine compaction must be conducted in such a way that the forces superimposed on the cable(s) or sleeve(s) does not exceed that superimposed by ordinary pedestrians or light vehicle traffic when the cover is already 1 m deep. If road traffic is involved, the cable(s) must be protected by a cable-way or -sleeve of at least 100mm in diameter, through which the cable(s) can be drawn at any time. Cable-ways beneath subways must be cast in concrete in a suitable way, if it is required by the project specifications.

(c) Cables at different depths

In situations where cables are laid at different depths in a common trench, the same procedure for placing and compaction of the approved fill material beneath and on top of the upper cable applies as for the lower cable.

In situations where cables have to be laid on top of each other the high voltage cables must be laid under the low voltage cables.

(d) Conduct with respect to Obstructions

In cases where obstructions are encountered during excavation that demands changes to the trench or a special kind of trench, the contractor must have the Engineer's approval to implement such changes before laying the cable(s).

(e) Anti-Theft Cable Protection

It is envisaged that new innovation products will be investigated and used to prevent vandalism on the project. One such product is the Synthetic resin Hydrocarbon Ground Glue. This is an applicator to the in-situ soil that hardens the soil around the cable.

The anti-theft cable protection, must meet the following requirements:

To be used for the purposes of creating solid bonded soil and gravel.

The Synthetic Resin Hydrocarbon Binder must be cold mixed on site through a chemical reaction by mixing bitumen emulsion, synthetic resin, water and a proprietary catalyst.

The mixture must be added to crushed stone, natural gravels or insitu material to form a water resistant, elastic and robust layer.

The product must improve the compressive, tensile and shear strength including abrasion and water resistance of the particular materials for cable protection.

The product must be insoluble in water and must not leach.

The Synthetic Resin Hydrocarbon Binder must be manufactured in South Africa

The Synthetic Resin Hydrocarbon Binder must be able to act as a conductor and must not isolate the heat which is dissipated by the electrical cable.

The product must be able to mix with in situ or onsite material or soil to achieve at least a C3 rating. The product must be able to achieve a strength of 30mpa if required for certain applications.

The product will only be accepted for use after performance testing on site and approved by the Client and Engineer.

INSTALLATION MATERIAL

(a) Stacking

The excavated material must be placed along the trench in such a way that it does not obstruct or damage adjacent fences, trees, drains, gate openings and other properties and must be heaped up in such a way that traffic is not obstructed. Should this not be possible, the material must be removed from site, with the Engineer's approval and brought back later to backfill the trench after the cable(s) has been laid.

Surplus material must be removed by the contractor and on the contractors own expense.

(b) Removal of surplus material

Surplus material excavated from trenches must be removed from the trenches side or the servitude to a scheduled area within 0,5 km of the source, as nominated.

(c) Admittance to Properties on Cable Routes

Unless otherwise specified in the project specifications, the contractor must (on his own expense) provide owners, inhabitant and their vehicles with reasonable access to their properties which may be situated adjacent or near the cable route(s).

(d) Transport of Cable Drums

Cable drums must be carefully transported to prevent damage to the cables and to prevent disturbing the cables. Damaged cables will be rejected. Drums may not be off-loaded by simply allowing them to roll off the back of the truck onto the ground. Drums may only be rolled in the direction as indicated by the arrow painted on the drum by the manufacturer. (This will ensure that the correct tension is maintained and prevent the cable from damage later). Every drum may only have one cable length on it. Proper attention must be given to where the drums are to be off-loaded in order to prevent unnecessary moving thereof, eg. at joint locations.

(e) Handling of Drums on Site

Note: It is recommended that a correctly designed spreader must be used to load and unload the drums with a crane.

Every drum must be mounted on jacks or on a cable-drum trailer with a horizontal supporting beam of suitable size and strength to handle the width and weight of the drum. The drum may not be allowed to rotate freely when the cable is rolled off. (Free rotation causes the cable to twist and loosen the windings, which can cause the inside armouring/insulation of the cable to be stretched). The cable must enter the trench from the top of the reel. All cables ends including that left on the drum or in a trench must be sealed to prevent the penetration of moisture into the cable. The free cable end on the drum must be fastened to the side of the drum.

(f) Rollers

Rollers must be used when each cable is laid and must be carefully placed in the trenches to make sure the cable only lies on the rollers when it is pulled in.

(g) Communication

The contractor must ensure good communication between the operators at the pulling end and at the reel end of the cable while laying the cable(s).

(h) Pulling Of Cable

The cable may be pulled by hand or by a wrench, but the maximum tension in the cable as specified by the manufacturer, may not be exceeded. A cable grip must be used to pull the cable, but if specified by the project specification, a loop connected to the cable cores and sheathing must be used. A twist connection must be used between the loop and the rope used to pull the cable. In cases where cables have to be drawn around corners, well lubricated skid-plates or special corner rollers must be used. Skid-plates and rollers must be firmly secured and must be inspected regularly throughout the cable laying process to ensure that they work properly.

CABLE BENDS

No cable bend may have a smaller radius than the minimum radius specified by the cable manufacturer. This radius shall never be less than the radius prescribed by the relevant SANS specification.

CABLES LAID IN SLEEVES, CABLE WAYS, ETC

Cables laid under roads or railway lines, must be laid through sleeves or cable-ways that are strong enough to withstand the expected shock loads applied by traffic. The laying of cable-ways and sleeves must comply with the applicable requirements of SANS 1200 LB and SANS 1200 LC. After the cable-ways and sleeves had been laid, they must be cleaned

thoroughly to remove roughness and sharp edges that can damage the cable. The ends of spare sleeves and cable-ways must be properly sealed and if the project specification requires a pull wire, this must be installed. The position of these sleeves and cable-ways must be identified in the project specifications.

SPACING BETWEEN CABLES AND OTHER SERVICES

The minimum spacing between electrical cables and other services must be in accordance with the project specifications.

In case of trenches used for a number of electrical cables the minimum horizontal free space required to prevent de-rating of the cables, are as follows:

- a) In the case of cables with a conductor size of not more than 70mm²:75mm
- b) In the case of cables with a conductor size of at least 70mm²:150mm

LUMINAIRES

(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.

Luminaires are to be suitable for use as per photometric data referred to in Form A15.

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 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.
2	Performance Requirements	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: Particular requirements – Section 1: Fixed general purpose luminaires. SANS 60598-2-3/IEC 60598-2-3, Luminaires – Part 2-3: Particular 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%. Nominal discharge current: 10kA
13	Surge Arrestor	Voltage protection level: 2kV Response time: ≤25nS Luminaire cut-out

No	Requirements	Minimum requirements
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
	IP Rating:	
17	Control gear compartment	IP66 certified (SANS 60598)
	Optical compartment	
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	EMA Socket	NEMA/ANSI C136.41 compliant 7-pin socket
23	Finish	Unpainted Aluminium

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.

MAST LIGHTING

(a) Design

The high masts shall be designed to SANS 10225 standards.

(b) Design wind speed

Terrain Category 2 with wind speed of 144km/ hour

(c) Construction

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.

(d) The following design calculations shall be submitted:

The mast in wind conditions

The mast during lowering

(e) Material and Corrosion protection

All material used in the pivot construction shall be of AISI grade 316 stainless steel or equivalent.

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.

(f) Earthing and Lightning Protection

A suitable lightning arrestor shall protrude at the top of the mast to protect the luminaires from a direct lightning strike. The lightning arrestor shall not be terminated directly on the connection box.

The earthing and lightning arrestor shall comply with the following standards:

SANS 1063: Earth rods, couplers and clamps, SANS 10199: The design and installation of an earth electrode, SANS 10313 / SANS 62305: The protection of structures against lightning.

Earthing of the masts shall be by means of two 3m lengths of 70mm² bare copper conductors in opposite directions of the mast 1000mm below final ground level and terminate each on a 1,8m x 16mm² copper earth electrodes driven into the trench. Additional to this earthing the LV cable armouring shall also be connected to the earth stud of the mast. The cost of this earthing shall be included in the rate.

(g) Electrical Portion

An electrical York box (IP 65) shall be included in the rate. It shall contain a circuit breaker mounting rail and a 15A double-pole circuit breaker (curve 3, 5kA, 230V). Waterproof glands shall be included to terminate a 16mm² or 25mm² 4-core cable in the York box.

The wiring to the luminaires shall be included in the rate as well as the glands needed to terminate these wires in the York box and luminaire. The York box must be securely affixed to the pole and shall be fully accessible.

All masts shall be labelled on both sides by means of matt black paint and a minimum letter size of 75mm. The labels shall be painted on the sides of each mast, facing 45 degrees towards approaching traffic at a height of 1,5 m from the ground.

STREETLIGHT POLES

1.0 Scope

This specification details the manufacture, supply, delivery, off-loading and stacking of vertical street lighting poles as specified in the Bill of Quantities or as depicted on drawings.

2.0 Tender submittals

2.1 Tenderers may submit alternatives that, in the tenderer's opinion, are to the Clients advantage economically and technically. Full technical details of these alternative offers shall be submitted with tender documents.

2.2 Tenderers shall quote on a per unit basis for the estimated quantities stated in the Bill of Quantities.

2.3 All drawings and documentation submitted shall become the property of SANRAL.

2.4 Tenderers shall note that the cost of all tests, required in this specification, shall be borne by the TENDERER. Payment for deliveries shall not be made until test certificates have been submitted and approved.

2.5 Tenderers shall note that price, availability, and both installation and maintenance costs will be taken into account in the adjudication process.

2.6 Tenderers shall note that SANRAL reserves the right to accept more than one technically and contractually compliant tender and orders will be placed on the basis of price and availability.

3.0 Normative References

The following standards contain provisions which, through reference in this text, constitute requirements of this specification. At the time of publication, the editions indicated were valid.

SANS 10225: The design and construction of lighting masts

SANS 15607: Specification and qualification of welding procedures

for metallic materials - General rules

SANS 15609: Specification and qualification of welding procedures

for metallic materials - Welding procedure specification
Part 1: Arc welding

SANS 62: Steel pipes Part 1: Pipes suitable for threading and

of nominal size not exceeding 150 mm

SANS 62: Steel pipes Part 2: Screwed pieces and pipe fittings

of nominal size not exceeding 150 mm

SANS 657: Steel tubes for non-pressure purposes Part 1:

Sections for scaffolding, general engineering and
structural applications

SANS 121/ISO 1461: Hot dip galvanized coatings on fabricated iron and
steel articles - Specifications and test methods

4.0 Design Data

4.1 The steel tubes shall comply fully with SANS 657: Part 1 except where amended herein.

4.2 The steel street lighting poles shall be designed to support two luminaires of unit mass of approximately 20 kg each.

4.3 The steel street lighting poles shall be manufactured of grade 300W steel or equivalent, in accordance with SANS 657 with a minimum yield stress of 300 MPa and a minimum tensile strength of 450 MPa.

4.4 The steel street lighting poles shall be capable of withstanding a fluctuating wind load in accordance with the requirements of SANS 10225. The maximum horizontal deflection at the spigot end, when subjected to two thirds of the design loading, shall not exceed 0,025 of the developed length above ground. The maximum vertical deflection at the spigot end, when subjected to the mass of the luminaires shall not exceed 1,5 % of the total length of the pole. Tenders must be accompanied by full technical details including comprehensive strength calculations certified by a qualified professional structural engineer.

5.0 Street lighting poles

5.1 The steel street lighting poles shall have minimum wall thicknesses as indicated on the drawings.

5.2 Protection sleeves shall be fully seal welded onto the steel street lighting poles. The dimensions of the protection sleeves shall be 600 mm long mild steel with a thickness of at least 3,5 mm and shall extend 300 mm above and below ground level.

5.3 Base plates, as per drawings shall be fitted to all steel street lighting poles.

5.4 A hatch opening 300 mm long, 95 mm wide shall be provided 3000 mm above the groundline. All edges are to be free from burrs and protrusions. The pole dimensions shown shall be increased to provide the required modulus of section or, alternatively, interior reinforcing shall be provided, should either of these requirements be necessary. A M6 stainless steel set screw (for earthing purposes) shall be fitted adjacent to the stud which is used to fasten the cover plate for the hatch opening.

Alternative shapes of hatch openings may be considered but drawings showing full details of the proposed alternative arrangements shall be submitted with tender for approval.

5.5 Cover plate for hatch opening:

5.5.1 A curved mild steel cover plate of the same wall thickness as the steel pole shall be fitted to cover the hatch opening. The cover plate shall be permanently attached to the pole by a fixing mechanism eg chain which shall be welded onto both the cover plate and pole. The plate shall be secured in the closed position by means of a M10 _ 25 mm galvanized or stainless steel stud welded to the pole, and a unique heptagonal (seven-sided) M10 stainless steel or brass nut. Once the cover is secured to the pole the nut shall not protrude beyond the diameter of the pole, and it shall only be possible to remove the nut with the aid of a tube spanner. The tenderer shall submit a fully detailed working drawing of any alternative cover and fixing mechanism offered, eg for cover plates of UV stabilised, impact resistant plastic. Due to the prevalence of removal and theft of cover plates by vandals within the area of

supply, preference will be given to designs whereby the cover plate sits flush with the exterior surface in order to prevent external leverage by means of tools and other implements.

5.5.2 The cover plate shall fit against the steel streetlight pole to give a flush exterior appearance.

A one piece silicon gasket (approximately 2 mm thick) shall be provided for sealing the cover plate to the pole.

5.6 Cable access:

5.6.1 For all steel street lighting poles, two 100 mm _ 65 mm slot shall be cut opposite one another at 90° to the hatch opening.

5.6.2 The slots shall be well radiused and free of burrs.

5.6.3 Anti-rotation fins to be welded below the protection sleeve. A minimum of 2 x fins is required.

6.0 Alternative Designs

6.1 Alternative designs of steel street lighting poles may be considered for acceptance provided that the poles are supplied in one piece.

6.2 For the alternative design, the tenderer shall submit with its tender, fully dimensioned drawings, and design calculations. These designs and calculations shall have been carried out by a qualified professional structural engineer. Documentary proof of compliance with this requirement will be required. It shall be required that the hatch opening, cover plates, cable entries, protection sleeves, fins, spigots and joints be in accordance with the drawings submitted.

7.0 Anti-vandalism

Pole design and manufacture to include anti-vandalism plates welded on the inside of the pole to prevent the poles being cut down. Manufacturer designs and recommendations would be considered in this regard. The anti-vandal plates to be welded within the pole in a cross-plate formation from bottom of pole up to the height of the access hatch. Refer to drawings.

8.0 Marking

8.1 The steel street lighting pole shall be clearly stamped, 50 mm below the hatch cover plate, with 12 mm number and letter punches with the following:

- (a) the Contract number,
- (b) the manufacturer's name, and
- (c) the pole size.

8.2 The lettering and numbers shall be clearly visible after hot-dip galvanizing.

8.3 Alternative methods of marking poles may be considered provided that a full description of the marking process shall be submitted with the tender documents.

9.0 Inspection

In addition to the requirements listed below, all poles shall comply with the test requirements of SANS 0225.

10.0 Anti-Vandal Streetlight Poles

The anti-vandal streetlight poles shall be specified for use at areas where vandalism is deemed as MEDIUM and HIGH risk.

The technical specifications of the anti-vandal street light poles shall comply with all relevant SANS standards and pole specifications in the general specifications. In addition to the requirement of the general specification, the following items shall apply.

(a) Pole dimensions

The pole dimensions for the streetlight poles are noted below. Any deviations to these requirements will only be considered as an alternative submission. Non compliance may render the tender non-responsive.

Technical Details	Requirements
Total Length of pole	5 000 mm – 12 000mm
Length of bottom section	6 000 mm
Diameter of bottom section	152 mm
Thickness of bottom section	3.5 mm
Length of middle section	3 000 mm
Diameter of middle section	114 mm
Thickness of middle section	3.0 mm
Length of top section	2 800 mm
Diameter of top section	76 mm
Thickness of top section	3.0 mm
Length from bottom of pole to ground line	1 800 mm
Hatch opening	3000mm from finished ground level to centre of hatch.
Anti-rotation fins x 2	450 x 125 x 6mm

(b) Anti-Rust Protection Sleeve

An anti-rust Protection sleeve shall be fully seal welded onto the steel street lighting poles at the interface point between the section of pole that is buried and part that is exposed. Poles to be buried in a way that the protection sleeve is partially buried and balance exposed, ideally buried midway between the protection sleeve.

The dimensions of the protection sleeves shall be 600 mm long mild steel with a thickness of at least 3,5 mm and shall extend 300 mm above and below ground level.

(c) Anti-Vandalism Plates

Pole design and manufacture to include anti-vandalism plates welded on the inside of the pole to prevent the poles being cut down. Manufacturer designs and recommendations would be considered in this regard. The anti-vandal plates to be welded within the pole in a cross-plate formation from bottom of pole up to the height of the access hatch. Anti-vandal galvanised pipes for the cables and anti-cut jagged plates to be installed to protect the cables inside the pole.

(d) Inspection

In addition to the requirements listed below, all poles shall comply with the test requirements of SANS 10225.

The finish of the poles shall be natural hot dipped Galvanised finish.

11.0 Anti-Vandal Streetlight Poles with Electronic Security

The anti-vandal streetlight poles with electronic security shall be specified for use at areas where vandalism is deemed as HIGH risk.

The technical specifications of the anti-vandal street light poles shall apply with the following additional requirements.

Each anti-vandal pole to be provided with components of approved electronic security system. The electronic security to be as specified in the security section of this specification.

(a) Electronic security system

The pole shall be fitted with the following electronic security(i) One vibration sensor should be fitted on the inside of the anti-vandal pole.

MINI SUBSTATIONS

ANTI-VANDAL MINI-SUBSTATION

The anti-vandal Min-substation shall be specified for use at areas where vandalism is deemed as MEDIUM risk.

The technical specifications of the mini-substation kiosk shall comply with all relevant SANS standards.

The mini-sub to be minimum IP65 rated and suitable for use and shall be a fully 3CR12 stainless steel unit.

The min-substation shall be supplied complete with a security cage around the unit.

All LV distribution circuits to be standardised and manufactured for 3 phase supply and 3 phase circuits

Each LV distribution circuit shall include the following equipment as per details on the drawings or schematic.

- 1 x 3 pole on-load main circuit breaker (Based on transformer size)
- 1 x set 3P+N Surge arresters
- 9 x 32amp 1 Phase streetlight circuits.
- 1 x 32amp 3 Phase streetlight circuit.
- 1 x 20amp 1 pole spare circuit breaker
- 1 X 63amp 1 phase ELU, 3 x 20amp CB's + 1 x 16 amp SSO
- 1 x concrete base per Mini-substation manufacturer's approval
- 4 x keyed alike 61mm black all weather brass lock with a strength rating of >5,
- 1 x daylight switch complete with control circuit to contactors
- 3 x 32amp 3 pole AC1 contactors
- 1 x 5amp 1 pole CB, 1 x bypass circuit breaker

The colour finish of the Mini-substation shall be Moss Green. RAL 6005

The entire enclosure (enclosure shell, roof, doors) shall be manufactured from 4mm (minimum thickness) 3CR12 (Corrosion Resistant Steel)

The enclosure is to be custom built to match the transformer, MV and LV compartments

Anti-vandal covers over Locks shall be fitted on each door.

All non-lockable doors shall be fitted with two 20mm stainless steel sliding pin locks, locking in the vertical position. The sliding pins shall be fitted with a retaining spring. The pins must slide into a receiver plate or receiver housing mounted on the top and bottom of the mini-sub inside panel plates and lock in that position.

The enclosure shall be suitable for mounting onto the existing / new miniature substation base.

The Enclosure Shell must be bolted onto the concrete plinth from the inside of the enclosure; it should be easily removed from the plinth if required.

The enclosure shall house the entire miniature substation, with the transformer cooling fins exposed to allow natural cooling of the transformer

Nothing must obstruct the operator from operating the switchgear when doors are opened. The enclosure shall be weather proof and safe to operate in any weather condition

The enclosure shall be robust enough to prevent tampering.

Bottom entrance prevention 3CR12 plates shall be inserted between the enclosure and plinth on the LV side of the enclosure. The purpose of the plates is to prevent access to circuit breakers, meters and any other installed equipment should someone dig a hole underneath the plinth to obtain entrance to the equipment. The Steel Plates should be at least 3mm thick.

Enclosures should be properly earthed both on the MV & LV sides as per specification.

All set screws, nuts and spring washers for fitment of different parts or equipment inside the enclosure shall be stainless steel.

Enclosures shall be properly prepared in the correct manner and powder coated for protection against corrosion.

Ventilation shall be adequate to allow that all installed equipment inside the enclosure shall operate normally in temperatures between -10°C and 60°C.

At the interface between the Mini-substation and the concrete base, the sides of the Mini-substation shall overlap over the sides of the base to restrict attempts to cut the mounting or holding-down bolts using a grinder.

The enclosures shall be manufactured from quality steel and capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity which are likely to be encountered in the services and at the same time ensuring the desired degree of safety.

The Enclosures shall be adequately protected against rust, dust and corrosion both from inside and outside.

The fabrication of material shall be done in such a way that there is a good finish of fabricated/moulded material. The material shall be fabricated/moulded accurately to adhere to dimensions as per the drawings

The enclosure shall be fabricated / welded such that the rain water does not enter the enclosure.

A Danger notice shall be fitted on all doors. The enclosure shall be fitted as per requirements on the schematic drawing.

The mini-substation and cage must be adequately earthed by means of an earth spike/s and 16mm² earth wire. Earthing to be carried out and tested in terms of SANS 10142. If earth resistivity is not achieved, further earth spikes and or earth wire to be installed to achieve the specified minimum readings.

Rails shall be mounted in the LV compartment to accommodate the LV equipment as per the Mini-substation schematic or with minimum requirements as noted below. The circuit breakers and switchgear shall be included in the rate.

All set screws, nuts and spring washers for fitment of different parts or equipment inside the enclosure shall be stainless steel.

Enclosures shall be properly prepared in the correct manner and powder coated for protection against corrosion

The doors' surrounds shall incorporate a splash-proof sill around the inner border of the door opening of the Mini-substation.

The enclosure shall be weather proof and safe to operate in any weather condition

Enclosures shall be adequately earthed.

The enclosures shall be manufactured from quality steel and capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity which are likely to be encountered in the services and at the same time ensuring the desired degree of safety.

The enclosure shall be free standing on the ground and properly mounted on an anti-vandal concrete plinth.

The Enclosures shall be adequately protected against rust, dust and corrosion both from inside and outside.

The fabrication of material shall be done in such a way that there is a good finish of fabricated /moulded material. The material shall be fabricated/moulded accurately to adhere to dimensions as per the drawings.

The enclosure shall be fabricated / welded such that the rain water does not enter the enclosure. A Danger notice shall be fitted on all doors. There shall be no external holes and the complete Mini-substation shall be robust and vandal proof. The unit shall be vermin and bug proof.

(a) Construction material

Enclosure Material (shell, roof and doors) 4mm 3CR12

Gland Plates 2mm 3CR12

Inner electrical equipment mounting plates 2mm 3CR12

(b) Installation requirements

The enclosure should be fitted onto a suitable concrete plinth which is planted as specified.

The enclosure door/s should NOT face the road side to ensure that the field operator does not have their back facing the road when working on the Mini-substation.

Mini-substations should be visible from road to restrict opportunities of vandalism.

(c) Doors

Reinforced doors must be mounted and recessed inward by no less than 4mm.

The door shall be flush with the box frame.

Doors shall be manufactured with minimum 4.0mm 3CR12 and to be the same type of steel as the rest of the enclosure shell.

There shall be no external hinges or holes. Hinges and doors shall be robust and vandal proof

Doors shall be marked in the inside as well.

The door's surrounds shall incorporate a splash-proof sill around the inner border of the door opening of the Mini-substation.

A pull handle / knob shall be welded onto the outside of the doors on the opposite side of the hinges in the middle of the vertical dimension of the door for easy opening and closing the enclosure door

The doors shall be fitted to be vermin proof.

(d) Hinges (durable and vandal proof)

Hinges Holding Bracket: 2 x Internal hinges per door

Hinges Material: 3CR12

Hinge Load Capacity: ± 100 kg per hinge

(e) Sturdy door stays

Material: Stainless Steel

Door open stay position: 90° Minimum

(f) Roof: general requirements

The roof of the enclosure shall be sloping to allow water to run off.

The roof shall be manufactured with the same thickness of steel and steel type as the rest of the enclosure shell.

The roof shall be permanently secured onto the enclosure shell to form part of the enclosure as a complete unit.

The roof shall only have an overhang on the door sides, but should be fitted flush against the non-door sides

There shall be no external holes and the roof shall be robust and vandal proof.

The roof shall be vermin and bug proof.

(g) Ventilation slots / louvers

Ventilation slots / louvers shall be machine punched on the sides of the enclosure shell to prevent condensation build-up.

Cross flow venting for natural draft ventilation and to remove excess heat build-up.

The ventilation slots shall be covered in the inside of the enclosure with a corrosion proof stainless steel wire mesh screen.

The ventilation slots shall be robust and vandal proof.

The ventilation slots shall be designed to prevent the ingress of rain, bugs, debris and shall be vermin proof.

Ventilation shall be adequate to allow that all installed equipment inside the enclosure shall operate normally in temperatures between -10°C and 60°C.

The Enclosure shall be constructed to allow adequate dissipation of heat. Ventilation of the enclosure shall not compromise the security of the enclosure and the equipment housed there-in.

(h) Gland plates

Gland plates will be secured onto the chassis frame with the required stainless-steel bolts, nuts and washers.

Knockout gland holes will be provided on the plates.

The knockouts shall be spot welded onto the gland plate and shall be easy removable during cable installation.

Gland Plates must not be powder coated.

(i) Lifting lugs / hooks

Lifting lugs shall be adequately welded on the sides of the roof of the enclosure to enable installation / removal of the enclosure with means of a lifting crane using relevant d-shackles and slings.

Enclosures shall only be moved into position safely and securely by means of lifting lugs

These lifting hooks shall be designed to hold twice the actual weight of the enclosure.

(j) Security cage

Cages to be constructed of a 50mm square tube frame with 20mm square tube screen with maximum openings of 100mm x 100mm. Access locks to be enclosed by means of vandal proof covers welded to the cage. All hinges and lock covers to be welded and installed in a way to prevent it being vandalised. The full frame to be hot dip galvanised to SANS 121 and painted.

Cages to be bolted to the concrete base in a way to prevent removal from outside of the fence.

Item	Description	Detail
1	Unit type	Mini-Substation
2	Continuous maximum rating at rated voltage of transformer	100/200/315/500kVA
3	Indoor or Outdoor?	Outdoor
4	Number of phases	3
5	Dry type or oil immersed?	Oil immersed / Dry Type
6	Rated frequencyHz	50Hz
7	Normal "ON LOAD" phase-to-phase voltages for transformer:	MV: 11000/6600/3300 Volts LV: 400 Volts
8	System highest operating voltage for transformer:	MV: >10% of operating voltage
9	Vector group of transformers	Dyn 11
10	Type of cooling	ONAN
11	Tapping	Fixed
12	Cable boxes or outdoor bushings for line terminals of transformer:	MV: air filled cable box LV air filled cable
13	Cable Connections	MV: As required LV: As required
14	MV Compartment	3 x circuits: 2 x 125Amp fused isolators for ring 1 x 20Amp fused isolator tee to transformer
15	LV Compartment	1 x 150Amp Main Circuit Breaker 9 x 32Amp 1 Pole Circuit Breakers 1 x 32Amp 3 Pole Circuit Breaker

Item	Description	Detail
		2 x 20Amp 3 Pole Circuit Breakers 3 x contactors, 1 x 5Amp CB + bypass 1 x 230V 63amp CB and ELU, 3 x 20Amp 1 Pole Circuit Breakers
16	PSC Rating for circuit breakers and busbars	10kA
17	Enclosure	IP65
18	Enclosure Material	3CR12
19	Colour	Moss Green
20	Windings	Copper
21	Shop Drawings required	Yes
22	FAT Test certificates required	Yes
23	Equipment & Installation Guarantee	12 Months from handover to client

(k) Security fence

Anti-vandal fencing is to be secured onto the cage frame on the outside. Fence type to be galvanised Razor Ripper Wire welded to the cage frame. Openings of the Razor Ripper Wire to be maximum 300mm high and 150mm wide.

(l) Distribution transformers

The technical specifications of the transformers shall comply with all relevant SANS standards.

ANTI-VANDAL MINI-SUBSTATION WITH ELECTRONIC SECURITY

The anti-vandal Mini-substation with electronic security shall be specified for use at areas where vandalism is deemed as HIGH risk.

The technical specifications of the anti-vandal mini-substation shall apply with the following additional requirements.

- (i) UPS Backup – Minimum 2 Hrs and electronic equipment.
- (ii) Electronically activated locks
- (iii) door sensors,
- (iv) vibration sensor on kiosk and cage.
- (v) an electronic back-up / override system

The electronically activated door layout positions of the front side of the mini-sub should remain the same for all enclosures as far as practically possible

Door sensors shall be fitted on each door, door sensors on the LV side shall be connected in series as one zone and all sensors on the MV side shall be connected in series to form a second zone

Two vibration sensors should be fitted on the mini-sub enclosure one on the LV side and one on the MV side, both vibration sensors should be connected into series to form one protection zone

All non-electronically activated doors shall be fitted with two 20mm stainless steel sliding pin locks, locking in the vertical position. The sliding pins shall be fitted with a retaining spring. The pins must slide into a receiver plate or receiver housing mounted on the top and bottom of the mini-sub inside panel plates and lock in that position.

(a) Distribution transformers

The technical specifications of the transformers shall be as per anti-vandal mini-substation specification with the following additional requirements.

Item	Description	Detail
25	ELV Compartment	Space for electronic equipment. To be separated physically for access by non-qualified electrical staff.

ELECTRONIC SECURITY SYSTEM FOR KIOSK, MINI SUBSTATIONS AND POLES

The enclosure and cage shall be fitted with the following electronic security: (i) electronically activated locking mechanism per door, (ii) door sensors, (iii) vibration sensor on kiosk and cage. (iv) an electronic back-up / override system

(a) Hardware Requirements

Tampering detection modules- end devices

For the detection of tampering of electrical substations, mini-substations, outdoor transformers, LV kiosks, lighting structures, fences and gates using Radio Frequency technology.

Minimum Requirements:

(i) Ingress Protection Rating- IP 66

(ii) Communications— Long Range Bi-directional RF (RX: 863-873MHz, TX: 864-873MHz)

(iii) Range - 2km radius

(iv) End-to-End encryption- AES 128-bit

(v) Rated Current - <1A

(vi) Operating Voltage-3-5V DC

- (vii) Battery Type- Lithium
- (viii) Ambient Temperature Range- -10°C to +50°C
- (ix) Relative Humidity - 40% to 90% RH
- (x) PCB Coating- Conformal Coating
- (xi) PCB Surge Protection- Integrated

(b) Magnetic & optical open/close sensors

For Substations, Mini Substations, Outdoor Transformers, LV Kiosks, Enclosures, and Gates)

Minimum Requirements:

- (i) Sensor devices should be robust in construction for industrial use.
- (ii) The sensor should have a reliable detection against tampering with high immunity against false alarms.
- (iii) The sensors should have a multi-level, application specific sensitivity adjustment to ensure that the sensors can be easily fine-tuned to the environmental conditions in which it is installed.
- (iv) All access doors of vandalized substations, mini-substations or enclosures shall be fitted with door sensors (magnetic or optical).

To be installed strategically for optimal functioning.

(c) Vibration sensors

(For Substations, Mini Substations, Outdoor Transformers, LV Kiosks, Enclosures, Lighting Structures and Fences)

Minimum Requirements:

- (i) Vibrations are detected through a piezo element.
- (ii) The sensitivity should be subject to three parameters i.e. vibration, time and frequency.
- (iii) Sensor devices should be robust in construction for industrial use.
- (iv) The sensor should have a reliable detection against tampering with high immunity against false alarms.

The sensors should have a multi-level, application specific sensitivity adjustment to ensure that the sensors can be easily fine-tuned to the environmental conditions in which it is installed.

To be installed strategically for optimal functioning.

(d) Change in direction / tilt sensors

(For Lighting Structures)

Minimum Requirements:

- (i) The sensor shall detect the tilt or deflection in multiple axes of the reference plane and is to be used for the detection of the change of orientation or extreme deflection of equipment.
- (ii) The sensitivity should be subject to two parameters i.e. deflection angle and time.
- (iii) Sensor devices should be robust in construction for industrial use.
- (iv) The sensor should have a reliable detection against tampering with high immunity against false alarms.
- (v) The sensors should have a multi-level, application specific sensitivity adjustment to ensure that the sensors can be easily fine-tuned to the environmental conditions in which it is installed.
- (vi) To be installed strategically for optimal functioning.

(e) Gateway device

(For each project location with end devices)

Minimum Requirements:

- (i) Single Gateway to control up to 1000 devices in range of at least 2km radius.
- (ii) Gateways are to be used in long range star network architectures.
- (iii) Ingress Protection Rating IP 66
- (iv) Communication to devices– Long Range Bi-directional RF (RX: 863-873MHz, TX: 864-873MHz)
- (v) Communication to server/s – Primary GSM communication with fibre where available as back-up.
- (vi) Controller to have option to add a Wi-fi module for communication.
- (vii) Range – 2 km radius
- (viii) End-to-End encryption- AES 128-bit
- (ix) Ambient Temperature Range- -10°C to +50°C
- (x) Relative Humidity -40% to 90% RH
- (xi) PCB Coating- Conformal Coating (xii) Internet Communication- Protocol IPv4

(f) CCTV camera system

(For each project location with end devices)

Each Camera system to include the following components:

- (i) 2MPx PTZ IR Camera
- (ii) Ethernet/Fibre Switch
- (ii) Power Supply for Camera and Switch
- (ii) LAN Cabling

- (ii) Fibre Cabling
- (iii) 12m Concrete Pole

(g) CCTV Camera

Minimum Requirements:

- (i) Rugged outdoor infrared camera that captures details in poorly lit situations
- (ii) 2 MPx, PTZ Camera complete with pole bracket
- (iii) 850nm IR Illumination to 150m
- (iii) Resolution: 1920x1080
- (iv) 30 x Optical zoom
- (v) 32 x Digital Zoom
- (vi) H.265, H.264 and MJPEG Video encoding
- (vii) Tilt range +15o to -90o
- (viii) Digital Image Stabilization
- (ix) Range – 2 km radius
- (x) Day/Night capabilities
- (xi) Auto Iris with manual override
- (xii) Built-in anti-vandal analytics alarm

(h) Fibre / Ethernet switch

(i) Minimum Requirements:

- (ii) 5-port full gigabit unmanaged Ethernet switch with 4 IEEE 802.3af/at PoE + ports
- (iii) Industrial EDS-G205-1GTXSFP series
- (iv) Full Gigabit Ethernet ports
- (v) IEEE 802.3af/at, PoE+ standards
- (vi) Up to 36 watts output per PoE port
- (vii) 12/24/48 VDC flexible redundant power inputs
- (viii) Supports 9.6 KB jumbo frames
- (ix) Intelligent power consumption detection and classification
- (x) Smart PoE over current and short circuit protection
- (xi) -10 to 60°C operating temperature range
- (xii) Power supply for switch and Camera

(i) Electronic controller

(For the access control of all Substations, Mini Substations, Outdoor Transformers, LV Kiosks, and Enclosures fitted with electronically activated locksets)

The controller shall be a Bi-Directional Communication device

The main controller output should be the primary source for all required locking arrangement systems and sensor devices

The battery back-up power will be the secondary source for the controller when the primary source is not available.

Controller and software shall be capable of sending and accepting instructions to perform remote switching from a control room or office by means of a smart device, desktop computer, lap top computer, or any other pc system available.

The Controller and software shall be compatible with wireless technology (Internet of Things), Low Power, Long Range Radio Frequency (RF), Wi-Fi, and Bluetooth Communication Systems

The main controller should be the master controller and the override controller should only be utilised when the main controller fails, or no controller communication is present

Override controller should report via the same Master Control and Monitoring Software.

Electronics and software shall be capable only to open and close enclosures by means of approved methods such as remote keys, tag readers or via smart devices utilising password protected software.

The override controller shall have its own unique serial number and displayed on the software program and can't be operated if the serial number is not allocated to a specific master controller.

The controller must be adequately protected against lightning and power surges

Controllers should be RTC (Real-Time-Clock) compatible for date/time stamping of all events and alarms

The Main Controller shall be compatible with both solenoid and motor driven locking arrangement systems.

(j) Event/ alarm logging & reporting

The Controller with the software shall identify the authorized person opening and closing any enclosure and store the information on a database which will upload information to the client server via the gateway device.

The controller and software shall store the record of the date and time when the enclosure was opened and closed on a data base.

A health / status check should be performed every 60 minutes automatically between the controller and software (Bi-directional Communication).

The controller shall be fitted with a visual and audible alarm and must make a sound when the enclosure is accessed in an authorised / unauthorised manner.

The preferred operation shall be from a Smart Device and Centralised Control Centre with Authentic Cloud Base Software.

Any events/ alarms that occur in the field shall be automatically sent to the control and monitoring system.

The event shall be identified and displayed together with the address of the enclosure (geographical area, street address, enclosure number, controller serial number).

The Controller and software shall constantly monitor the back-up battery voltage and condition and immediately report when the battery voltage drops below 11.6 V or is non-existing / removed.

Communication Signal Strength should be monitored and a weak or no signal event should be recorded and reported immediately for the required attention.

Mains power failure should report to the main server and only sends a SMS to the standby staff after 4 hours to accommodate load shedding conditions.

Mains power failure time period should be accurately as possible be recorded in regards when power was disconnected and when power was restored again

Three phase monitoring and any missing phase must be reported if required.

Any abnormal operation of accessing the enclosure should be immediately reported by means of the controller and software to selected persons.

Any abnormal vibration for example from a grinder, hammer or any other forces should be immediately reported by means of the controller and software to selected persons.

The controller and software shall report normal authorised access activities to a software database for record keeping.

The controller and software shall alert selected people when enclosure doors are open for longer than 4 hours at a time.

The controller and software shall be capable to detect and store at least the last hundred (100) events of any enclosure before it is overwritten. An early alarm should warn specified pc stations if the event recording has reached 80% of its capacity for an operator to download and store the information on backup server/s.

The system should be able to notify / alert selected people of any alarm events via sms and / or e-mails.

(k) Ups unit

On-line UPS to be provided for the electronic equipment during power failure.

UPS to be suitably sized to ensure the minimum back-up time of 2 Hours on UPS power is achieved on Full load of all the controllers and electronic equipment.

The UPS should have one main supply input connection point and at least three battery backup outlet connection points.

Frequency – 50Hz

UPS to be line interactive technology with a sine-wave output waveform.

Battery technology to be Lead acid or Nickel Cadmium.

UPS to be suitably rated to operate between -5oC to 40oC

The UPS to be installed in a way to be easily unplugged for replacement.

(l) Battery backup

Battery backup power should be available for at least 48 hours and controllers should be fully functional for at least 20 operations during this 48-hour period.

The backup power source shall be rated for at least 4 years operating life.

The backup power shall be protected against incoming surges.

The system should have an automatic change over facility between mains and battery operations without losing any operation of the controller and any of its sensors

The backup power source shall be protected against excessive discharges.

On-board charger to be used to not overcharged batteries to prolong their useful lifespan.

The charger must monitor the battery's voltage, temperature or time under charge to determine the optimum charge current and to terminate charging.

Charger should fast-charge the battery up to about 85% of its maximum capacity in less than two hours, then switch to trickle charging, which charges the battery to its full capacity in less than 24 hours.

(m) Power requirements

The power supply to the electronic controller shall be protected by a suitable circuit breaker against overload and short circuit conditions and to disconnect the supply to the controller when required.

A clip-on neutral screw type terminal connection block shall be mounted next to the controller, a neutral conductor from the main neutral bus-bar shall be utilised to supply the neutral terminal connection block, the neutral supply shall be from the connection block and not directly from the bus-bar.

A clip-on earth screw type terminal connection block shall be mounted next to the controller, an insulated earth conductor from the main earth bus-bar shall be utilised to supply the earth terminal connection block, the earth supply shall be from the connection block and not directly from the bus-bar.

The circuit breaker, neutral and earth connection terminal blocks shall be mounted side to side to one another next to the controller on a Din Rail.

The controller and control circuit equipment shall be clearly labelled / marked.

(n) Antenna

As far as possible all antennas should be internal.

Should be RoHS compliant.

Antennas should be high gain omni-directional and should match the correct communication controller module and operating frequencies for the application.

Antennas should be omni-directional i.e. no faraday cage must be formed

Where communication is inadequate with an internal fitted antenna, an external antenna should be fitted.

External / Outdoor Antennas Should Conform to The Following:

A moulded (eg. resin type) robust, heavy duty vandal proof type.

Weather resistant, IP67 rated.

Can only be removed with the means of tools.

The housing should be a direct mount antenna package with excellent isolation (10dB+). The antenna should have its own ground-plane and must radiate on any mounting environment like metal or plastic without affecting performance.

Should be fitted with a suitable waterproof seal not to allow water inside enclosure.

(o) Data usage

Data usage should be kept to the minimal to reduce costs but not to compromise required performance.

The controller required is for access control and asset management purposes, data usage is basically for an hourly health status check and when alarm or other events are triggered.

Data usage of the RF Communication system is the Data between the Gateways and Server/because of the RF communication between end-device and Gateway it is important to determine the total Data usage between Gateways and Servers and relate to an average usage per controller.

(p) Override controller

The override controller shall be powered from an external 12V DC supply as connection points are fitted on the outside of the enclosure for this purpose, controller should be protected against any other voltage input not rated for correct operation.

The override controller should be connected that it operates all doors at the same time where electronically activated locking arrangements are fitted in metering and distribution enclosures, in the case of mini-sub, two override controllers should be installed, one on the LV side and one on the MV side to ensure different level of access are maintained and connected to the electronically activated locking arrangement doors.

The override controller shall be protected against incoming surges any harmful overcurrent, short-circuit and earth fault conditions.

The override controller shall be protected against incoming voltages greater than 12V DC and up to 415V AC.

The override controller shall have its own unique serial number and displayed on the software program and can't be operated if this serial number is not allocated to a specific authorised user.

The override controller should have a 12V DC (10A) output and the output wires should be directly connected to the electronically activated door locking arrangement.

The override controller should be Bluetooth / Wi-Fi operated.

The override controller must be operated by a Bluetooth Smart Device and only receive commands via the Master Access Control and Monitoring Software to ensure only authorised users are allowed to have access to the locking arrangement devices.

The operation is via the Master Software and must still record all access events including the user details.

Should be compatible with the latest Android operating system.

SOFTWARE & USER INTERFACE

(For the monitoring and management of all security devices installed at the various project locations).

(a) Software: access control and monitoring minimum requirements for electronic controllers

(i) Software (general requirements).

Software shall make provision for the following 3-Type of users:

(1) Administrator / Master User: (Will be able to edit and access the software with no restrictions).

(2) Supervisor Level: Can access all reports and e-mail sections, and clear certain alarms from the system, but is restricted to add or delete users and to add or delete node end-devices or make any changes to them..

(3) Restricted Field User: Can only access the program to unlock an electronically activated device within a certain set GEO / Group Fence zone.

Software should be Subscription-based and Cloud-managed for simplified remote access control, monitoring and management of the entire network accessible via SANRAL dashboard to avoid individual user software installations, delivering a ready-to-deploy solution that saves time and money.

Users should be restricted by a Geo Fenced allocation, by region, or project location.

Software shall provide for easy access to information and Real-time notification of network alarms, alerts and event logs.

Map based interface should provide a quick overview of the installed end-devices displaying on the same page information of the end-devices as follows:

- (1) Device Name.
- (2) Stand No.
- (3) Street No.
- (4) Suburb / Area.
- (5) Health Status.
- (6) Sensor Type.
- (7) Sensor Status.

All events must be logged into the Access Control System database, date and time stamped and should be available for customized reporting.

In addition to logging all events in the Access Control System, the System shall be able to provide the historical record of all events of a specific electronically activated control and monitored end-device since commissioning of the end-device.

Each event (if selected) shall trigger an alert and an SMS and / or an Email shall be sent for each event to individually program mobile numbers and email addresses. SMS / email should be configurable based on priority. Several user accounts should receive SMS-email, and the list of users should be customizable.

Automated Backup of Software and data base populated information must also be made available to SANRAL.

Remote update of unit firmware functionality should be available.

Logs of all events must be made available automatically on a scheduled time via e-mail and from direct access of the software in a *.xls format.

The populated information of the end-devices in the software data basis must also be used as an asset control management tool.

The software should have a user-friendly search option to quickly locate an installed node / controller device on the GIS map. The sort / filter fields are:

- (1) Street Number
- (2) Stand Number
- (3) Street Name
- (4) Suburb / Area
- (5) Town

There should be a function whereby the user can be directed / navigated to the location of a specific node / controller from the position he / she is in.

Software should be compatible with Windows 10/8/7 and with Android to allow for communication via Android Smart Devices.

An Android Application is required on the Smart Devices to easy access the electronically activated device application.

Software should be able to generate automated reports.

The data base / server system shall be minimum SSL (Secure Sockets Layer) 128-bit encrypted.

Software should be able to communicate with selected controllers at the same time especially when the same command needs to reach all controllers. The system shall allow for individual selections as well as group selections.

A health / status check should be performed every 60 minutes automatically between the controller and software updating the status of the end device (Bi-directional Communication).

Software should be able to send SMS and / or E-mail messages in selected alarm events occurrences.

Software should be able to remotely control and managed the controllers and perform diagnostic tests in the back end and must be able to re-boot / reset the controller if needed.

(b) Software (required information fields)

Controller Serial Number

Controller Installation Location (Street Number, Street Name, Suburb, Town, GPS Coordinates – Decimal Degrees)

Controller Initial Installation Date

Enclosure Type: (Mini-Sub, Ground Mounted Metering Kiosk, Ground Mounted Distribution Kiosk, Ground Mounted MV Switching Kiosk / Ring Main Unit, Pole Mounted Metering Kiosk, Pole Mounted Distribution Kiosk etc.)

Controller Status: (Healthy / Forced Open / Off-line / Normally Accessed / Alarm Status if triggered)

User Details: (Registered Name and Login Name)

All Event Logs of End-Device (Should display a summarised report of all actions of the end-device)

All User Logs (Should display a summarised report of all the actions performed by the authorised user)

(c) Software (access control requirements)

Log on to the server software will only be possible when the server data base determines the validity of the cellular number / ID number + the user selected password permitted on the server of the user.

Verification via a smart device / pc / laptop / tablet shall only be when the authorised operator log onto the GIS based software and provides a user name + a 6-digit (minimum) password; the system must be able to change the password on a daily basis automatically if required to do so.

The user should create his / her own password after a Master User has enrolled the normal user on the system.

Access permissions for each individual user should be based on time, date, GEO Group Area and authority level.

Software shall restrict operators per working area / GEO Group area and access hours to the system, eg. a person can only work in a certain area and the access is only for 1 day (8hours) from 08h00 until 16h00 or any other required period from 1 minute until unlimited access as desired.

The software shall identify the authorized person opening and closing any enclosure and store the information on a data base (preferably a client server).

The software shall store the record of the date and time when the enclosure was opened and closed on a data base.

Software should be able to report which specific door is open if it is an enclosure with more than one door.

Software shall be capable to identify the installed GPS position / location of any controller.

Controller and software shall be capable of sending and accepting instructions to perform remote control and monitoring from a control room or office by means of a smart device, desktop computer, lap top computer, or any other pc system available.

Controllers and software must be capable to allow independent programming of a specific enclosure door, as an example at a mini-sub an operator is only allowed to have access to

the low voltage (LV) compartment of the mini-sub and not to the medium voltage (MV) compartment.

Software (monitor requirements) features

Mains power status

Battery status

Authorised and unauthorised access user monitoring

Vibration sensor status

Temperature sensor status if fitted

Door sensor/s status

Health status of Main controller

Status of the Auxiliary Controller

Communication status and signal strength (Poor, Average, Good)

Solenoid / Motor Output Status

The Time the Enclosure is accessed

The Time the Enclosure is closed

Total Time spend at enclosure

Power supply status of all phases

Power consumption of entire enclosure load

Software (GIS map based alarm events & icon indicators)

(d) Software (alarm, alert and monitoring events)

All Key Alarm events must be dispatched immediately via a sms or/and e-mail to selected users at the set time periods below, the system must be capable to generate multiple messages / e-mails simultaneously. The sms and e-mail systems should have a functionality to “force” the receiver to accept the alarm / event condition as proof that the alarm has been dispatched and received. If a sms / e-mail has not been accepted in a specified time (15 minutes’ maximum) then it should be escalated to the next level for action. System should cater for at least 4 levels of escalation.

All alarm and other events must be updated automatically on the web-based program within the time periods indicated below. All outstanding alarm events should be escalated to all relevant user levels for attention.

The system should be able to have an escalation function if the alarm event is not accepted and attended to within a selected time period, as an example: The first line user is Electrician A and receives a forced opened alarm of enclosure XXX via sms after a half an hour the alarm still remains unattended, then the first escalation must be triggered and the next inline the immediate Supervisor of the Electrician must be informed, if the alarm still remains unattended after 15minutes the second escalation must be triggered and the direct Responsible Engineer / Manager of the Supervisor must be informed, if the alarm is still unattended after another 15minutes a third escalation should be triggered and the Area Manager / Engineer should be informed and if necessary a fourth escalation whereby the Divisional Head is informed.

Event Monitor Alarm and Reporting shall provide visibility into active alarms on a real-time basis

All alarms require an operator response and must be presented at a rate that the operator can respond to it

It must be clear when the alarm monitoring system is not performing as intended, what alarms have been suppressed if any and why

A special report must be generated and automatically dispatched via a message and e-mail when more than 5 alarm events have occurred from one end-device within 30 days or any other specified time period

Service Providers shall only supply equipment that is immune against false triggers / operation to ensure that alarm events are true and to avoid nuisance call outs which might result in a user distrust / dislike in the system

The System shall report on all the following items:

Anomalies

Events / alarms / alerts

Tamper

Users (All users: Administrator, Supervisor & Field Users)

Assigned Smart Devices.

Extensive reporting on the alerts is required.

Each alert shall have a priority level.

Status of alert shall be:

Accepted (Any intruder alarm condition shall be dispatch for immediate attention)

Outstanding (Escalation of outstanding alert depends on the severity of the alarm / event)

Resolved / Authorised Clearing of Alarm

Reported via SMS and / or E-mail

Only supervisor and administrator users can reset key alarms on the web program after it has been cleared on site.

No alarm / event / alert condition should be cleared on the web program without the required action onsite; the system should escalate alarm / event / alert conditions to relevant action / responsible users if not cleared in specified time frame.

SOFTWARE INTEGRATION

It might be a requirement that the Service Provider needs to integrate their software with the above mentioned to ensure effective software and systems integration methods and to allow the understanding and importance of critical factors such as planning, systems design,

requirements, software design, configuration management, integration, testing, quality integration, test facilities or any other requirements.

Rates will be called for if there is a need for investigations into all systems and proposals to execute such integration whether using middleware or any other methods.

SANRAL has a converged server environment where all applications shall be hosted if requested.

Software (subscription / maintenance / operations / upgrading / updates).

It shall be noted that the software should be made available to SANRAL for the entire duration of this contract.

Monthly "Subscription" / SLA based system, to benefit and receive software updates automatically, to ensure the latest and greatest version is available as soon as new functionality is ready and released.

Along with updates, the service provider should provide unlimited full technical support at no additional cost for the duration of the contract.

There shall be no additional costs for the first year of this contract from date of appointment for any server costs, software subscription / license fees, software access fees or any maintenance or operational costs in terms of the software program/s.

Subscription fee escalation after the first year will be applicable on an annual basis.

Software should be continuously upgraded throughout the contract period at no additional cost to SANRAL.

It is the Service Provider's responsibility to maintain and ensure the software program and all data captured is available 24/7/365 via their own secure servers.

All data captured shall be kept for record purposes for a minimum period of 3 years.

It will also be a requirement that the data bases be stored on SANRAL servers as well and be available and accessible 24/7/365.

If the Service Provider ceases to trade and can't successfully complete his / her contract obligations for the contract period, then the Service Provider will be obliged to provide SANRAL full access to hardware, firmware and software to ensure that SANRAL can continue with its business for the contract duration period.

Asset/ works order management

The Asset / Access Control and Monitor System shall have a works order management module for the tracking of alerts and events raised. The module's functionality shall include but not limited to:

Assignment of Periodically Asset Inspection & Maintenance works orders, alerts / events to specific resource for resolution into the system and generation of a printable form of the work-order.

Date and frequency of the alert/event occurred.

The option to update the status of the alert into the system and logging of the user who has updated the status.

Date of resolution / completion.

Software (support)

Service Providers should have the ability:

To provide general pre-and post-sales product information

To provide Hardware and software configuration and upgrade support

To Collect relevant technical problem identification information

To Perform base problem determination

To Provide Support on the products, protocols and features

To Replace Field Replaceable Units (FRUs) or whole Hardware units as and when required

To resolve misconfigurations, troubleshoot and simulate complex configuration, hardware, and software problems

To perform Hardware diagnostics to determine Hardware malfunction and support problem isolation and determination of product specification defects

To provide lab simulation and interoperability and compatibility testing for new software and hardware releases prior to being deployed into a Customer production network

To define an action plan; provide advanced Support on all products, protocols and features; have the ability to analyze traces, diagnose problems remotely, and provide Customer with complete steps to reproduce a problem

To provide software enhancements such as patches and Hotfixes, fixing or generating workarounds that address software bugs; troubleshoot bugs that were not diagnosed during installation

To work with Customers to resolve critical situations, and building action plans with Customers to address complex issues

LIGHTING MANAGEMENT SYSTEM (LMS)

Supply, install and commission a Lighting Management System suitable to the client's requirements and subject to approval by the client.

The user interface and central point of control of the lighting management system is via the Central Management System (CMS) component of the system. Via, the CMS one is able to perform several oversight, monitoring and control functions, inter alia:

Real-time control

Equipment failure reporting

Energy consumption monitoring

Equipment inventory

Equipment failure analysis

Event scheduling

Work Orders generation

Via the CMS, the Service provider will be required to perform the following functions:

(i) Monitor, analyse and generate custom reports for the Employer for energy consumption, energy savings, equipment failures, fault alarms, device lifetime, work orders, equipment status and failure trends.

(ii) Manage the Contractor access and privileges on the system, with requisite approvals from the Employer

The System to be made up of the following components as a minimum:

Luminaire Controller (LC)

A luminaire controller should be installed in each Luminaire point. Luminaire controllers must communicate with the Zone Controller (ZC) / System server using a protocol that does not require additional wiring from the kiosk to each Luminaire. Communication should be in the form of wireless or other approved form.

LC's receive commands (ON, OFF, dimming, set values and parameters) and send data (e.g. lamp and ballast failures, low power factor, voltage, current, power, energy, burning hours, lamp feedback etc...) back to the Zone Controller (ZC) / System server. The software needs to be an open source software to be able to be supported with other similar software and the integration software used in the client's Control Room system.

Zone Controller (ZC) (If Required)

The Zone Controller is to be installed in the streetlight control kiosk if required as part of the system architecture. The ZC must have a 3 phase smart meter for billing of street lights, modem and scenario button. All information must be transmitted to the control room via fibre optic cables.

The Controller (ZC) must have its own clock to trigger the lamps as per scenario selected. It must also be able to send dimming commands at fixed and/or sunlight time. Lighting scenes must consider external conditions for switching and dimming). All information must be able to be transmitted and stored in the central database.

(c) Software and server connectivity

The software must be open source software and compatible with other similar lighting controllers. The software must be compatible with the integration software provided by the client in their control room server in Pietermaritzburg, Kwazulu-Natal. Control room staff must be able to monitor, control all the streetlights fitted with controllers. Billing software must be provided to provide billing costs for the street lights. Communication to the Clients Server , located at the SANRAL offices in Pietermaritzburg, Kwazulu-Natal to be via Fibre optic cable or GMS is a fibre link is not suitable or available.

(d) User Management

Technical and control room staff must be able to monitor and control each street light installed with a controller. There should be a hierarchy system with password control for staff with different functional control. Monitoring should be accessible by all staff. Staff must also be able to access the software for monitoring and controlling via the web browser.

(e) System Architecture

Software must be open source and compatible with other similar systems. System architecture to include the following components:

Server

Database

Control and technical staff monitors

Zone controllers

Individual light controllers.

APPROVED MANUFACTURERS

Manufacturers: If they comply with these specifications and requirements, products of the following manufacturers will be acceptable:

The manufacturer must be an ISO9001 certified company. Proof of certification is to be submitted together with the tender document, failing which the tender may be disregarded.

Products must carry the SABS mark or an international certification and approved for use in South Africa.

Installers must be certified or registered installers of the manufacturers or their representatives. Manufacturers or their representatives must also have registered offices in South Africa and the local office must carry sufficient stock and spare parts for the project.

PRIORITY OF WRITTEN SPECIFICATION

In the event of any disagreement between the written specification and the drawings, the written specification will take priority over the drawing(s).

SCHEDULE OF STANDARD DRAWINGS

The following drawings are part of the Sanral standard electrical drawings

Drawing No.Title

TD-E-P-1000-1-V1	Anti-Vandal MSS
TD-E-P-1001-1-V1	AntiVandal MSS with Electronic Security
TD-E-P-1002-1-V1	Anti-Vandal Kiosk
TD-E-P-1003-1-V1	AntiVandal Kiosk with Electronic Security
TD-E-P-2000-1-V1	Anti-Vandal Pole 6-12 m
TD-E-P-2001-1-V1	Anti-Vandal Pole with Electronic Security
TD-E-P-3000-1-V1	LV Cable Trench
TD-E-P-3001-1-V1	MV Cable Trench
TD-E-P-3002-1-V1	Sleeve Installation
TD-E-P-4000-1-V1	LMS Topology
TD-E-P-4001-1-V1	Nema Socket on Luminaire
TD-E-P-6000-1-V1	Labeling & Tagging Detail

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 project was originally designed as part of the rehabilitation and upgrading of National Route N11 Section 13 from Mokopane (km 1,310) to the Grootshandsloot River (km 24,0), but it was decided to split the original project into two contracts. This contract (also referred to as Contract 1) entails the rehabilitation and upgrading of the second part of the original project, stretching from the R518 Intersection (km 8,345) to the Grootshandsloot River (km 24,0) over a distance of approximately 15,7 km. A portion of the road between km 19,171 and km 20,204 is omitted from the N11-13 Rehabilitation Contract as it will form part of the proposed new Mokopane Bypass project (design undertaken by Royal Haskoning DHV). Short-term rehabilitation measures for this section of the road are however included in this project to serve as a holding action until the Bypass is constructed. The original road reserve width of 100 Cape feet (approximately 30m) will be increased to 40m minimum over the total length of this contract. The project is located in the Mogalakwena Local Municipality of the Waterberg District Municipality in the Limpopo Province of South Africa. Refer to Appendix 1 in clause C4.14: Appendices, for a Locality Plan of the project.

The existing road is a single carriageway surfaced road with varying width stretching through areas that can be classified as urban, semi-urban and rural. The area from km 14,160 to km 15,820 (Tshamahansi) can at this stage already be classified as semi-urban to urban, while the remaining areas up to km 16,540 are developing fast into semi-urban areas. Only the area from km 16,540 onwards can still be regarded as predominantly rural. From km 8,345 up to the existing mine access road at km 23,360, the existing single carriageway road is to be widened to a 12,4m minimum surfaced width. Between km 13,0 and km 15,2 the road centre line was moved to the right-hand side of the travelled way to avoid affecting several existing properties and improvements situated on the RHS of the road. Paved sidewalks of 1,8m wide are specified over some sections of the road between km 8,345 and km 16,620. The existing road width is retained from km 23,360 up to the end of construction at km 24,0.

The project must be executed in close liaison with a separate CD contract for the Construction of Local Access Roads to formalise access to properties situated adjacent to the N11-13 main road by replacing the current direct access of these properties onto the main road. The CD contract includes construction of the local access roads situated on Contract 1 from the R518 Intersection (km 8,345) to the Grootshandsloot River (km 24,0), but also including the local access roads on the future Contract 2 from Mokopane (km 1,310) to the R518 intersection (km 8,345). Construction of the CD contract will overlap with the construction of the N11-13 main road contract and liaison between the two contracts is required in planning the sequence of construction to prevent access problems to properties.

Anglo-Platinum requested negotiations with SANRAL for the construction of a new interchange at the junction of Road D4380 with N11-13 at km 23,360 (access to Anglo-Platinum mining activities), where only an at-grade intersection is planned at this stage. Agreement was reached that the interchange will not form part of this contract and construction of the N11-13 will continue as originally planned. The design of the interchange will be done by Anglo-Platinum's consultants (as approved by SANRAL) to tie in with the existing design of the N11-13, and construction of the interchange will be a separate contract partly funded by Anglo-Platinum.

The core strategies of the project are the following:

- Implementing measures to improve the safety of pedestrians and the general public:
 - Upgrading of intersections to provide bus/taxi bays and pedestrian crossings.
 - Construction of paved sidewalks through built-up areas.
 - Erection of a welded steel mesh high security fence along road in built-up areas.
 - Installation of street lighting along main road through built-up areas.

- Improving the general geometry of the road to increase capacity and safety:
 - New vertical alignment to raise existing road levels for improved drainage and to fit in with the pavement strengthening strategy.
 - Upgrading and widening of surfaced width of the single carriageway road.
 - Upgrading of all intersections and junctions.
- Constructing a new road pavement and strengthening the existing pavement structure for a 20-year life cycle by adding new pavement layers (450mm to 750mm).
- Improving the surface- and cross-drainage of the road by a raised vertical alignment (higher road levels) and upgrading/replacing all drainage culverts.
- Replacing one existing bridge structure due to hydraulic inadequacies.

It should be noted that the description of the works that follows below is not exhaustive and does not limit the work to be carried out under this contract. The extent of the work is shown on the drawings and estimated quantities for the various aspects of the project are given in Part C2: Pricing Data.

C4.1.1 ROADWORKS

(a) General Roadworks

The general roadworks on the project consists of the following main elements:

- Clearing and grubbing of the site.
- Accommodation of traffic.
- Construction of temporary deviations where required.
- Relocation and/or protection of services.
- Installation of drainage culverts.
- Installation of subsoil surface drains.
- Construction of banks and dykes.
- Construction of mass earthworks.
- Construction of new pavement layers, Cape Seal and asphalt surfacing.
- Installation of guardrails.
- Erosion protection such as gabions and stone pitching.
- Construction of paved sidewalks.
- Erection of road signs and application of road marking (including remarking at end of Defects Liability Period) and the installation of road studs.
- Erection of fencing, including new high security proprietary fencing in residential areas.
- Landscaping and grassing.
- Finishing off the road and road reserve, including borrow pits, hard rock quarry and spoil areas.
- The installation of street lighting in built-up areas.

(b) Typical Cross-Sections

(i) The cross-section of the existing road N11-13 is as follows:

(1) N11-13: km 8,345 - km 23,360

- Lanes: 2 x 3,5m surfaced
- Shoulders: 2 x 1,5m gravel
- Rounding: 2 x 0,5m
- Roadway: 11,0m

(2) N11-13: km 23,360 - km 24,0

- Lanes: 2 x 3,7m surfaced
- Shoulders: 2 x 1,3m surfaced + 2 x 1,2m gravel
- Rounding: 2 x 0,5m gravel
- Roadway: 12,40m

(ii) The typical cross-sections of the roads to be constructed under this contract are shown on the drawings and are described below:

- (1) N11-13: km 8,345 - km 10,000, km 13,160 - km 14,100 and km 15,820 - km 16,620: Urban single carriageway with raised sidewalk one side only
 - Lanes: 2 x 3,7m surfaced
 - Shoulders: 2 x 2,5m surfaced
 - Sidewalk kerb: 1 x 0,45m barrier kerb-channel combination
 - Sidewalk: 1 x 1,8m paved
 - Rounding: 2 x 0,5m gravel
 - Roadway: 14,65m
- (2) N11-13: km 14,100 - km 15,820: Urban single carriageway with raised sidewalks both sides
 - Lanes: 2 x 3,7m surfaced
 - Shoulders: 2 x 2,5m surfaced
 - Sidewalk kerb: 2 x 0,45m barrier kerb-channel combination
 - Sidewalks: 2 x 1,8m paved
 - Rounding: 2 x 0,5m gravel
 - Roadway: 16,90m
- (3) N11-13: km 10,000 - km 13,160 and km 16,620 - km 23,360: Rural single carriageway
 - Lanes: 2 x 3,7m surfaced
 - Shoulders: 2 x 2,5m surfaced
 - Rounding: 2 x 0,5m gravel
 - Roadway: 12,40m
- (4) N11-13: km 23,360 - km 24,0: Rural single carriageway
 - Lanes: 2 x 3,7m surfaced
 - Shoulders: 2 x 1,3m surfaced + 2 x 1,2m gravel
 - Rounding: 2 x 0,5m gravel
 - Roadway: 12,40m
- (5) Provincial and Municipal connecting roads
 - Lanes: 2 x 3,7m surfaced
 - Shoulders: 2 x 2,5m surfaced
 - Rounding: 2 x 0,5m gravel
 - Roadway: 12,40m

(c) Major Intersections

All major intersections on Road N11-13 forming part of the project are shown in TABLE C4.1 below:

TABLE C4.1: MAJOR INTERSECTIONS ON ROAD N11-13

ROAD	NEW km DISTANCE	SIDE	EXISTING TYPE	DESTINATION	REMARKS/ UPGRADES
N11-13	8.578	LHS	T-junction	Masodi	Upgrade T-junction, provide turning lanes and bus stops
N11-13	9.552	LHS	T-junction	Masodi	Upgrade T-junction, provide turning lanes, and bus stops
N11-13	10.752	LHS	T-junction	Ga-Kgubudi	Upgrade T-junction, provide turning lanes, and bus stops
N11-13	11.432	LHS	T-junction	Ga-Kgubudi	New T-junction with turning lanes and bus stops
N11-13	12.137	RHS	T-junction	D1603 Uitloop (RHS); New Access to Ga-Kgubudi (LHS)	Upgrade to 4-legged intersection, provide turning lanes and bus stops, close access at km 12,270 (LHS)
N11-13	13.243	RHS	Intersection	Tshamahansi (RHS); Ivanplats Mine Access (LHS)	Upgrade existing intersection, provide turning lanes and bus stops
N11-13	14.059	LHS	T-junction	Ga-Magongwa (LHS); New Access to Tshamahansi (RHS)	Upgrade to 4-legged intersection, provide turning lanes and bus stops
N11-13	14.866	RHS / LHS	Staggered intersect.	Ga-Magongwa (LHS); Tshamahansi (RHS)	Upgrade intersection, realign access LHS, provide turning lanes and bus stops
N11-13	15.738	LHS	T-junction	Ga-Mokaba	Upgrade T-junction, provide turning lanes and bus stops
N11-13	16.537	RHS	T-junction	Tshamahansi	Upgrade T-junction, realign access road, provide turning lanes and bus stops
N11-13	18.650	RHS	T-junction	No official destination	Upgrade access to game reserve RHS, re-align access road
N11-13	19.480	RHS	T-junction	D1501 Mashashane	Keep existing, upgrade of T-junction forms part of future Ring Road
N11-13	21.460	LHS	T-junction	D3521 Mogalakwena	Keep open as farm access only; Access to be closed with

ROAD	NEW km DISTANCE	SIDE	EXISTING TYPE	DESTINATION	REMARKS/ UPGRADES
					construction of future Ring Road
N11-13	23.360	LHS	T-junction	D4380 Mokopane Platinum Mine	Upgrade T-junction, provide turning lanes, future interchange

C4.1.2 PAVEMENT DESIGN FOR ALL PARTS OF THE VARIOUS ROADS

Detail of the various road pavements to be constructed are shown on the drawings and are summarized below:

(a) N11-13: New pavement construction

- Surfacing:
- (i) km 8,345 – km 24,0
Bituminous single seal (20mm aggregate) with slurry (Cape Seal), Binder: Hot applied polymer modified bitumen Class S-E1 or Cold applied binder Class SC-E2 (70-73)(t).
 - (ii) Intersections
Asphalt wearing course: Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).
- Base : 150mm crushed stone (G1) compacted to 88% of apparent density.
- Sub-base : 300mm imported stabilized natural gravel (C3) compacted to 97% of Max. Dry Density (MDD). The layer shall be tested as two layers of 150mm each.
- Upper selected : 150mm natural gravel (G6) compacted to 95% of Max. Dry Density (MDD).
- Lower selected : 150mm natural gravel (G6) compacted to 95% of Max. Dry Density (MDD).
- Fill : Natural gravel (G9) compacted to 93% of Max. Dry Density (MDD), or rockfill.

Total pavement material depth = 750mm

(b) N11-13: Pavement rehabilitation where H = 600mm – 750mm (See Note 4)

- Surfacing :
- (i) km 8,345 – km 24,0
Bituminous single seal (20mm aggregate) with slurry (Cape Seal), Binder: Hot applied polymer modified bitumen Class S-E1 or Cold applied binder Class SC-E2 (70-73)(t).
 - (ii) Intersections
Asphalt wearing course: Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm

precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).

Base	:	150mm crushed stone (G1) compacted to 88% of apparent density.
Sub-base	:	300mm imported stabilized natural gravel (C3) compacted to 97% of Max. Dry Density (MDD). The layer shall be tested as two layers of 150mm each.
Selected layer	:	Imported natural gravel (G6) of varying thickness between 150mm and 300mm, compacted to 95% of Max. Dry Density (MDD).
Roadbed (Existing pavement):	:	Remove failed areas to a depth of 150mm and backfill with natural gravel (G6) compacted to 95% of Max. Dry Density (MDD).

(c) N11-13: Pavement rehabilitation where H = 450mm – 600mm (See Note 4)

Surfacing	:	(i) km 8,345 – km 24,0 Bituminous single seal (20mm aggregate) with slurry (Cape Seal), Binder: Hot applied polymer modified bitumen Class S-E1 or Cold applied binder Class SC-E2 (70-73)(t). (ii) Intersections <u>Asphalt wearing course: Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).</u>
Base	:	150mm crushed stone (G1) compacted to 88% of apparent density.
Sub-base	:	300mm imported stabilized natural gravel (C3) compacted to 97% of Max. Dry Density (MDD). The layer shall be tested as two layers of 150mm each.
Selected layer	:	Imported natural gravel (G6) mixed with in-situ bituminous surfacing and base material to a layer thickness of 150mm, and compacted to 95% of Max. Dry Density (MDD). (See Note 1)

(d) N11-13: Pavement rehabilitation where H = 350mm – 450mm (See Note 4)

Surfacing	:	(i) km 8,345 – km 24,0 Bituminous single seal (20mm aggregate) with slurry (Cape Seal), Binder: Hot applied polymer modified bitumen Class S-E1 or Cold applied binder Class SC-E2 (70-73)(t). (ii) Intersections <u>Asphalt wearing course: Sand skeletal mix: Gap graded; NMPS 14mm; PG64E-16 (EMB); Design Level II; minimum 45mm thickness; with 10mm precoated Rolled-in chips (the spreading rate of the chips should be controlled and limited to 6 to 8 kg per m²).</u>
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Base	:	150mm crushed stone (G1) compacted to 88% of apparent density.
Sub-base	:	Imported natural gravel mixed with in-situ bituminous surfacing and base material to a layer thickness of 300mm, stabilized to C3 and compacted to 97% of Max. Dry Density (MDD). The layer shall be tested as two layers of 150mm each. (See Notes 1 to 3)
Selected layer	:	150mm in-situ natural gravel (G6) compacted to 95% of Max. Dry Density (MDD). (See Note 1)

(e) Provincial and Municipal connecting roads

Surfacing	:	Bituminous single seal (20mm aggregate) with slurry (Cape Seal), Binder: Hot applied polymer modified bitumen Class S-E1 or Cold applied binder Class SC-E2 (70-73)(t).
Base	:	150mm crushed stone (G1) compacted to 88% of apparent density.
Sub-base	:	150mm stabilized natural gravel (C3) compacted to 97% of Max. Dry Density (MDD).
Upper selected	:	150mm natural gravel (G6) compacted to 95% of Max. Dry Density (MDD).
Lower selected	:	150mm natural gravel (G6) compacted to 95% of Max. Dry Density (MDD).
Fill	:	Natural gravel (G9) compacted to 93% of Max. Dry Density (MDD), or rockfill.
Shoulder	:	150mm natural gravel (as per COTO Table A4.1.5-10) compacted to 95% of Max. Dry Density (MDD).

Total pavement material depth = 600mm

(f) Temporary widening for accommodation of traffic

Surfacing	:	Bituminous single seal (14mm aggregate) with slurry (Cape Seal), Binder: Cold applied binder Class SC-E2 (70-73)(t).
Base	:	150mm stabilized natural gravel (C3) compacted to 97% of Max. Dry Density (MDD).
Sub-base	:	150mm natural gravel (G6) compacted to 97% of Max. Dry Density (MDD). (See Note 5)

(g) Paved sidewalks

Block paving	:	60mm S-A interlocking concrete blocks (25 MPa) on 20mm sand bedding.
Sub-base	:	150mm imported natural gravel (G6) compacted to 97% of Max. Dry Density (MDD).

Notes:

1. Treatment of deficiencies in lower layers:

In instances where treatment of deficiencies in the lower layers is required and instructed by the engineer, the in situ material shall be windrowed (if practical) or removed and utilized elsewhere or removed to stockpile to allow for the work to be carried out on these layers.

2. Breaking down and mixing of existing pavement layers:
 The existing asphalt/seal, the crushed stone base, sub-base and shoulder material, which shall be re-used in the sub-base and selected layers, shall first be broken down by means of effective methods and pulverized if required.

 Where no widening of the existing road occurs, material shall be added to make up any shortages and the layer shall then be constructed by in-situ recycling and mixing of the respective types of materials, including mixing of the water and stabilizing agent (where applicable) to meet specifications of the concerned layer.

 Where widening of the existing road occurs, the broken down and milled material shall be spread over the full width and material shall be added to make up any shortages. The layer shall then be constructed by in-situ recycling and mixing of respective types of material, including mixing of the water and stabilizing agent (where applicable).
3. Mixing and stabilizing of sub-base layer:
 The sub-base material shall be stabilized and mixed by means of a recycling machine.
4. Definitions
 "H" is the difference in height between the existing road level and the new road level.
5. The sub-base layer for temporary traffic accommodation is only to be constructed in areas indicated by the engineer as shown on the Layout Plans and Typical Cross Sections.

C4.1.3 STRUCTURAL WORKS

(a) Culverts

The portal culverts as listed in TABLE C4.2 below were designed as cast in situ concrete drainage structures:

TABLE C4.2: NEW CAST IN SITU CONCRETE CULVERTS ON THE N11-13

CULVERT No.	km DIST.	SIZE AND SKEW	PURPOSE
9/2	9,662	1 x (2400 x 900) @ 90°	Drainage
9/3	9,844	2 x (2400 x 1200) @ 90°	Drainage
9/4	9,988	1 x (2400 x 1200) @ 90°	Drainage
10/3	10,518	2 x (2400 x 1500) @ 90°	Drainage
12/1	12,160	3 x (3000 x 900) @ 90°	Drainage
12/2	12,217	2 x (3000 x 1200) @ 90°	Drainage
13/4	13,715	1 x (2400 x 900) @ 60°	Drainage
14/3	14,574	1 x (2400 x 1200) @ 90°	Drainage
20/3	20,551	2 x (2400 x 1200) @ 90°	Drainage
20/4	20,740	1 x (2400 x 1200) @ 90°	Drainage

The drainage culverts as listed in TABLE C4.3 below were designed as precast concrete culverts (either pipe or portal culverts), with cast in situ concrete inlet and outlet structures and the portal culverts to be installed on cast in situ concrete floor slabs:

TABLE C4.3: NEW PRECAST CONCRETE CULVERTS ON THE N11-13

CULVERT No.	km DIST.	SIZE AND SKEW	PURPOSE
8/2	8,550	1 x (900 x 450) @ 90°	Drainage
8/2a	8,595	1 x (600Ø) @ 90	Drainage
8/3	8,700	2 x (900Ø) @ 90°	Drainage
8/4	8,970	1 x (600Ø) @ 90°	Drainage
9/1	9,365	1 x (600Ø) @ 90°	Drainage
9/1a	9,530	1 x (600Ø) @ 90°	Drainage
9/1b	9,655	1 x (600Ø) @ 90°	Drainage
9/2a	9,840	1 x (600Ø) @ 90°	Drainage
9/3a	9,985	1 x (600Ø) @ 90°	Drainage
10/1	10,168	1 x (900Ø) @ 90°	Drainage
10/2	10,340	1 x (900Ø) @ 90°	Drainage
10/4	10,745	1 x (900Ø) @ 60°	Drainage
11/1	11,015	1 x (900Ø) @ 90°	Drainage
11/2	11,276	1 x (900Ø) @ 90°	Drainage
11/3	11,582	1 x (900Ø) @ 90°	Drainage
11/4	11,856	1 x (900 x 900) @ 90°	Drainage
12/3	12,490	1 x (600Ø) @ 75°	Drainage
12/4	12,770	1 x (600Ø) @ 75°	Drainage
13/1	13,057	8 x (1200 x 600) @ 60°	Drainage
13/1a	13,180	1 x (600Ø) @ 90°	Drainage
13/1b	13,241	1 x (900 x 600) @ 50°	Drainage
13/2	13,263	1 x (600Ø) @ 270°	Drainage
13/3	13,430	4 x (1500 x 600) @ 75°	Drainage
13/3a	13,435	1 x (900 x 450) @ 90°	Drainage

CULVERT No.	km DIST.	SIZE AND SKEW	PURPOSE
13/4a	13,730	1 x (600Ø) @ 270°	Drainage
13/5	13,900	1 x (600Ø) @ 75°	Drainage
14/1	14,090	1 x (600Ø) @ 90°	Drainage
14/2	14,287	3 x (1500 x 600) @ 75°	Drainage
14/2a	14,295	1 x (600Ø) @ 90°	Drainage
14/3a	14,580	1 x (600Ø) @ 90°	Drainage
14/4	14,874	1 x (900 x 600) @ 60°	Drainage
14/5	14,890	1 x (600Ø) @ 270°	Drainage
14/6	14,900	1 x (600Ø) @ 90°	Drainage
15/1	15,130	1 x (600 x 600) @ 75°	Drainage
15/2	15,396	2 x (900Ø) @ 90°	Drainage
15/3	15,416	1 x (900Ø) @ 90°	Drainage
15/4	15,640	1 x (600Ø) @ 270°	Drainage
15/5	15,748	1 x (900Ø) @ 285°	Drainage
16/1a	16,310	1 x (900 x 450) @ 90°	Drainage
16/1b	16,480	1 x (600Ø) @ 270°	Drainage
16/1	16,504	1 x (900Ø) @ 270°	Drainage
16/2	16,680	1 x (600Ø) @ 270°	Drainage
16/3	16,865	2 x (900Ø) @ 270°	Drainage
17/1	17,116	2 x (900Ø) @ 270°	Drainage
17/2	17,347	2 x (900 x 600) @ 270°	Drainage
17/3	17,636	3 x (900Ø) @ 270°	Drainage
17/4	17,830	1 x (900Ø) @ 285°	Drainage
18/1	18,024	2 x (900Ø) @ 270°	Drainage
18/2	18,275	1 x (600Ø) @ 105°	Drainage
18/3	18,478	1 x (900Ø) @ 90°	Drainage
18/3a	18,647	1 x (900 x 600) @ 45°	Drainage

CULVERT No.	km DIST.	SIZE AND SKEW	PURPOSE
19/1	19,050	1 x (600Ø) @ 90°	Drainage
20/2	20,320	1 x (600Ø) @ 105°	Drainage
21/1	21,310	1 x (900 x 600) @ 90°	Drainage
21/1a	21,410	1 x (600Ø) @ 90°	Drainage
21/2	21,540	2 x (900Ø) @ 90°	Drainage
21/3	21,800	1 x (600Ø) @ 90°	Drainage
22/1	22,036	2 x (900Ø) @ 90°	Drainage
22/2	22,300	1 x (600Ø) @ 105°	Drainage
22/2a	22,600	1 x (600Ø) @ 90°	Drainage
22/3	22,647	2 x (900Ø) @ 90°	Drainage
23/1	23,007	1 x (900Ø) @ 90°	Drainage
23/2	23,164	1 x (900 x 450) @ 90°	Drainage
23/3	23,416	1 x (900Ø) @ 90°	Drainage
23/4	23,660	1 x (900 x 450) @ 105°	Drainage
23/5	23,910	1 x (900 x 450) @ 105°	Drainage
24/1	24,188	2 x (900 x 600) @ 90°	Drainage

(b) Bridges

Two road-over river bridges are situated on this section of the N11-13 as shown in Table C4.3 below. One of these is to be demolished and replaced with a new one. The second bridge is to remain intact.

TABLE C4.4: EXISTING BRIDGES ON THE N11-13

km	BRIDGE No.	NAME	ACTION
15,61	1170	Dithokeng River	Demolish and replace
24,27	1115	Grootsandsloot River	Retain; no action required

Below follows a brief description of the new bridge over the Dithokeng River (see Volume 5: Structural Drawings for more information).

(i) Dithokeng River Bridge at km 15,606 on N11-13

This bridge is located on a straight, and at a skew of 20° to the road. It comprises a 3-span box type normal reinforced structure with 5,0m x 5,0m cell openings.

The overall road direction length is about 19m and the average cell length is about 24m. Both ends are skew relative to the road direction.

The road above the deck is at a cross-fall of 2,0% to both directions from the centreline. Road fill material ranges from about 250mm to 800mm over the top of the structure.

The structure has 3 transverse joints with 4 separate cells.

The structure is founded on in-situ material.

The bridge is to be constructed in two stages to facilitate traffic accommodation over the existing bridge during construction. While 2-way traffic is retained over the existing bridge, one third (1/3) of the new portal structure is completed adjacent to the existing bridge. Two-way traffic is then relocated to the new culvert portion, the existing bridge is demolished and the balance of the bridge is constructed. Road fill is completed in stages over the new bridge and 2-way traffic can be relocated to the centre of the new bridge. The detailed construction sequence is shown on the bridge drawings in Volume 5 of the contract documents.

Wing-walls are normal reinforced cantilever type, founded on spread footings in in-situ material. Erosion protection in the form of a 1000mm thick rip-rap covered by a 200mm filter layer is specified on both sides of the bridge. (Detail of erosion protection shown on the drainage drawings of the Roadworks Plans).

(ii) Grootssandsloot River Bridge at km 24,270 on N11-13

Bridge was excluded from Scope of Works by SANRAL.

C4.1.4 CONCRETE DURABILITY

(a) General

All structural concrete prefixed 'D' shall conform to the durability requirements specified in Section 13.4, sub-clause A13.4.7.7 of the Standard Specifications. Durability is influenced by the materials used in the concrete, their mix proportions, transporting, placing, compacting and, in particular, curing of the finished cover concrete (concrete layer between the outermost layer of steel reinforcement and the exposed outer surface of the concrete element). The tests required to prove durability performance of the placed concrete are specified in Section 20.1, sub-clause A20.1.5.1 of the Standard Specifications. The numbers of panels and tests are shown in Tables 1 and 2 below and are the minimum requirement that the engineer considers necessary to achieve the desired quality of concrete.

It is the engineer's responsibility to approve the component materials and their mix properties. However, it is the contractor's responsibility to design and blend them and in so doing produce concrete of the specified quality.

(b) Concrete mix design

Good mix design practice is essential and the following criteria ought to be taken into consideration when pricing:

- (i) Selection of sands and aggregates to achieve a good grading is important if the correct concrete density is to be achieved.
- (ii) The use of the correct cement grade and type for the environmental conditions (and not based solely on costs) is fundamental
- (iii) Selection of the correct cement extenders and admixtures are also fundamental to appropriate mix designs.
- (iv) Water: cement ratios are critical, dictating both the structural strength and the durability requirements.

Mix proportions for the concrete to be used on site need to be determined by an approved laboratory. Refer to the requirements of Section 13.4, clause A13.4.4 of the Standard Specifications.

It will be necessary for the contractor to establish a target mean strength with a margin above the minimum requirement so that small fluctuations due to material changes or workmanship can be accommodated.

(c) Site testing

To ensure that the concrete has been placed, compacted and cured correctly, a number of tests shall be carried out on the trial and test panels as well as on the tops of decks and precast panels by an approved laboratory.

For this contract the following number of test / trial panels and testing are envisaged:

TABLE 1: MINIMUM NUMBER OF TRIAL / TEST PANELS REQUIRED

Panel Type	No. Vertical Cast	No. Horizontally cast	Total No.
Trial Panel	1	2	3
Test Panel			
Substructures	13	-	13
Culverts	8	-	8
Retaining walls	9	-	9
Bases	13	-	13
Decks	4	-	4
Parapets	1		1

TABLE 2: MINIMUM NUMBER OF CORE RESULTS REQUIRED

Element	No. of Cores
Substructures	78
Culverts	45
Retaining walls	54
Bases	78
Decks	24
Parapet element	6

(d) Non-compliance with specified criteria

The contractor should also note that there is specific provision made for curing of concrete in Section 13.4, subclause 13.4.7.12 under payment item C13.4.5 of the Standard Specifications. The amounts priced under this item will be subject to reduced payments should the durability tests indicated in Section 20.1, subclause A20.1.5.1 fail to meet the required targets. Similarly, failure to achieve the required durability test results will be sufficient cause to apply partial payment factors for all the pay items of the elements of the structure under Section 13.4 of the Standard and Project Specifications or in some cases the removal of the concrete rejected.

C4.1.5 MAINTENANCE WORKS

The road reserve within the defined limits of the contract falls within the limits of another contract that has already been let to a routine road maintenance (RRM) contractor who is obliged to conduct regular maintenance on the route on which this contract is sited. The contractor shall take over the above-mentioned maintenance responsibility on the date of handover, but may liaise with the routine maintenance contractor by arranging a transition

period immediately after the hand-over of the site to allow sufficient time to muster his resources required for routine maintenance of the road.. Any potholes or other failures which occur on the road surface shall be repaired within 24 hours after first being noted. (Also see Section B; Specification Data, subclause PA1.2.3.15).

C4.1.6 OTHER WORKS

a) Electrical Works

Part of the works for street lighting will be carried out by sub-contractors to be appointed by the main contractor, in co-operation with the main contractor, while some other works will have to be done by the main contractor himself. The design of Street Lighting was included in the Scope Work of the Service Provider to be appointed for the construction supervision of the Road Contract.

A Provisional Sum was allowed in the Schedule of Quantities (Pay Item PC 1.2.12) for these works. A description of the works required in this regard and the respective responsibilities of SANRAL, the main contractor and the sub-contractors are specified in Part C3: Scope of Works, Section A2, subclause A1.2.7.7: Street Lighting.

b) New Housing with associated Infrastructure

New housing with associated infrastructure for the relocation of property owners affected by the Conventional Road contract (excluding Local Access Roads forming part of the CD contract), will be constructed by sub-contractors to be appointed by the main contractor, in co-operation with the main contractor, while some other works will have to be done by the main contractor himself. Communal and/or Municipal land will be made available for the construction of housing, as negotiated by SANRAL. The appointment of suitably qualified architects and other professional service providers to prepare the required plans and specifications of new housing, services, etc. is the responsibility of SANRAL.

A Provisional Sum was allowed in the Schedule of Quantities (Pay Item PC 1.2.11) for these works. A description of the works required in this regard and the respective responsibilities of SANRAL, the main contractor and the sub-contractors are specified in Part C3: Scope of Works, Section A2, subclause A1.2.7.8: Relocation of Land Owners.

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.

Detailed drawings included in this project are provided in Volume 4: Roadworks Drawings and Volume 5: Structural Drawings of the tender documents.

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.

The contractor himself shall provide a suitable site for his camp and for accommodating his labourers.

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 Part C3: Scope of Works, Section C: Environmental Management Plan.

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

(a) General

Apart from some local widening at intersections, the N11-13 currently consists of a single lane per direction with a gravel shoulder. The section from km 8,340 to approximately km 10,0 runs through the built-up area of Masodi. From km 13,0 to km 17,0 the N11-13 runs through the Tshamahansi and Ga-Magongwa residential areas.

The first section of the N11-13 up to km 8,0 (Marken turn-off), which is not forming part of this contract, carries about 9000 veh/day, where after traffic reduces to about 5000 veh/day. Beyond the Mokopane Platinum Mine turn-off (km 23,35) the traffic volume drops to about 2600 veh/day. Pedestrian movements parallel to the N11-13 are considerable, especially through the built-up areas.

The available average daily traffic (ADT) and average daily truck traffic (ADTT) since 2005 are given in Table C4.2 below:

TABLE C4.4: ADT AND ADTT (ELECTRONIC TRAFFIC COUNTS)

SECTION	STATION	km – DISTANCE	HEAVY VEHICLE			ADT	ADTT
			SHORT	MEDIUM	LONG		
2005							
N11-13	0853	km 2,0*	72	9	20	7624	800
N11-13	0852	km 9,0	64	12	25	3841	432
2007							
N11-13	981	km 2,0*	50	21	29	8965	529

N11-13	982	km 9,0	45	28	27	5690	518
2010							
N11-13	1367	km 18,7	HV split not available			3906	551
2013							
N11-13	1367	km 18,7	35	14	51	4696	448
2015							
N11-13	0220	km 7,2*	72	7	21	18089	2524

* Falling outside the limits of the contract

(b) Accommodation of traffic

- The travelling public will have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.
- Special measures to be approved by the Engineer shall be taken by the Contractor to make allowance for the safe accommodation of pedestrian and other non-motorized traffic travelling along the existing road and/or wanting to cross the existing road. Regular pedestrian crossings on the existing road shall be identified by the Engineer and the Contractor at the beginning of the contract and temporary pedestrian crossings with flagmen on duty shall be provided at such places.
- Clearly demarcated pedestrian crossings safeguarded by temporary barriers shall be provided where pedestrians must be able to cross certain work areas and such crossings cannot be avoided. The pedestrians should not be able to enter areas where construction works are taking place and construction machines are operating.
- Failure to maintain road signs, warning signs or flicker lights, etc., in a good condition shall constitute ample reason for the Engineer to bring the works to a stop until the road signs, etc., have been repaired to his satisfaction. The Contractor shall take note of Book 2: Section C1.2.2, clause A8.7 wherein penalty conditions shall be imposed for non-adherence to the accommodation of traffic.
- The Contractor shall not commence construction activities before adequate provision has been made to accommodate traffic in accordance with the requirements of this document, and Part 3 of Volume 2 of the SADC Road Traffic Signs Manual.
- Details for the accommodation of traffic under different conditions are shown in Volume 4: Road Work Drawings (for road construction) and Volume 5: Structural Drawings (for bridge construction). Also see Section B: Specification Data, Appendix B2.
- Information on actual embargo times and dates can be found under Section B: Specification Data, Appendix B1.
- Two-way traffic to be maintained at all times on Road N11-13 as shown on the Accommodation of Traffic Plans, including the bridge construction site at km 15,61 (Dithokeng River). One-way traffic with STOP/GO control/traffic signals (half-width construction) will be allowed during construction of the bridge approaches at the Grootssandsloot River (km 24,25), as well as for the Short-term Rehabilitation of the road section between km 19,171 and km 20,204 (forming part of the N11-13X Mokopane Bypass construction).
- Two-way traffic to be maintained within the contract limits during the annual Christmas/New-year shut-down period in December and January.

C4.7 RESTRICTED WORKING CONDITIONS

Restricted working conditions include the following (information on actual embargo times and dates can be found under Section B: Specification Data, Appendix B1:

- Work areas restricted to a maximum of two (2), each with a maximum length of 4,0 km and with 4,0 km minimum length between work areas. The minimum length between work areas may be relaxed by the engineer if deemed necessary to accommodate local conditions.
- Where construction work is carried out while two-way traffic is accommodated on the other half of the road, construction work shall only be allowed on that one side of the roadway which is rebuilt.
- Full road width within a work area must be fully completed before a new work area can be occupied.
- The project must be executed in close liaison with a separate CD contract for the Construction of Local Access Roads (falling under this Contract 1 from km 8,345 to km 24,0 and the future Contract 2 from km 1,310 to km 8,340) to formalise access to properties situated adjacent to the N11-13 main road by replacing the current direct access of these properties onto the main road.
- Land acquisition by SANRAL for the construction of the local access roads may continue for a maximum period of 12 months after the Beginning of this Contract 1 and construction of the access roads can only start after the land acquisition has been completed and the affected land-owners have been relocated to new site(s).
- Construction of the main road (N11-13) must be programmed to allow existing access from individual properties to the main road to be maintained while the construction of access roads is still in progress.
- Stabilizing restrictions: Refer to Standard Specifications, clause A5.4.3.
- Asphalt placing restrictions: Refer to Standard Specifications, clause A9.1.3.
- Sealwork restrictions: Refer to Standard Specifications, clause A10.1.3.
- Concrete placing restrictions: Refer to Standard Specifications, clause A13.4.7.

C4.8 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.

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

- (i) optimising the utilisation of local resources in the project area;
- (ii) developing these local resources in the execution of the project; and
- (iii) maximising the amount of funds retained within the project area.

To give effect to these objectives the Contractor shall:

- a) recruit Targeted Labour from the Target Area(s) as stated in the Contract Data; and

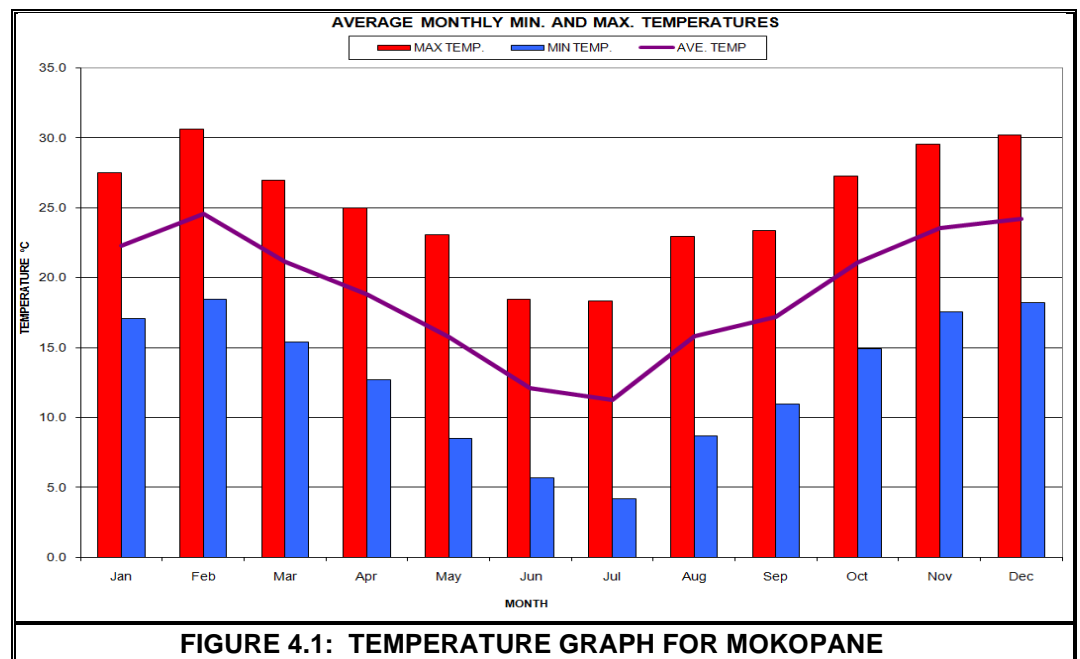
- b) subcontract Targeted Enterprises based on market research and/or skills and resources audits of the rural or underdeveloped areas or townships within the Project Area.

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).

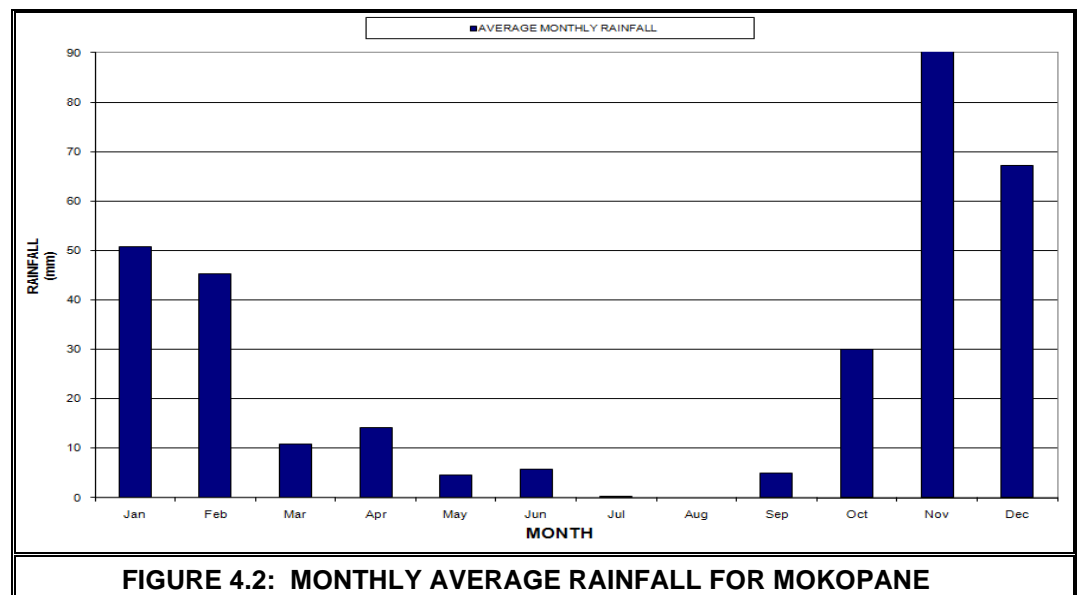
C4.9 CLIMATE

The N11-13 is situated within the summer rainfall region of the Limpopo Province with an assumed mean annual precipitation (MAP) of 327mm.

Climatic information, with respect to temperature, was obtained from the South African Weather Services. Temperature data is reported for Mokopane [Station 06338827]. This data is graphically presented as Figure 4.1



Climatic information, with respect to rainfall was also obtained from the South African Weather Services. Rainfall averages are reported for Mokopane [Station 06338827]. This data is presented graphically as Figure 4.2.



C4.10 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.

The **Baseline Risk Assessment** undertaken in terms of construction regulation 5(1)(a) to identify the operational risks to be addressed by the project specific health and safety specification is included in Clause C4.14: Appendices as **APPENDIX 2**.

C4.11 SAFETY PROCEDURES

Safety Procedures are covered in the **Site Specific Health and Safety Specification** undertaken in terms of construction regulation 5(1)(f), and included in Clause C4.14: Appendices as **APPENDIX 3**.

Members of the public in the form of road users, pedestrians, school children, etc. may be vulnerable to criminal activities during construction as result of traffic accommodation measures and restrictions to pedestrian movement along the road and at road crossings. In terms of clause 4.8 of the General Conditions of Contract (FIDIC), the contractor must take care of the safety of all people entitled to be on the site, which includes these members of the public. It is the contractor's responsibility to provide fencing, guards and other appropriate measures to protect the public for the duration of the contract.

C4.12 OTHER INFORMATION

(a) Services

All known services on site are shown on the drawings and are included in Section B: Specification Data, Appendix B3. The contractor is to acquaint himself with the position of all the services on the site before commencement of the Works. The contractor will be required to liaise with the relevant service owners well in advance to allow them to relocate or protect any of their services that may/will be affected by the Works.

Chapter 2: Services of the COTO Standard Specifications for Road and Bridge Works, Section A2.1 (as amended by particular applications), covers the contractor's obligations in this regard in detail.

The following known services are situated within, or in close proximity of the road reserve:

- Eskom: Overhead electrical lines.
- Telkom: Overhead telephone lines and underground cables.
- Anglo Platinum: Underground water pipe lines.
- Mogalakwena Local Municipality:
 - Overhead electrical lines.
 - Underground cables.
 - Underground and partially above ground sewer lines.
 - New water pipeline.

(b) Geology

According to the available geological maps, the N11-13 is underlain by rocks of the Bushveld complex and is intruded mostly by gneiss, norite and gabbro. Soil cover overlying these rocks are expected to range from clayey silty sand to clayey sandy gravel with an overburden of topsoil.

(c) Topography, Drainage, Land Use and Vegetation

Topographical information indicates that the general fall varies along the route. The topography can be described as undulating.

Except for the Dithokeng River and Groot Sandsloot River, which exist as defined river streams, drainage mainly occurs in the form of overland flow.

Land along the route is mainly used as agricultural land in the form of subsistence farming. Rural villages exist between km 8,34 and km 10,00 and between km 13,00 and km 15,00 where land is utilized by local inhabitants for agricultural farming.

Natural vegetation, in the form of bushveld occurs along the route, except where it has been ousted by human and farming activities, where cultivated land exists.

(d) Construction Materials

All information regarding the road centre line material investigations, gravel borrow pit and hard rock quarry material investigations, as well as the proposed material utilization, are contained in Volume 6 of the contract documents: Materials Investigation and Utilisation.

The contractor shall note that Borrow Pits 4 and 5 and the Hard Rock Quarry may be utilized simultaneously by the contractors on Contract 1 (Contract N.011-130-2010/1R from km 8,345 – km 24,0) and Contract 2 (Contract N.011-130-2019/1 from km 1,310 – km 8,345), if it happens that these two contracts overlap. Each contract shall however be allocated a specific area to utilize in each of these Borrow Pits and the Hard Rock Quarry and shall be responsible for opening their respective areas, maintaining the areas, finishing off the areas and providing and maintaining their own haul roads.

(i) Natural gravel

Four gravel borrow pits have been identified for the original project and two of these borrow pits are available for this Contract 1, namely Borrow Pits 4 & 5. Borrow Pit 3A will be utilized on Contract 2 (km 1,310 – km 8,345) only, while it was agreed with SANRAL that Borrow Pit 3 will only be utilized on the N11-13X Bypass Project. The borrow pit locations are shown on the locality plan in Appendix A of C4.12: Appendices. In general, the natural gravel predominantly consists of clayey silty sand and clayey sandy gravel with an overburden of topsoil. The borrow pit information is summarized in Table C4.5. It is expected that these borrow pits will provide in all gravel requirements for construction of the road (up to subbase material).

(ii) Crushed stone base

One hard rock quarry site has been identified for the production of G1 crushed stone base in particular. Its location is shown on the locality plan in Part C4, Section C4.14: Appendices.. The material consists of unweathered anorthosite which is considered suitable for a G1 base. The quarry information is summarized in Table C4.6.

It should be noted that the subbase material for the N11-13 shall be a Type G5A material as specified in COTO. Suitable subbase material should be available from the borrow pits or as crushed material from the hard rock quarry.

TABLE C4.5: SUMMARY OF BORROW PIT INFORMATION

BORROW PIT NUMBER	LOCATION	MATERIAL TYPE	COLTO CLASSIFICATION	ESTIMATED QUANTITIES (M³)	USAGE	UCS @ 100% (Min 1.5MPa)		ITS (Min 250)		STABILIZING AGENT % PROPOSED
						2.0%	4.0%	2.0%	4.0%	
3 (See Note 1)	Farm Turfspruit 241-KR	Clayey silty sand / Clayey sandy gravel	G6 / G7	72,000	Subbase / Selected / Fill	-	-	-	-	-
3A (See Note 2)	Farm Turfspruit 241-KR	Clayey silty sand / Clayey sandy gravel	G6 / G7	56,000	Subbase / Selected / Fill	-	-	-	-	-
4	Farm Tweefontein 238-KR PT.2	Clayey silty gravel / Clayey sandy gravel	G5 / G6 / G7	110,000	Subbase / Selected / Fill	1.62	4.11	280	510	3.5% Cement (32.5N CEM IV)
						0.85	2.15	180	380	
						1.27	2.69	420	680	
5	Farm Gillimberg 861-LR PTN. 9	Clayey silty sand / Clayey sandy gravel	G6	68,000	Subbase / Selected / Fill	3.03	3.98	350	610	2.0% Cement (32.5N CEM IV)
						1.72	2.56	280	570	

Notes:

1. Borrow Pit 3 to be utilized on N11-13X Bypass Project only.
2. Borrow Pit 3A to be utilized on Contract N.011-130-2019/1: km 1,310 – km 8,345.

TABLE C4.6: SUMMARY OF HARD ROCK QUARRY INFORMATION

BORROW PIT NUMBER	LOCATION	MATERIAL TYPE	COLTO CLASSIFICATION	EST-QUANT (m³)	USAGE
HARD ROCK QUARRY	Farm Tweefontein 238-KR	Hard Rock Anorthosite	G1	467,000(+)	Base / Subbase

Available commercial sources in the area that may be used as alternative to supply crushed stone material which are not available from the Hard Rock Quarry or not complying with specifications, are the following (the Contractor shall submit proof of compliance of materials from the commercial sources he intends to use):

- (1) Platistone Mogalakwena
Tel: (015) 413 0923/24/27/28
Email: isaac@platistone.co.za
Contact person: Mr. Isaac Raphaodile (072 906 7477)
- (2) Supa Aggregates
Contact person: Mr. Wouter Pretorius (082 959 7214)
Email: woutersupamining@gmail.com
- (3) Wearne Crushers Polokwane
Tel: 079 529 2727 (office) or 082 459 8776 (readymix)
Salesperson: Ms. Marlise Nieuwenhuis (082 304 8958)
- (4) Rooiberg Stone
Contact person: Mr. Martin van Wyk (083 514 3124)
Email: martinvw@rooiberg.com
- (5) Alpha Stone & Sand
Tel: (015) 293 0208
Cell: 071 693 4744
Email: sales@alphasand.co.za

(iii) Concrete aggregate

It is anticipated that all aggregate required for concrete works can be sourced from the proposed hard rock quarry. However, should this prove not to be the case, the aggregate must be obtained from commercial sources and provision in this regard is made in the Pricing Schedule. The contractor should note that all structural concrete shall conform to the durability requirements specified under Section 13.4, subclause A13.4.7 of the Standard Specifications. The tests required to prove durability performance of the concrete are specified in Section 20.1, subclause A20.1.5.1 of the Standard Specifications. It is the contractor's responsibility to design and blend the materials to produce concrete of the specified quality.

(iv) Aggregate for bituminous surfacing seals

The crushed stone available from the proposed hard rock quarry is not regarded suitable for the use of surfacing aggregate due to poor adhesion and marginal polishing properties, and this aggregate must be obtained from commercial sources.

(v) Construction water

It is the contractor's responsibility to obtain suitable water for construction purposes. Potential water sources that can be considered for this project are:

- Mogalakwena Municipality
- Anglo Platinum Mogalakwena Mine
- Land owners
- Grootssandsloot River
- Gert Combrink Dam (just outside Mokopane)

Water for use on site other than municipal, shall be subject to the required permit from the Department of Water affairs (DWA). This shall include such extraction points as rivers, streams, dams and boreholes. The water quality shall conform to the requirements specified in Section 1.2, subclause A1.2.3.21 of the Standard Specifications.

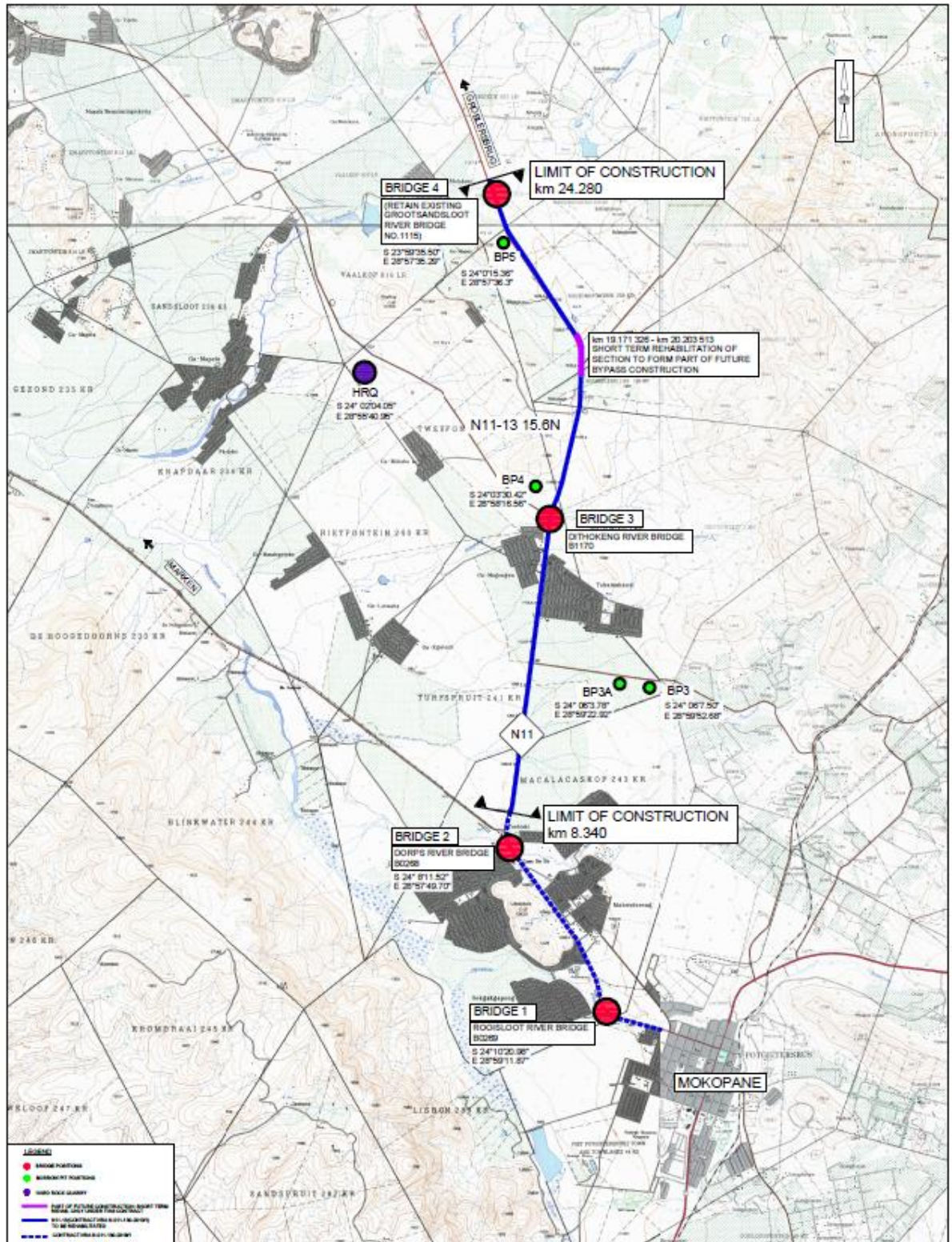
C4.13 AGREEMENT TO OCCUPY SANRAL'S PROPERTY

No SANRAL-owned land is available for this purpose.

C4.14 APPENDICES

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APPENDIX 1: LOCALITY PLAN



APPENDIX 2: BASELINE RISK ASSESSMENT

BASELINE RISK ASSESSMENT UNDERTAKEN IN TERMS OF CONSTRUCTION REGULATION 5(1) TO IDENTIFY THE OPERATIONAL RISKS TO BE ADDRESSED BY THE PROJECT SPECIFIC HEALTH AND SAFETY SPECIFICATION



THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM R518 INTERSECTION (km 8.345) TO GROOTSANDSLOOT RIVER (km 24,0)

Date: 7 June 2021

Project Likelihood & Consequences Tables

Likelihood Category				
1	2	3	4	5
Rare	Unlikely	Moderate	Likely	Almost Certain
Highly unlikely to occur on this project	Given current practices and procedures, this incident is unlikely to occur on this project	Incident has occurred on a similar project	Incident is likely to occur on this project	Incident is very likely to occur on this project, possibly several times
OR				
5% chance of occurring	20% chance of occurring	50% chance of occurring	80% chance of occurring	95% chance of occurring

	Severity				
	1 - Insignificant	2 - Minor	3 - Moderate	4 - Major	5 - Catastrophic
Safety and Health	First Aid Case	Minor Injury, Medical Treatment Case with/or Restricted Work Case.	Serious injury or Lost Work Case	Major or Multiple Injuries permanent injury or disability	Single or Multiple Fatalities
Environment	No impact on baseline environment. Localized to point source. No recovery required	Localized within site boundaries. Recovery measurable within 1 month of impact	Moderate harm with possible wider effect. Recovery in 1 year	Significant harm with local effect. Recovery longer than 1 year.	Significant harm with widespread effect. Recovery longer than 1 year. Limited prospect of full recovery
Financial	<R100,000	R100k - R500k	R500k - R5m	R5m - R10M	>R10m
Production/Schedule	Up to 3 days	3 days – 1 week	1 week – 1 month	1 – 6 months	> 6 months
Reputation	Localized temporary impact	Localized, short term impact	Localized, long term impact but manageable	Localized, long term impact with unmanageable outcomes	Long term regional impact
Business Impact	Impact can be absorbed through normal activity	An adverse event which can be absorbed with some management effort	A serious event which requires additional management effort	A critical event which requires extraordinary management effort	Disaster with potential to lead to collapse of the project

Risk Matrix

11	16	20	23	25
7	12	17	21	24
4	8	13	18	22
2	5	9	14	19
1	3	6	10	15

Risk Rating	Risk Level	Guidelines for Risk Matrix
21 to 25	Extreme	Eliminate, avoid, implement treatment actions, procedures to manage and monitor
13 to 20	High	Proactively manage
6 to 12	Medium	Activity manage
1 to 5	Low	Manage & monitor as appropriate

Key operational activities/risks that will form part of the project

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
Site establishment	Yes	- Improper loading and offloading - Use of defective portable electrical tools	5	4	(20) HIGH	- Ergonomics awareness toolbox talks to be conducted. - Competent high-up operator and banks man - load test certificates for high-up, slings and chains to be verified and made available in the OHS file - Tools and equipment pre-use inspections to be conducted - PPE requirements to be established and adhered to. - Lifting activity RA and MS to be compiled and adhered to.	3	6	(18) HIGH
Illumination	Yes	Poor illumination in work area resulting in trip and fall hazard /poor quality of work/property damage	4	4	(16) HIGH	Suitable artificial lighting to be provided, in accordance with EWR 3.	2	2	(4) LOW
Steel fixing	Yes	- Personal injury - Manual handling - Use of incorrect tools - Unsafe stacking of materials	4	4	(16) HIGH	- The supervisor is to ensure that the right tools for the task are readily available - Tools pre-use inspections to be conducted - PPE requirements to be established and adhered to. - All stacking and storage activities to be conducted under the supervision of the appointed stacking and storage supervisor - Steel fixing RA and MS to be compiled and adhered to.	2	2	(4) LOW
Drug & alcohol abuse	Yes	Injuries due to complacency of employee as a result of intoxication	3	3	(9) MODERATE	- Communication and adherence to alcohol and drug misuse standard	2	2	(4) LOW

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
						- Adequate & competent supervision - Random drug and alcohol testing to be undertaken.			
Ergonomics	Yes	Musculoskeletal injury due to improper manual handling Ergonomic - Exertion / lifting practices.	4	4	(16) HIGH	- Shared load handling for heavy loads - Ergonomics awareness toolbox talks to be conducted. - Observe proper lifting techniques.	2	2	(4) LOW
Occupational Medicine/medical surveillance	Yes	Contractor employees unfit to work.	5	4	(20) HIGH	Please note the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets.	2	2	(4) LOW
Emergency preparedness, contingency planning and response	Yes	Inadequate emergency preparedness, contingency planning and response could result in the inability to effectively respond to emergencies and this could impact negatively on the health and safety of employees and other persons.	5	4	(20) HIGH	Please note the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets.	3	1	(3) LOW
First-aid	Yes	Inadequate first-aid arrangements could impact negatively of the ability to respond to first-aid injuries or to stabilise injured employees or other persons that may require advanced health care. This could negatively impact the injured person's prognosis, recovery and medical costs.	4	4	(16) HIGH	Please note the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must implement and maintain to prevent the risks associated with this activity from posing a risk for employees and/or other persons. First aiders - Level 1 must be appointed and a first aid box(s) available on site.	3	2	(6) MODERATE
Security	Yes	Inadequate security arrangements could result in unauthorised access by members of the public that could pose a risk to employees working on this site or	3	2	(6) MODERATE	Please note the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must	2	2	(4) LOW

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
		could also result in the illegal removal of equipment and/or material from the site or injuries to these members of the public.				implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets. Security plan in place.			
Accommodation of traffic – road users, construction vehicles as well as pedestrians, school kids, donkey carts, stray animals, taxis, other contractors and service providers utilising the roads	Yes	Inadequate traffic accommodation poses a potential risk to employees as well as road users and could not only result in injuries and subsequent medical and other costs to employees, but also injuries to road users and damages to vehicles with subsequent claims against the Client and or principal contractor.	3	3	(9) MODERATE	Due to the construction activities a suitable traffic management plan will have to be developed to control the traffic as well as movement of construction vehicles including road risks such as rutting.	3	6	(18) HIGH
Fall protection	Yes	Inadequate fall protection arrangements could result in employees and other persons falling from elevated working areas and result in serious injuries or even fatalities.	5	4	(20) HIGH	Please note the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets.	3	6	(18) HIGH
Structures	Yes	Unsafe or sub-standard parking and sub-station structures could collapse on employees and/or other persons with subsequent injuries to employees/persons or even fatalities and also impact negatively on project costs, liability claims and reputation risks for all stakeholders.	5	4	(20) HIGH	Refer to Construction Regulations, 2014 Section 11.	3	6	(18) HIGH
Access scaffolding	Yes	Unsafe scaffolding structures could collapse or employees or may fall from unprotected working platforms or equipment falling from these unsafe structures and result in injuries or even fatalities to persons.	5	4	(20) HIGH	Refer to Construction Regulations, 2014 Section 16 and SANS 10085-1:2004.	3	6	(18) HIGH
Lifting equipment	Yes	The use of unsafe lifting equipment could result in loads being lifted to fail and fall with subsequent injuries to persons or	3	3	(9) MODERATE	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation	3	2	(6) MODERATE

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
		even fatalities as well as asset damages that will result in claims and reputation risks.				measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets.			
Lifting tackle	Yes	The use of unsafe lifting tackle could result in loads being lifted to fail and fall with subsequent injuries to persons or even fatalities as well as asset damages that will result in claims and reputation risks.	5	4	(20) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets.	2	2	(4) LOW
Construction vehicle and mobile plant operators TLB Excavators Bakkie Road construction vehicles	Yes	The use of vehicles and/or plant operators that are not suitable or competent could result in incidents with subsequent injuries to persons or even fatalities as well as asset damage with subsequent costs/claims and reputation risks.	5	4	(20) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets. Operators appointed, medical fit and competent.	2	2	(4) LOW
Electrical installations	Yes	Unsafe electrical installations could result in employees and other persons being electrocuted with subsequent injuries to persons or even fatalities as well as asset damage due to fire or fire spread risks with subsequent costs and reputation risks.	5	4	(20) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets. COC in place.	3	2	(6) MODERATE
Electrical and mechanical lockout	Yes	The lack of suitable lock-out procedures may result in employees and other persons being electrocuted with subsequent injuries or even fatalities with resulting costs and reputation risks.	4	4	(16) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must implement and maintain to prevent the risks associated with this	3	2	(6) MODERATE

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
						activity from posing a risk for employees, other persons and/or assets. Lockout procedure			
Hazardous chemical substances	Yes	The unsafe use of hazardous chemical substances could result in fires with subsequent injuries or even fatalities as well as asset damage due to fire with subsequent costs/claims. Spilled chemical substances may also impact negatively on the health of employees and other persons or negative implications for the environment including legal and claim exposures.	4	4	(16) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets. MSDS sheets displayed	2	2	(4) LOW
Storage of flammable and hazardous chemicals	Yes	The unsafe storage of flammables and hazardous chemicals could result in fires with subsequent injuries or even fatalities as well as asset damage due to fire with subsequent costs/claims. Spilled chemical substances may also impact negatively on the health of employees and other persons or negative implications for the environment including legal and claims exposures.	4	4	(16) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets. Competent person appointed, as well as the HASEM, certificate available.	3	2	(6) MODERATE
Fire prevention and protection	Yes	Inadequate fire prevention and protection measures may impact negatively on the ability to attend to fires that may cause injuries or even result in fatalities as well as asset damages with subsequent costs/claims.	3	3	(9) MODERATE	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets. Appoint a fire fighter at the site office	2	2	(4) LOW
Stacking and storage	Yes	Unsafe stacking and storage practices may result in stacked items collapsing with subsequent injuries or even fatalities as well as asset damage with	3	3	(9) MODERATE	Procedures in place including legal appointments. Daily inspections to be conducted	3	2	(6) MODERATE

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
		associated losses and costs.							
Eating, changing, washing and toilet facilities (Welfare facilities)	Yes	Inadequate provision of welfare facilities may have negative implications on the health of employees and other persons with associated health, environmental as well as claims and costs.	3	3	(9) MODERATE	Contractor to provide adequate eating and changing facilities. Develop Hygiene Plan.	2	1	(2) LOW
Personal and other protective equipment (PPE)	Yes	The inadequate and unsuitable provision and utilisation of PPE could cause injuries or even fatalities with associated claims and costs including legal and reputation exposures.	5	4	(20) HIGH	Please refer to the project specific occupational health and safety specification. A PPE standard and register must be in place. All contractor employees must receive induction	2	2	(4) LOW
Portable electrical tools and equipment	Yes	The use of unsafe or unsuitable portable electrical tools and equipment could result in employees and other persons being electrocuted with subsequent injuries or even fatalities as well as asset damage due to fire with subsequent claims and costs.	6	2	(12) MODERATE	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor has to implement and maintain to prevent the risks associated with this activity from posing a risk for employees, other persons and/or assets.	3	1	(3) LOW
Public health and safety	Yes	The disregard of the public's health and safety could result in injuries or even fatalities with associated claims and reputation risks.	5	3	(15) HIGH	Please refer to the project specific occupational health and safety specification for the minimum risk mitigation measures that the principal contractor must implement and maintain to prevent the risks associated with this activity from posing a risk for employees and other persons. Notifications available, Traffic Accommodation, Emergency numbers displayed at control points, including project limits.	3	3	(9) MODERATE
Excavations	Yes	Unsafe excavations could result in these collapsing with subsequent injuries and fatalities or even damages to adjacent structures/services with resultant claims and costs. Excavations that are not suitably barricaded could result in	6	3	(18) HIGH	Refer to CR.13 Excavations	3	3	(9) MODERATE

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
		employees or other persons falling into them resulting in injuries or even fatalities.							
Tunnelling activities	N/A	Not currently foreseen.				Will be addressed should that be required.			
Blasting	TBC	Not currently foreseen.				Will be addressed should that be required.			
Working in confined spaces	TBC	Non-adherence to the requirements of GSR 5 resulting in asphyxiation.	6	3	(18) HIGH	Refer to General Regulation 5.	3	3	(9) MODERATE
Working over or next or close to water or similar substances	TBC	Non-adherence to CR 26 could result in employees / persons falling into water / release of water and sustaining injuries or drowning.	3	2	(6) MODERATE	Pipeline to be isolated and water to be drained prior to work commencement. Refer to Construction Regulation 26.	2	1	(2) LOW
Temporary work	Yes	Failing to adhere to the requirements of Reg CR.12, may lead to injuries and damage to equipment	5	4	(20) HIGH	Appoint a temporary works designer, conduct inspections, fulfil the requirements as set out in Construction Regulation.12.	2	2	(4) LOW
Demolition work – milling of the road	Yes	Unsafe method of demolition could result in structural collapse with subsequent injuries and fatalities or even damages to adjacent structures/services with resultant claims and costs.	5	4	(20) HIGH	Procedures to be in place and competent persons appointed and training completed. Refer to Construction Regulation 14.	2	2	(4) LOW
Explosive actuated fastening devices	Yes	Use of defective impact tools such as chisels, wedges, or drift pins have mushroomed heads, the heads may result in shatter on impact, sending sharp fragments flying toward the user or other employees.	5	4	(20) HIGH	Tool pre-use inspection to be conducted Competent person appointed, and training completed. Safety glasses to form part of PPE requires, refer to Construction Regulation 21.	2	2	(4) LOW
Material hoists	N/A	Not currently foreseen.				Will be addressed should that be required.			
Suspended platforms	N/A	Not currently foreseen.				Will be addressed should that be required.			
Bulk mixing plant	TBC	Exposure to cement dust resulting in eyes, nose, throat and the upper respiratory system irritation.	5	4	(20) HIGH	Procedures to be in place and competent persons appointed and training completed. Dust masks to form part of PPE requires, refer to Construction Regulation 20.	2	2	(4) LOW
Welding and flame cutting	Yes	The unsafe use of welding and flame cutting equipment could result in employees/persons suffering from burns or injuries or even result in	6	3	(18) HIGH	Procedures to be in place and competent persons appointed and training completed. Hot work permits to be issued. DSTI for high risk	2	1	(2) LOW

Description of risk area/context	Yes / No	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
		fires that could cause injuries and fatalities as well as damage to property with subsequent claims and costs.				activities to be signed off by the appointed Construction Manager and Construction Safety Officer.			
Transportation of employees and/or material	Yes	The unsafe transportation of employees and/or material could result in injuries and/or fatalities and/or damage with subsequent costs and claims.	6	3	(18) HIGH	Adequate transportation provided for contractor employees. Also refer to the National Road Traffic Act. Currently using taxis, gang truck.	2	1	(2) LOW
Demolition of asbestos	N/A	Not currently foreseen.				Will be addressed should that be required.			
Working under or close to overhead power lines	Yes	Accidental contact with live overhead cables resulting in injuries and/or fatalities and/or damage with subsequent costs and claims.	6	3	(18) HIGH	Risk Assessment and Method statement for the task to be provided. Application for way leave if applicable.	2	2	(4) LOW
Severe weather plan	Yes	Severe weather may result in injuries and or asset damage. Flooding in areas of bridges and culverts.	6	3	(18) HIGH	Weather station - monitors live weather: covered in the evacuation plan. Inclement weather procedure to be included in the SHE plan.	2	2	(4) LOW

Risk areas arising from task/activities that the principal contractor's operational risk assessments to be undertaken in terms of Construction Regulation 9(1) should cover

No.	TASK / EQUIPMENT	HAZARD / EFFECT
1	Steel fixing	Hand injuries caused by touching sharp objects
		Frame could collide or break loose and fall on workers causing injury or damage
2	Working under overhead power lines	Electrocution due to plant touching the overhead power lines
		Electric cables falling due to pylon damage
3	Traffic accommodation (Robot/Stop/Go)	Collisions between vehicles and persons
4	Felling/removing of trees by means of excavator	Falling tree causing injury to by-standers or damage to property
5	Installation of storm water drainage	Damaging underground services whilst excavating
		Trench collapsing whilst excavating
		Pipes falling while laying pipes
6	Trimming and top soiling of cut slopes	Machine can topple over edge when pushing topsoil
		Topsoil could fall and injure passing vehicles
		Workers could fall while raking topsoil on slope
		Falling tools can cause injury
7	Ready mix truck pouring concrete	Person can fall from inspection platform next to drum
		Injuries caused by moving gear of drum
		Person could be hit by control chute
		Collisions between persons and concrete truck
		Dermatitis caused by wet cement
8	Layer works	Collision between plant and public traffic
		Persons riding or jumping on moving plant
		Collision between persons and plant
		Plant leaks can cause damage to the environment
9	Working with compactor	Machine can fall on feet causing injury
		Noise induced hearing loss
		Employees can be bumped and injured by machine
		Sprain and strain injuries
		caused by manhandling machine

ADDENDUM 1: COVID-19 RISK ASSESSMENT

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
Site Preparation - Disinfecting Facilities (offices, bathrooms/toilets, eating areas), ensuring sufficient handwashing stations and or hand sanitizing stations, Procuring of sufficient amount of required PPE	Exposure (close contact) to a person with confirmed or suspected COVID-19 or getting in contact with surfaces that might have been contaminated could lead to severe health effects and even fatality, and if not attended to or self-isolation could lead to the spread of the virus.	5	4	(20) HIGH	1) The Principal contractor must ensure that the construction site, particularly in communal areas such as security access control room, site office, working areas, ablution facilities, welfare facilities, eating facilities, hand washing facilities and confined spaces are disinfected and cleaned, regularly, in addition, this must include, all touch points such as taps, toilets flushers and seats, door handles and push plates, handrails and corridors, lift and hoist controls, machinery and equipment controls, eating area chairs, telephone equipment, keyboards, photocopiers and other office equipment. 2) Employees that are appointed to conduct deep cleaning must be trained on all the Health and Safety protocols, including the Handling of Hazardous Chemical Substances, the Material Safety Data sheet and must be provided with the correct PPE and supervision.	3	6	(18) HIGH
Travel to and from construction site	1) PSP's , contractor management and SANRAL project teams traveling from 1 province to another. 2) Flights(domestic) / Airports 3) Teams traveling in big groups 4) Contaminated vehicle / transport / taxi's / busses 5) Pick up and drop off areas for public transport	4	4	(16) HIGH	1) PSP's, Contractor management and SANRAL project team to minimize travel to site. Work from home should be priority, meetings can be scheduled through available technology platforms. 2) Flights Will not be allowed until proven save by President of the Republic 3) Professional teams travelling to sites by vehicle will be limited to 2 persons, if 1 person drives/operate the vehicle and another person need to be seated at the back. If vehicle is a single cab,	2	2	(4) LOW

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
					<p>strictly only 1 person will be allowed in the vehicle. bus services and e-hailing services shall not carry more than 50% of the licensed capacity and taxi services shall not carry more than 70% of the licensed capacity</p> <p>4) All Vehicles / public transport must be disinfected / sanitized before entering. Before entering public transport ensure to sanitize or wash your hands with soap, as soon as arrival on site ensure to wash your hands with soap or sanitize before entering the construction area. All employees</p> <p>5) Pick up and drop off areas for public transport the employees and general public must ensure social distancing is adhered to. Do not sit or stand next to other people, keep at least a safe distance of between 1.5m and 2m.</p>			
Site specific Health and safety Induction	<p>1) Large groups of employees to undergo induction</p> <p>2) Induction not addressing procedures, risk assessment and information in relation with Covid-19</p> <p>3) Inductions conducted in confined spaces</p> <p>4) Inappropriate social distancing when conducting inductions</p> <p>5) No control of amount of employees to be or that were inducted.</p>	4	4	(16) HIGH	<p>1) Current Health and Safety Inductions to be reviewed and amended to ensure information regarding procedures, safe working procedure and risk assessments address risk associated with Covid-19.</p> <p>2) Inductions to be conducted in small groups not larger than 15 employees / visitors at a time. This Induction must be conducted in an open well-ventilated area (like in the open air).</p> <p>3) When conducted Induction all employees to comply to the social distancing requirements of having at least 1.5 m-2m between each other.</p> <p>4) Registers for all employees to be available and kept updated with the following information:</p> <ul style="list-style-type: none"> - Age of Employees - Health status 	2	2	(4) LOW

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
					– (High risk immunocompromised) - Socio economic status/Unskilled Labour - Accommodation			
Site Facilities / Toilets / Hand wash Stations / Eating areas / Offices or boardrooms	1) Bathrooms, toilets, hand wash stations, offices and eating areas surfaces contaminated and not cleaned on a regular basis throughout the duration of the day 2) Insufficient amount of soap, hand sanitizer, cleaning materials 3) Insufficient amount of Toilets (chemical and flushable toilets) 4) Inappropriate social distancing at these mentioned areas 5) Offices, eating area not well ventilated 6) Site offices over populated (to many managers/supervisors sharing a office)	3	3	(9) MODERATE	1) Eating areas to be set up in such a way that the maximum number of persons who will use the area at any one time are able to maintain the required social distancing of 1 metre. Should this not be practicable, mealtimes are to be staggered on a rotational basis to avoid contact between persons. No communal drinking facilities at eating areas (shared cups etc.). The PC to provide adequate supplies of bottled water to all employees on site. Empty bottles to be disposed of as normal waste. Training and awareness to address procedures and the importance of good hygiene practice. Workers are required to stay on site once they have entered it and not use local shops. • Break times should be staggered to reduce congestion and contact at all times. • Workers should be asked to bring pre-prepared meals and refillable drinking bottles from home. 2) Ablution facilities are an essential facility that must be available for workers across a site. Facilities are a high risk area and increased cleaning regimes are required to be introduced. A policy on how this will be done is required, that will cover both portable and permanent facilities. The following are considerations, which include, inter alia: • Portable toilets to be provided at a 1:10 ratio • Cleaners to continually clean and have a formal	2	2	(4) LOW

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
					<p>cleaning regime (checklist to be conducted and kept for records)</p> <ul style="list-style-type: none"> • Hand washing facilities (soap and water, paper towel) to be available where possible, and if not, to provide hand sanitizer • Flush toilets preferably 1:15 unless increased cleaning regime present; • Restrict the number of people using toilet facilities at any one time e.g. use a welfare attendant; • Wash hands before and after using the facilities; • Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush; • Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently; • Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal that need to be managed as hazardous waste; 			
Site inspections / visits and site meetings	<p>1) Coming into contact with infectious surfaces/ item/ individuals</p> <p>2) Inappropriate social distancing when meetings are held in container officer</p> <p>3) Large group of Teams, managers, agent and client representatives visiting site and moving around on site</p> <p>4) Insufficient amount of PPE for visitors</p> <p>5) Procedures / Induction not followed</p> <p>6) Visitors not aware of Emergency procedures</p>	4	4	(16) HIGH	<p>1) Meeting areas/ preferably use technology (Skype, Zoom, Microsoft teams): The PC is to limit the number of employees at all activities to the minimum required to do the work in a safe manner. Where possible meetings must be held in open areas limited to essential personnel. Technological alternatives to be exploited for meeting attendance if possible.</p> <p>2) All visitors attending site meetings must undergo site induction were all procedures and rules are explained in relation with Covid-19 requirements.</p>	2	2	(4) LOW

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
Accommodation for contractor employees	1) Accommodation for employees over populated 2) Inappropriate social distancing practised within a house environment 3) Insufficient cleaning practises in the house (disinfecting of surfaces and laundry) 4) No handwash station or hand sanitizer available before entering the house 5) Employees bringing visitors/ family to the house	5	4	(20) HIGH	1) Where accommodation is provided by the contractor/sub-contractor, factors to be considered in the procedure include, inter alia: <ul style="list-style-type: none"> • Density of occupants to allow for adequate social distancing (minimum 1.5m) in sleeping and dining quarters; • Restriction on the number of persons using the same sanitary/hygiene facilities; • Provision of dedicated crockery and cutlery for each occupant, together with a procedure for effective cleaning and safe storage of same and a prohibition on the sharing of utensils; • Dedicated facilities for safekeeping of personal belongings and abovementioned utensils for each person. Such facilities are to allow for total segregation of belongings and must be easy to sanitize. Provision of such facilities for safekeeping to be accompanied with a procedure for the use and sanitizing of the storage facility to reduce the risk of cross-contamination; • Facilities for accommodation provided by the contractor to have in place stringent procedures for personal hygiene, ongoing maintenance of sanitizing and social distancing, and • Additional rules to include a prohibition on the sharing of clothing, towels and other personal belongings, as well as the laundering of clothing for multiple persons at the same time. 2) Handwashing / Sanitizing stations to be available at contractor	2	2	(4) LOW

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
					accommodation. Employees to ensure washing and disinfecting of hand before entering the accommodation. 3) Sealable bags provided to each person for keeping PPE requiring laundering, such as gloves and overalls, to ensure each person's PPE is contained and not cross contaminate other employees PPE.			
Handling of tools, equipment, and materials	1) Coming into contact with infectious surfaces/ item/ individuals	5	4	(20) HIGH	1) All tools used by employees to be disinfected daily before and after use. 2) Materials handled by employees to be disinfected before handled by another employee. 3) Storage areas must be strictly controlled with handwash stations or sanitizer available before handling materials or tools. 4) Social distancing to be implemented within the storage area.	3	1	(3) LOW
Medical Surveillance	1) Employees not medically fit to work 2) Employees with chronic conditions / Tuberculosis / HIV3) Employees over the age of 50	4	4	(16) HIGH	1) All employees on site undergo routine medical examinations specific to the work to be performed taking into account the hazard and risk exposures. This to address pre-employment examination, periodic examination as required, and exit examinations. 2) Where medical examinations are governed by legislation, the principal contractor to ensure the legislative requirements are complied with by all employees. 3) All the employees performing work on site are declared medically fit for the work they are to perform. 4) Employees are notified confidentially by the construction health and safety officer or other appropriate delegated person of the results and	3	2	(6) MODERATE

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
					<p>interpretation of their medical examinations and any abnormal findings, health conditions, referrals or recommendations made as well as any restrictions that may become evident from medical examinations.</p> <p>5) In the event of referrals or recommendations for additional testing or consultation with health specialists, proof of action taken by the principal contractor to be maintained. Action taken could be a scheduled appointment with a specialist, an appointment for the additional testing etcetera.</p> <p>6) Copies of valid medical certificates of fitness to be available in the occupational health and safety file. The requirements above to be founded on a duty of care towards employees to ensure employees are made aware of any health conditions or health restrictions which may have resulted from or may be aggravated by work activities on site or associated areas. The consultation, notification and communication with the employee to, with the employees' written consent, be made available upon request for verification by the client.</p>			
Procurement of PPE and Sanitizers, disinfectants and other measures	<p>1) Insufficient amount of PPE available for all employees</p> <p>2) No Soap, sanitizers or disinfectants available on site</p>	3	2	(6) MODERATE	<p>1) All required PPE must be available on site prior to start of work</p> <p>2) Employees to be issued with a minimum of 2 overalls.</p> <p>3) Material masks at least 2 per person to be issued to all employees on site. All employees, visitors on site must wear a dustmask or a material face mask.</p>	2	2	(4) LOW

Description of risk area/context	Potential risk impact	L	S	Inherent Risk Rating	Risk mitigation	L	S	Residual Risk Rating
					<p>4) Procedure for disposing of used PPE to be implemented, monitored and communicated to all employees and visitors.</p> <p>5) Dustmasks and latex gloves to be disposed after each use and should not be used over a period of 1 day</p> <p>6) Every employer must, free of charge, ensure that – there are sufficient quantities of hand sanitizer based on the number of workers or other persons who access the workplace at the entrance of, and in, the workplace which the workers or other persons are required to use and every employee who works away from the workplace, other than at home, must be provided with an adequate supply of hand sanitizer.</p>			

ROUTE INSPECTION – N11 Section 13 from R518 Intersection (km 8.340) to Grootlandsloot River (km 24,280)

On the 12th February 2020 a route inspection was conducted, the following photos represents the risks and hazards that must be considered as part of the traffic management planning process before construction work can commence in order to mitigate the risks.

Photo 1



Photo 2



Church & Tavern – increase of traffic

Photo 3



Photo 4



Overhead electric cabling

Photo 5



Entrance to mine – traffic congestion in the morning and afternoons

Photo 6



Primary school on the main road, school children crossing, dropped and pick up by taxis

Photo 7



Photo 8



Commonly found on route was stray animals, permanent signage in place

Photo 9



Photo 10



Illegal access roads were found throughout the route

Photo 11



Damage fences, area also identified as potential flooding

Sign-off by designer and occupational health and safety agent

This serves as confirmation that the designer and occupational health and safety agent have formally discussed the content of this baseline risk assessment as well as the project specific health and safety specifications and that the risks addressed in these documents were duly taken into consideration in the project designs.

Signed on by the following parties who warrants that they are duly authorised to do so –

Project Engineer

Construction Health and Safety Agent

.....

.....

**PROJECT HEALTH AND SAFETY SPECIFICATION IN TERMS OF
CONSTRUCTION REGULATIONS 2014**



**THE REHABILITATION OF NATIONAL ROUTE N11 SECTION 13 FROM
R518 INTERSECTION (km 8.345) TO GROOTSANDSLOOT RIVER (km
24,0)**

Date: 7 June 2021

PROJECT HEALTH AND SAFETY SPECIFICATION

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- Health and Safety File Index

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Annexure C

- COVID-19 OHS Directives

i. SPECIFIC PROJECT INFORMATION

1.1 DEFINITIONS

Definitions applicable to this Health and Safety Specification as per the Construction Regulations 7 February 2014:

1. Agent means a competent person who acts as a representative for a client;
2. Angle of repose means the steepest angle of a surface at which a mass of loose or fragmented material will remain stationary in a pile on the surface, rather than sliding or crumbling away.
3. Bulk Mixing Plant means machinery, appliances or other similar devices that are assembled in such a manner so as to be able to mix materials in bulk for the purpose of using the mixed product for construction work.
4. Client means any person for whom construction work is being performed and/or undertaken [i.e. Century Property Development PTY (Ltd) for purposes of this specification];
5. 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 67, of 2000), those qualifications and those training must be regarded as the required qualifications and training; and is familiar with the Act and the applicable regulations made under the Act.
6. Construction Manager means a competent person responsible for the management of the physical construction activities on a construction site.
7. Construction Regulations means the Occupational Health and Safety Act's, No 85 of 1993, new Construction Regulations that came into effect on 01 March 2014.
8. Occupational health and safety plan means a sufficiently documented plan to the standards of the Client, which addresses hazards identified and includes safe working procedures to mitigate, reduce or control the hazards identified;
9. Occupational health and safety specification means a documented specification of all health and safety requirements pertaining to the associated works on a construction site, so as to ensure the health and safety of persons working, visiting, passing, staying and/or working close to the construction site and/or other applicable areas such as site camp;
10. OHSACT means the Occupational Health and Safety Act, No 85 of 1993, as amended; and;
11. Principal Contractor means an employer, as defined by Section 1 of the OHSACT who performs construction work and is appointed by the Client to be in overall control and management of the construction site and works.

1.2 INTRODUCTION

In terms of Construction Regulation 5(1)(b) of the OHSACT, SANRAL is required to compile an occupational health and safety specification for any intended project and provide such specification to prospective tenderers/bidders, under the supervisory consultancy of the certified Health and Safety Agent as appointed, Construction Regulations 5(5) respectively.

This specification has as objective to ensure that the principal contractor entering a contract with SANRAL achieves and maintain an acceptable level of occupational health and safety performance and compliance. This document forms an integral part of the contract between SANRAL and the principal contractor, the appointed CR 5(1)(k) and the principal-contractor and other contractors the appointed CR 7(1)(c)(v), should make it part of any contract/s that they may have with other contractors and/or suppliers as far as this project is concerned.

Compliance with this document does not absolve the principal contractor from complying with any other minimum legal requirements and the principal contractor remains responsible for the health and safety of his employees, those of his mandataries as well as any persons coming on site or on adjacent properties as far as it relates to the construction activities. SANRAL will monitor the Principal Contractor and Contractors compliance with the requirements of such legislation.

1.3 PROJECT DESCRIPTION

The project was originally designed as part of the rehabilitation and upgrading of National Route N11 Section 13 from Mokopane (km 1,310) to the Grootssandsloot River (km 24,0), but it was decided to split the original project into two contracts. This contract entails the rehabilitation and upgrading of the second part of the original project, stretching from the R518 Intersection (km 8,345) to the Grootssandsloot River (km 24,0) over approximately 14,9 km. A portion of the road between km 19,171 and km 20,204 is omitted from the N11-13 Rehabilitation Contract as it will form part of the proposed new Mokopane Ring Road project (design undertaken by Royal Haskoning DHV). The original road reserve width of 100 Cape feet (approximately 30m), and later widened to 40m from km 3,54 to km 7,20, will be increased to 40m minimum over the total length of the contract. The project is in the Mogalakwena District Municipality in the Limpopo Province of South Africa.

The existing road is a single carriageway surfaced road with varying width running through areas that can be classified as urban, semi-urban and rural. The area from km 14,160 to km 15,820 (Tshamahansi) can at this stage already be classified as semi-urban to urban, while the remaining areas in between up to km 16,540 are developing fast into semi-urban areas. Only the area from km 16,540 onwards can still be regarded as predominantly rural. From km 8,340 up to the existing mine access road at km 23,360, the existing single carriageway road is to be widened to a 12,4m minimum surfaced width. Paved sidewalks of 1,8m wide are specified over some sections of the road between km 8,340 and km 16,540. The existing road width is retained from km 23,360 up to the end of construction at km 24,280.

1.4 INTERFACE AND RESTRICTIONS BY CLIENT

Contractor must note that the following activities will continue during construction:

The travelling public will have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.

The Contractor shall not commence construction activities before adequate provision has been made to accommodate traffic in accordance with the requirements – refer to Part 3 of Volume 2 of the South African Road Traffic Signs Manual

Warning Notices: Construction warning signage must be prominently displayed to avoid unauthorised access to site and to warn of dangers associated with construction works.

Members of the public in the form of road users, pedestrians, school children, etc. may be vulnerable to criminal activities during construction as result of traffic accommodation measures and restrictions to pedestrian movement along the road and at road crossings. In terms of clause 4.8 of the General Conditions of Contract (FIDIC), the contractor must take care of the safety of all people entitled to be on the site, which includes these members of the public. It is the contractor's responsibility to provide fencing, guards and other appropriate measures to protect the public for the duration of the contract.

The following SANRAL safety rules and/or requirements are to be observed:

All workers to undergo medical examination fitness
 All workers are to receive induction prior to commencement of work on site.
 All workers must be able to be identified as inducted, otherwise need to leave the site.
 No workers of contractors will be allowed on site without supervision.
 Please also refer to tender document.

Danger areas need to be demarcated efficiently. Danger tape is not enough.

The Contractor shall exercise strict control over all personnel and compliance to the OHS act requirements. Non-compliance this regards can lead to contractual consequences. Personnel found non-compliant will face disciplinary action by the contractor and may lead to dismissals. The contractor has the duty to enforce all legal requirements in accordance with the OHS act.

The principle contractor shall have a disciplinary programme in place which supports his duty and responsibility of enforcing the OHS act and its regulations were deemed necessary onto employees and sub-contractors. A penalty/fine system may be considered within the programme. Whereas the penalties/fines shall be based on the nature of the violation and employees or contractor's compliance history.

1.5 SAFETY FILE RETURN TO SANRAL

The Safety File for the Project is to be handed over by the Principal Contractor to SANRAL or the appointed Agent upon Project Completion in either a hard copy format or on CD or any other electronic device

1.6 GENERAL ROAD WORKS

The general roadworks on the project consist of the following main elements:

- Clearing and grubbing of the site.
- Accommodation of traffic.
- Construction of temporary deviations.
- Relocation and/or protection of services.
- Installation of drainage culverts.
- Installation of subsoil surface drains.
- Construction of banks and dykes.
- Construction of mass earthworks.
- Construction of new pavement layers, asphalt surfacing and seals.
- Installation of guardrails.
- Erosion protection such as gabions and stone pitching.
- Construction of paved sidewalks.
- Erection of road signs and fencing.
- Application of road markings (including remarking at end of Defects Liability Period) and the installation of road studs.
- Landscaping.
- Finishing off the road and road reserve, including borrow pits, stone quarry and spoil areas.
- The installation of street lighting in built-up areas.

1.7 SERVICES

The following known services are situated within, or in close proximity of the road reserve:

- Eskom: Overhead electrical lines.
- Telkom: Overhead telephone lines and underground cables.
- Anglo Platinum: Underground water pipelines.
- Mogalakwena District Municipality: Overhead electrical lines.
- Underground cables.
- Underground and partially above ground sewer lines.
- New water pipeline.

2. FURTHER REQUIREMENTS

2.1 Duties of Principal Contractor / Contractor in terms of Construction Regulations 2014

A Principal Contractor must:

- provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the principal contractor as work progresses;
- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor; and
- on appointing any other contractor, in order to ensure compliance with the provisions of the Act –
 - provide contractors who are tendering to perform construction work for the principal contractor, with the relevant sections of the health and safety specifications pertaining to the construction work which has to be performed;
 - ensure that potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;
 - ensure that no contractor is appointed to perform construction work unless the principal contractor is reasonably satisfied that the contractor that he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;
 - ensure prior to work commencing on the site that every contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993;
 - appoint each contractor in writing for the part of the project on the construction site
 - take reasonable steps to ensure that each contractor's health and safety plan is implemented and maintained on the construction site;
 - ensure that the periodic site 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;
 - stop any contractor from executing construction work which is not in accordance with the client's health and safety specifications and the principal contractor's health and safety plan for the site or which poses a threat to the health and safety of persons;
- where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the contractor to execute the work safely;
- discuss and negotiate with the contractor the contents of their health and safety plan and finally approve that plan for implementation;
- ensure that a copy of both the principal contractor and contractor's health and safety plan is available on request to an employee, an inspector, a contractor, the client or the client's agent;
- hand over a consolidated health and safety file to the client upon completion of the construction work, to include a record of all drawings, designs, materials used and other similar information concerning the completed structure;
- in addition to the documentation required in the health and safety file include and make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done;

- ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

A contractor must prior to performing any construction work-

- provide and demonstrate to the principal contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the client's health and safety specification and provided by the principal contractor, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the contractor as work progresses;
- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, and which must be made available on request to an inspector, the client, the client's agent or the principal contractor;
- before appointing another contractor to perform construction work be reasonably satisfied that the contractor that he or she intends to appoint has the necessary competencies and resources to perform the construction work safely;
- co-operate with the principal contractor as far as is necessary to enable each of them to comply with the provisions of the Act;
- as far as is reasonably practicable, promptly provide the principal contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.

Where a contractor appoints another contractor to perform construction work, the duties that apply to the principal contractor will apply to the contractor as if he or she were the principal contractor.

A principal contractor must take reasonable steps to ensure co-operation between all contractors appointed by the principal contractor to enable each of those contractors to comply with these Regulations.

No contractor may allow or permit any employee or person to enter any site, unless that employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

A contractor must ensure that all visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.

A contractor must at all times keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the principal contractor.

A contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3 (a template of which can be found in the Construction Regulations, 2014).

2.2 Management and Supervision of Construction Work

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

Where the construction manager has not appointed assistant construction managers, or, in the opinion of an inspector, a sufficient number of such assistant construction managers have not been appointed, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers

indicated by the inspector, and those assistant construction managers must be regarded as having been appointed.

No construction manager appointed in terms of the Regulations may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

A contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor, and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties.

Where the contractor has not appointed such an employee, or, in the opinion of an inspector, a sufficient number of such employees have not been appointed, that inspector must instruct the employer to appoint the number of employees indicated by the inspector.

No construction supervisor appointed may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

Only through visible, passionate and engaged leadership we will achieve our HSE Project Objectives. Leaders shape an organisation's HSE culture and ultimately its HSE performance. Leaders will ensure that mechanisms are in place to manage HSE in their works. Leaders will exhibit appropriate and positive personal HSE behaviours.

Leadership and commitment from the Contractor will be demonstrated by the following items:

- Demonstrate visible, personal commitment to all levels of the workforce ensuring that HSE is seen as a key priority for all employees.
- Ensure that correct and appropriate safety behaviours are encouraged and displayed in every job.
- Continuously seek ways to improve HSE performance. Identify lessons which can be learned, from whatever source, and use or share these with others.
- Invite, facilitate, encourage and listen to feedback on leaders' own safety performance and behaviours.
- Strive to understand the impact of different cultures and environments. Seek to include those with different perspectives and recognize how these variables can impact on HSE performance.
- Give the appropriate level of resource to HSE programs.
- Supervisors and managers have adequate job skills and are aware of the applicable legal, regulatory and other requirements of their area.

2.3 Notification of Intention to Commence Construction Work – NOT APPLICABLE

The Contractor shall notify the Provincial Director of the Department of Labour of the intention to commence construction work at least 7 days prior to the works commencing if the intended construction work will:

- Include excavation work
- Include work at height where there is a risk of falling
- Include the demolition of a structure, or
- Include the use of explosives to perform construction work.

If the construction work involves construction of a single storey dwelling for a client, and such client will be residing in such dwelling upon completion, the contractor must also notify the Provincial Director of the Department of Labour at least 7 days before the works commence.

This must be done on a form similar to an Annexure 2 (template of which can be found in the Construction Regulations, 2014). A copy of the notification letter to the Provincial Director shall be forwarded to the Client for record purposes.

2.4 Construction Work Permit

It must be noted that from August 2015 all projects that meet the following criteria will require a construction work permit to be applied for at least 30 days prior to the work being carried out:

- Exceeds 180 days
- Will involve more than 1800 person days of construction work
- Works contract is of a value equal to or exceeding thirteen million rand, or Construction Industry Grading Board (CIDB) grading level 6

It is SANRAL's responsibility to apply for this permit from the Provincial Director and construction work may not commence until the permit has been issued by the Provincial Director. **Refer to latest exemption letter from the Department of Labour**

A copy of this permit will be required to be kept in the principal contractor's safety file, and the site-specific number issued by the Provincial Director must be displayed at the site entrance.

2.5 Assignment of Contractor's Responsible Persons to Manage Health and Safety on Site

The Contractor shall submit management and supervisory appointments as well as any relevant appointments in writing (as stipulated by the Construction Regulations 2014 and the Occupational Safety and Health Act 1993), prior to commencement of work (refer to **Annexure B** at the end of this Health and Safety Specification).

2.6 Competency for Contractor's Responsible Persons

The Contractor's responsible persons shall be competent in health and safety and be familiar with the Occupational Health and Safety Act 1993, and applicable regulations. Valid proof of pertinent health and safety courses attended by such persons will be required to be presented to the Client.

2.7 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The successful Contractor shall submit to the Client a valid letter of good standing with the Compensation Insurer prior to appointment.

2.8 Occupational Health and Safety Policy

The Contractor shall submit their Health and Safety Policy, prior to construction commencement, signed by the Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented within the company operations.

2.9 Health and Safety Organogram

The Contractor shall submit an organogram, prior to construction commencement, outlining the Health and Safety Site Team that will be assigned to the project, if successful with the tender. In cases where appointments have not been made, the organogram shall reflect the position. The organogram shall be updated, when there is a change in the site team.

2.10 Risk Assessments

Baseline Risk Assessment

SANRAL shall cause a baseline risk assessment to be conducted by a competent person before the design process and tender process commence, and the assessed risks shall form part of the health and safety specifications.

The Contractor must, before commencement of any construction work, and during construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site and must include:

- The identification of the risks and hazards to which persons may be exposed to;
- An analysis and evaluation of the risks and hazards identified; based on a documented method
- A documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified.
- A monitoring plan; and
- A review plan

The Contractor must ensure that, as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in a risk assessment.

In general, the Contractor must ensure that the Risk Assessment involves identifying the hazards present in a work activity on site. This is followed by an evaluation of the extent of the risk involved considering those precautions already being taken.

The following general principle should be followed when conducting a risk assessment:

- All relevant risks and/or hazards should be systematically addressed;
- The risk assessment should address what actually happens in the workplace during the work activity;
- All employees and those who may be affected must be considered, including maintenance staff, security guards, visitors and subcontractors;
- The risk assessment should highlight those groups and individuals who may be required to work alone or who have disabilities;
- The risk assessment process should take into account the existing safety measures and controls;
- The level of detail on a risk assessment should be appropriate to the level of risk.

2.11 Health and Safety Representative(s)

The Contractor shall ensure that Health and Safety Representative(s) is/are elected and trained to carry out his / her functions. The appointment must be in writing. The Health and Safety Representative shall carry out regular inspections, keep records and report to the supervisor to take appropriate action. He / she shall attend Health and Safety Committee Meetings. The Health and Safety Representative shall be part of the team that will investigate incidents, accidents and non-conformances.

2.12 Health and Safety Committee

The Contractor shall ensure that monthly health and safety meetings are held with such representatives and minutes are kept on record. Meetings must be organized and chaired by the Contractor's Health and Safety Committee Chairperson. Minutes of these meetings must be available for the employees of the contractor to refer to.

2.13 Medical Certificate of Fitness

The contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template (refer to the Construction Regulations 2014 on the Department of Labour website for a sample of this form).

2.14 Health and Safety Training

The Contractor shall quarterly conduct a training needs analysis to ascertain what health and safety training is required. A plan of action should be devised and forwarded to the Client for records. Once the identified people have attended the training, the Contractor must provide the Client with copies of certificates obtained.

2.14.1 Induction

No Contractor may allow or permit any employee or person to enter site unless they have undergone health and safety induction training pertaining to the hazards prevalent on site at the time of entry. This includes visitors to site. The Contractor must ensure that visitors to site have the necessary protective equipment (PPE). A copy of attendance registers of all employees who attend inductions shall be kept.

2.14.2 Awareness

The Contractor shall conduct periodic toolbox talks on site, preferably weekly or before any hazardous work takes place. The talks shall cover the relevant activity and an attendance register must be signed by all attendees. This record of who attended and the content of the topic will be kept on the site health and safety file as evidence of training.

2.15 Competency

After the Contractor has identified the training to be conducted as part of the competency requirement, and based on Risk Assessment, he shall send the relevant persons on appropriate courses and keep certificates of training for reference. Familiarity with the Health and Safety Act and Regulations is an integral part of the definition of competence.

2.16 General Record Keeping

The Contractor shall keep and maintain Health and Safety records to demonstrate compliance with the Health and Safety Specification and the Occupational Health and Safety Act. The contractor shall ensure that all records of incidents, spot fines, training etc. are kept on site. All documents shall be available for inspection by the Client, or the Department of Labour's Inspectors.

The following items listed in the below table shall be maintained and reported weekly on a Monday by the Contractor, for the previous week.

General	Lagging Indicators	Leading Indicators
Staffing	Equipment/plant damage incidents	New RA / SWP's developed
Man-Hours		Safe working hours
		LTI free hours
	First aid injuries	RA / SWP's reviewed
	Medical treatment cases (MTC)	Near misses reported
	Lost time injuries (LTI)	Number of PTO's conducted
	Environmental incidents	Audit results (self-audit)
	Non-Conformances (NCR)	Toolbox Talks conducted
		Number of VFL's conducted
		EHS Committee meetings
		Suggestions / initiative schemes

2.17 General Inspection, Monitoring and Reporting

EHS KPIs have been established for the project to ensure that both lagging and leading indicators are being measured and tracked. The Table below defines the KPIs for the project. The CONTRACTOR shall communicate status of KPI's to the stakeholders monthly with incidents being reported forthwith.

The CONTRACTOR will review the project statistics at the end of each reporting period and on a three-monthly rolling basis identifying trends within the reports. Any trends identified and actions arising will be included in the deviation register.

Indicator Type	Criteria	Responsibility	Measure
Leading Indicators	External audit of specific project EHS management system	CONTRACTOR	Within 30 days of mobilisation

Indicator Type	Criteria	Responsibility	Measure
	Internal self-audit (monthly). Audit of CONTRACTORs	CONTRACTOR	> 85% compliance score to be achieved CONTRACTORs achieving <75% = stop work
	Principal CONTRACTOR EHS audits	SANRAL EHS Agent	Within 30 days of mobilisation and then monthly
	Planned Task Observations (PTO's)	CONTRACTOR	100% execution of scheduled PTO's
	Pre-start meetings / Daily Safe Task Instructions (DSTI's)	CONTRACTORs	For each work team before each task commences
	Toolbox talks	CONTRACTOR	Daily
	Project EHS committee meetings	CONTRACTOR	1 per month
	Method statements, Risk assessments and Safe Work Procedures	CONTRACTOR	All tasks at all times
	Hazard and near miss reporting.	All personnel	100% of all near misses reported
Lagging indicators	Fatalities or serious disabling, immobilisation injury	CONTRACTOR	Zero
	Disabling injury frequency rate (DIFR)	CONTRACTOR	Zero
	Lost time injury frequency	CONTRACTOR	0
	Occupational illness	CONTRACTOR	0

2.18 Emergency Procedures

The Contractor shall submit a detailed Emergency Procedure for approval by the Client's representative prior to commencement on site. The procedure shall detail the response plan including the following:

- List of key personnel;
- Details of emergency services;
- Actions or steps to be taken in the event of the emergency; and
- Information on hazardous materials / situations, including each material's hazardous potential impact or risk on the environment or human and measures to be taken in the event of an accident.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, dangers as a result of riot / service deliver protests / intimidation, etc. The Contractor shall advise the Client in writing of any on-site emergencies, together with a record of action taken, within 24 hours of the emergency occurring. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc) must be maintained and available to site personnel.

2.19 First Aid Box and First Aid Equipment

The Contractor shall provide first aid box/es and appoint, in writing, First Aider(s) for this project in line with the results of the Contractor's risk assessment for the project, this health and safety specification as well as the provisions of the General Safety Regulations. The appointed First Aider(s) are to be sent for accredited first aid training before starting on site. Valid certificates are to be kept on site.

First Aid box/es must be adequately stocked at all time, accessible and be controlled by a qualified First Aider. If required by the Client, the Contractor shall have a stretcher on site to be used in case of a serious incident.

2.20 Accident / Incident Reporting and Investigation

The Contractor shall, in addition to the prescribed requirements of the Occupational Health and Safety Act and General Safety Regulations, investigate, record and report all Section 24 reportable incidents to the Client within 24 hours of the incident occurring. Incident investigations shall be conducted by the Contractor's appointed Accident Investigator – this Investigator must be a competent person or persons who have sufficient knowledge to carry out an investigation.

In the event of a fatality or a permanent disabling injury the Contractor must submit proof of reporting of incident to Department of Labour as well as proof of preventative measures to the Client. The Client reserves the right to conduct investigations into any incidents that they deem fit and the Contractor is required to provide full co-operation in this regard.

2.21 Hazards and Potential Situations

The Contractor shall immediately notify other Contractors of any hazardous or potentially hazardous situations, which may arise during performance of the activities.

H&S issues identified through workplace inspections and audits will be addressed immediately on site where possible or work stopped where the situation is life-threatening. Where deviations are observed a safety interaction with the individual(s) must be held to determine the reason for the deviation and to change behaviour. All H&S deviations must be captured on a project Deviation Register even if closed out on site for the purpose of trend analyses. The Principal Contractor is responsible to maintain the Deviation Register and must identify trends from repeat deviations and implement the necessary interventions.

The minimum headings to be included in the Deviation Register are: Area, Construction Supervisor's name, relevant Contractor, potential incident category (equipment damage or MTI etc.), work stopped or not, risk type (origin of the risk e.g. procedure not followed or unsafe act etc.), responsible person, dates, close-out / status.

Non-conformance with project EHS requirements may result in disciplinary action which may include removal from the project OR Fines. The following NCR categories shall be used:

No	NCR Category	Notes	1 st Offence	2 nd Offence	3 rd Offence	Any more than three offences of the same category – 7-day notice
1	SANRAL/Community property damage - depending on the outcome of the investigation	Minor	R5000.00	R10,000.00	R15,000.00	
		Major	R5000.00	R10,000.00	R15,000.00	
2	Non-Compliant tools & equipment		R5000.00	R10,000.00	R15,000.00	
3	Poor Quality/Re-works		R5000.00	R10,000.00	R15,000.00	
4	Failure to close investigation within 7 days		R5000.00	R10,000.00	R15,000.00	
5	Failure to wear/inadequate PPE		R5000.00	R10,000.00	R15,000.00	
6	speeding		R5000.00	R10,000.00	R15,000.00	
7	Unsafe Act		R5000.00	R10,000.00	R15,000.00	
8	COVID-19 : Non adherence to COVID-19 protocols		R5000.00	R10,000.00	R15,000.00	
9	No valid medical		R5000.00	R10,000.00	R15,000.00	
10	No induction		R5000.00	R10,000.00	R15,000.00	
11	Drug and alcohol abuse at the worksite	R5000.00 AND PERSON REMOVED FROM THE PROJECT	R5000.00	R10,000.00	R15,000.00	
12	Failure to remove waste		R5000.00	R10,000.00	R15,000.00	
13	Poor Housekeeping		R5000.00	R10,000.00	R15,000.00	
14	Failure to conduct Tool Box Talks		R5000.00	R10,000.00	R15,000.00	
15	Failure to implement SANRAL EHS Directives – High risk activities		R5000.00	R10,000.00	R15,000.00	
16	Failure to report near misses		R5000.00	R10,000.00	R15,000.00	
17	Working without Permit to Work		R5000.00	R10,000.00	R15,000.00	
Please note that this is a guideline for NCR Fines and not exhaustive. In the event that higher fines are warranted these will be discussed and approved by the Construction Manager						

2.22 Occupational Health and Safety Signage

The Contractor shall ascertain and provide adequate on-site health and safety signage. This signage shall include, but shall not be limited to, Hard Hat / Helmet Area; Safety Shoes to be worn on site; Dust Masks to be worn in areas where there might be exposure to excessive dust; Ear Plugs / Muffs to be worn where there might be noise exposure over 85 db; Gloves; Safety Goggles; Safety Harness, Workers in Excavation, traffic management, etc. The Contractor shall be responsible to maintain the quality and replacement of signage.

2.23 Management of Contractors by Principal Contractor

The Principal Contractor shall ensure that all contractors under his control are complying with the respective Health and Safety Plans, as well as Health and Safety Legislation.

2.24 Stacking of Materials

In addition to the provisions for the stacking of articles in the General Safety Regulations, 2003, the contractor must ensure that –

- a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- adequate storage areas are provided;
- there are demarcated storage areas; and
- storage areas are kept neat and under control.

2.25 Housekeeping and General Safeguarding on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, promulgated by Government Notice No. R. 2281 of 16 October 1987, ensure that suitable housekeeping is continuously implemented on each construction site, including-

- the proper storage of materials and equipment;

- the removal of scrap, waste and debris at appropriate intervals;
- ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals;
- ensuring that waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out in the regulations;
- ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under, or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger or possibility of persons being struck by falling objects.

2.26 Construction Vehicles and Mobile Plant

A contractor must ensure that all construction vehicles and mobile plant-

- are of an acceptable design and construction;
- are maintained in a good working order;
- are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- are operated by a person who-
 - has received appropriate training, is certified competent and in possession of proof of competency and is authorised in writing to operate those construction vehicles and mobile plant;
 - has a medical certificate of fitness to operate those construction vehicles and mobile plant, issued by an occupational health practitioner in the form of Annexure 3.
- have safe and suitable means of access and egress;
- are properly organized and controlled in any work situation by providing adequate signalling or other control arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guard-rails and crash barriers;
- are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- are equipped with an acoustic warning device which can be activated by the operator;
- are equipped with an automatic acoustic reversing alarm; and
- are inspected by the authorised operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant.

A contractor must ensure that-

- no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose;
- every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health;
- the traffic routes are suitable for the persons, construction vehicles or mobile plant using them, are sufficient in number, in suitable positions and of sufficient size;
- every traffic route is, where necessary, indicated by suitable signs;
- all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant;
- all construction vehicles or mobile plant when not in use, have buckets, booms or similar appendages, fully lowered or blocked, controls in a neutral position, motors stopped, wheels chocked, brakes set and ignition secured;
- whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
- tools, material and equipment are secured and separated by means of a physical barrier in order to prevent movement when transported in the same compartment with employees;
- vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and

- all construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirements of the National Road Traffic Act, 1996.

2.27 Electrical Installations and Machinery on Construction Sites

A contractor must, in addition to compliance with the Electrical Installation Regulations and the Electrical Machinery Regulations, ensure that –

- before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;
- all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- all electrical machinery is inspected by the authorized operator or user on a daily basis using a relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

2.28 Use and Temporary Storage of Flammable Liquids on Construction Sites

A contractor must, in addition to compliance with the provisions for the use and storage of flammable liquids in the General Safety Regulations, 2003, ensure that –

- where flammable liquids are being used, applied or stored at the workplace concerned, it is done in a manner that does not cause a fire or explosion hazard, and that the workplace is effectively ventilated;
- no person smokes in any place in which flammable liquid is used or stored, and the contractor must affix a suitable and conspicuous notice at all entrances to any such areas prohibiting such smoking;
- an adequate amount of efficient fire-fighting equipment is installed in suitable locations around the flammable liquids store with the recognized symbolic signs;
- only the quantity of flammable liquid needed for work on one day is taken out of the store for use;
- all containers holding flammable liquids are kept tightly closed when not in actual use and, after their contents have been used up, are removed from the construction site and safely disposed of;
- where flammable liquids are decanted, the metal containers are bonded and earthed; and
- no flammable material, including cotton waste, paper, cleaning rags or similar material is stored together with flammable liquids

2.29 Water environments

N/A

2.30 Fire precautions on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, ensure that –

- all appropriate measures are taken to avoid the risk of fire;
- sufficient and suitable storage is provided for flammable liquids, solids and gases;
- smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;
- in confined spaces and other places in which flammable gases, vapours or dust can cause danger-
 - only suitably protected electrical installations and equipment, including portable lights, are used;
 - there are no flames or similar means of ignition;
 - there are conspicuous notices prohibiting smoking;
 - oily rags, waste and other substances liable to ignite are without delay removed to a safe place; and
 - adequate ventilation is provided;
- combustible materials do not accumulate on the construction site;
- welding, flame cutting, and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;

- suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;
- the fire equipment contemplated above is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;
- a sufficient number of workers are trained in the use of fire- extinguishing equipment;
- where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;
- the means of escape is kept clear at all times;
- there is an effective evacuation plan providing for all -
 - persons to be evacuated speedily without panic;
 - persons to be accounted for; and
 - plant and processes to be shut down; and
- a siren is installed and sounded in the event of a fire.

2.31 Construction Employees' Facilities

A contractor must, in terms of the Construction Regulations 2014, provide:

- Shower facilities after consultation with the employees or employees representatives, or at least one shower facility for every 15 persons – TBC
- at least one sanitary facility for each sex and for every 30 workers;
- changing facilities for each sex;
- and sheltered eating area.
- Provide drinking water

A contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

2.32 Fall protection – If Applicable

The Contractor must:

- designate a competent person to be responsible for the preparation of a fall protection plan
- ensure that the fall protection plan contemplated above is implemented, amended where and when necessary and maintained as required; and
- take steps to ensure continued adherence to the fall protection plan.

A fall protection plan contemplated above must include-

- a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- a programme for the training of employees working from a fall risk position and the records thereof;
- the procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

A contractor must ensure that a construction manager appointed under regulation 8(1) is in possession of the most recently updated version of the fall protection plan.

A contractor must ensure that all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;

Also that no person is required to work in a fall risk position, unless such work is performed safely as contemplated in above and fall prevention and fall arrest equipment are approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and securely attached to a structure or plant, and the structure of plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and person who could fall, and fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

2.33 Temporary works

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

A contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.

A contractor must ensure that-

- all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;
- all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted;
- detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent or any employee;
- all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;
- all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;
- all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;
- no person may cast concrete, until authorization in writing has been given by the competent person contemplated above;
- if, after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it is safely removed or reinforced immediately;
- adequate precautionary measures are taken in order to-
 - secure any deck panels against displacement; and
 - prevent any person from slipping on temporary works due to the application of release agents;
- as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
- upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the competent person
- the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level;
- a temporary works drawing, or any other relevant document includes construction sequences and methods statements;
- the temporary works designer has been issued with the latest revision of any relevant structural design drawing;
- a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- the temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

No contractor may use a temporary works design and drawing for any work other than its intended purpose.

2.34 Excavation

A contractor must-

- ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose; and
- evaluate, as far as is reasonably practicable, the stability of the ground before excavation work begins.

A contractor who performs excavation work-

- must take reasonable and sufficient steps in order to prevent, as far as is reasonably practicable, any person from being buried or trapped by a fall or dislodgement of material in an excavation;
 - may not require or permit any person to work in an excavation which has not been adequately shored or braced: Provided that shoring and bracing may not be necessary where -
 - the sides of the excavation are sloped to at least the maximum angle of repose measured relative to the horizontal plane; or
 - such an excavation is in stable material: Provided that -
 - permission has been given in writing by the appointed competent person contemplated above upon evaluation by him or her of the site conditions; and
 - where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the competent person and the professional engineer or technologist, as the case may be;
 - must take steps to ensure that the shoring or bracing contemplated above is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question;
 - must ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers the safety of any person, unless precautions such as the provision of sufficient and suitable shoring or bracing are taken to prevent the sides from collapsing;
 - must ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken to ensure the stability of such building, structure or road and the safety of persons;
 - must cause convenient and safe means of access to be provided to every excavation in which persons are required to work, and such access may not be further than six meters from the point where any worker within the excavation is working;
 - must ascertain, as far as is reasonably practicable, the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved;
 - must ensure that every excavation, including all bracing and shoring, is inspected -
 - daily, prior to the commencement of each shift;
 - after every blasting operation;
 - after an unexpected fall of ground;
 - after damage to supports; and
 - after rain,
- by the competent person, in order to ensure the safety of the excavation and of persons, and those results must be recorded in a register kept on site and made available on request to an inspector, the client, the client's agent, any other contractor or any employee;
- must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be –
 - adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
 - provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor, or have resort to any other suitable and sufficient precautionary measure where this is not practicable;
 - must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with by any person entering any excavation;
 - must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in accordance with the applicable explosives' legislation; and
 - must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.

2.35 Demolition Work – If Applicable

A contractor must appoint a competent person in writing to supervise and control all demolition work on site.

A contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

During a demolition, the competent person contemplated in above must check the structural integrity of the structure at intervals determined in the method statement contemplated in above, in order to avoid any premature collapses.

A contractor who performs demolition work must with regard to a structure being demolished, take steps to ensure that-

- no floor, roof or other part of the structure is overloaded with debris or material in a manner which would render it unsafe;
- all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and
- precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;
- ensure that no person works under overhanging material or a structure which has not been adequately supported, shored or braced;
- ensure that any support, shoring or bracing contemplated above, is designed and constructed so that it is strong enough to support the overhanging material;
- where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;
- ascertain as far as is reasonably practicable the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of demolition work that may affect any such service, take the steps that are necessary to render circumstances safe for all persons involved;
- cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means;
- cause convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work; and
- erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger areas if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.

A contractor must ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.

No person may dispose of waste and debris from a high place by a chute unless the chute-

- is adequately constructed and rigidly fastened;
- if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;
- if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;
- where necessary, is fitted with a gate at the bottom end to control the flow of material; and discharges into a container or an enclosed area surrounded by barriers.

A contractor must ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.

A contractor must ensure that no equipment is used on floors or working surfaces, unless such floors or surfaces are of sufficient strength to support the imposed loads.

Where a risk assessment indicates the presence of asbestos, a contractor must ensure that all asbestos related work is conducted in accordance with the Asbestos Regulations 2001.

Where a risk assessment indicates the presence of lead, a contractor must ensure that all lead related work is conducted in accordance with the Lead Regulations, 2001.

Where the demolition work involves the use of explosives, a method statement must be developed in accordance with the applicable explosives legislation, by an appointed person who is competent in the use of explosives for demolition work and all persons involved in the demolition works must adhere to demolition procedures issued by the appointed person.

A contractor must ensure that all waste and debris are as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation.

2.36 Working in Confined Spaces

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.

2.37 Scaffolding

A contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work.

A contractor using access scaffolding must ensure that such scaffolding, when in use, complies with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act.

2.38 Bulk mixing plant

A contractor must ensure that the operation of a bulk mixing plant is supervised by a competent person who has been appointed in writing and is –

- aware of all the dangers involved in the operation thereof; and
- conversant with the precautionary measures to be taken in the interest of health and safety.

No person supervising or operating a bulk mixing plant may authorize any other person to operate the plant, unless that person is competent to operate a bulk mixing plant.

A contractor must ensure that the placement and erection of a bulk mixing plant complies with the requirements set out by the manufacturer and that such plant is erected as designed.

A contractor must ensure that all devices to start and stop a bulk mixing plant are provided and that those devices are placed in an easily accessible position and constructed in a manner to prevent accidental starting.

A contractor must ensure that the machinery and plant selected is suitable for the mixing task and that all dangerous moving parts of a mixer are placed beyond the reach of persons by means of doors, covers or other similar means.

No person may remove or modify any guard or safety equipment relating to a bulk mixing plant, unless authorized to do so by the appointed person.

A contractor must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with when entering any silo.

A contractor must ensure that a record is kept of all repairs or maintenance to a bulk mixing plant and that the record is available on site to an inspector, the client, the client's agent or any employee.

2.39 Rope Access Work

N/A

2.40 Hazardous Chemical Substances (HCS)

In addition to the requirements in the HCS Regulations, the principal contractor must provide proof in the Health and Safety Plan that:

- Material Safety Data Sheets (MSDS's) of the relevant materials / hazardous chemical substances are available prior to use by the contractor. All MSDS's shall be available for inspection by the agent at all times.
- Risk assessments are done at least once every 6 months.
- Exposure monitoring is done according to OESSM and by an Approved Inspection Authority (AIA) and that the medical surveillance programme is based on the outcomes of the exposure monitoring.
- How the relevant HCS's are being / going to be controlled by referring to:
 - Limiting the amount of HCS
 - Limiting the number of employees
 - Limiting the period of exposure
 - Substituting the HCS
 - Using engineering controls

- Using appropriate written work procedures
- The correct PPE is being used.
- HCS are stored and transported according to SABS 072 and 0228.
- Training with regards to these regulations was given.

The Health and Safety plan should make reference to the disposal of hazardous waste on classified sites and the location thereof (where applicable).

The First Aider must be made aware of the MSDS and trained in how to treat HCS incidents appropriately.

2.41 Noise Induced Hearing Loss

Where noise is identified as a hazard the requirements of the NIHL regulations must be complied with and the following must be included / referred to in the Health and Safety Plan:

- Proof of training with regards to these regulations.
- Risk assessment done within 1 month of commencement of work.
- That monitoring carried out by an AIA and done according to SABS 083.
- Medical surveillance programme established and maintained for the necessary employees.
- Control of noise by referring to:
- Engineering methods considered
- Admin control (number of employees exposed) considered
- Personal protective equipment considered/decided on
- Describe how records are going to be kept for 40 years.

2.42 Explosives and Blasting

Not applicable

2.43 Personal Protective Equipment (PPE)

The Contractor shall carry out PPE or clothing needs analysis in accordance with his risk assessment, to determine the necessary PPE or clothing to be used during construction. The Contractor shall always make provision and keep adequate quantities of SABS approved PPE or clothing on site.

The Contractor must ensure that personnel are trained in the correct use of PPE to be used. Employees will not be charged for personal protective equipment. The Principal Contractors disciplinary code must be applied where abuse can be proven.

The Contractor must ensure that lost, stolen, worn out or damaged PPE is replaced as required and receipt signed for by employees on site.

2.44 Asbestos

Not applicable

2.45 Pressure Vessels (Including Gas Bottles)

The Contractor shall comply with Pressure Vessel Regulations, including:

- Providing competency and awareness training to the operators;
- Providing PPE or clothing;
- Providing and maintain appropriate signage in areas where pressure vessels are used, as applicable;
- Inspect equipment regularly and keep records of inspections;
- Providing appropriate fire fighting equipment (Fire Extinguishers).

2.46 Fire Extinguishers and Fire Fighting Equipment

The Contractor shall provide adequate, regularly serviced fire extinguishers located at strategic points on site. The Contractor shall keep spare serviced portable fire extinguishers. The Contractor shall have adequate persons trained or competent to use the Fire Fighting Equipment.

Safety signage shall be posted up in all areas where fire extinguishers are located.

2.47 Lifting Machinery and Tackle

The Contractor shall ensure that lifting machinery and tackle is inspected before use and on a monthly basis. The Contractor shall have lifting machinery and tackle inspector who will inspect the equipment at intervals required by the Driven Machinery Regulations, taking into account that:

- All lifting machinery and tackle have a safe working load clearly indicated;
- Regular inspection and servicing is carried out;
- Records are kept of inspections and of service certificates;
- Thorough examinations are carried out by competent personnel at the frequencies required by legislation
- There is proper supervision in terms of guiding the loads which includes a trained banks man to direct and check lifting tackle if it is safe for use.

Ladders and Ladder work

The Contractor shall ensure that all ladders are numbered and inspected regularly keeping record of inspections. It should be noted that Aluminium ladders are preferred to wooden ladders.

2.48 General Machinery

The Contractor shall comply with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing and training those that use machinery and enforce compliance.

2.49 Portable Electrical Tools

The Contractor shall ensure that use and storage of all explosive actuating fastening devices and portable electrical tools are in compliance with relevant legislation.

The Contractor shall consider that:

- A competent person undertakes routine inspections;
- Only authorised persons use the tools;
- There are safe working procedures applied;
- Awareness training is carried out and compliance is enforced at all times; and
- PPE and clothing is provided and maintained.

2.50 High Voltage Electrical Equipment

The Contractor shall ensure that, where the work is under, on or near high-voltage electrical equipment the Electrical Installation Regulations, together with safety instructions (Regulations of the Owner of the Equipment) are complied with. Such equipment includes:

- Eskom and the Local Authority equipment
- The Contractor's own power supply; and
- Electrical equipment being installed but not yet taken over from a Contractor by The Client.

2.51 Public Health and Safety

The Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from on site activities and the precautions to be observed to avoid or minimize those dangers. Appropriate health and safety signage shall always be posted.

2.52 Night Work

To be determined

2.53 Environmental Conditions and Flora and Fauna

The Contractor must be mindful of adverse weather conditions upon the health and safety of the workforce. This includes inclement weather, strong wind, heat stress, extreme cold, etc. The Contractor's risk assessment process must take into account the risks associated with such weather conditions. The same is true when working in an environment where there is a risk to employees' health and safety from presence of poisonous flora, or wildlife (including bees, snakes, etc). The Contractor's risk assessment process must take these risks into account.

2.55 Occupational Health

Exposure of workers to occupational health hazards and risks are very common in any work environment, especially in construction. Occupational health hazards and risks exposure is a major problem and all Contractors are to ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards and risks.

The occupational hazards and risks may enter the body in three ways:

- Inhalation through breathing e.g. cement dust;
- Ingestion through swallowing maybe through food intake;
- Absorption through the skin (pores) e.g. painting or use of thinners.

The contractor is required to ensure that all his personnel are medically fit prior to being allowed onto the work site.

All Contractors should ensure that Occupational Hygiene surveys are conducted as per the Occupational Health and Safety Act to ensure employees are not exposed to hazards. Risk Assessments should identify areas where surveys are to be conducted.

2.56 Suspended Platforms

Not applicable

2.57 Material Hoists

Not applicable

OTHER HEALTH AND SAFETY SPECIFICATION REQUIREMENTS

The contractor must be aware of the following additional requirements:

What	When	Output
Awareness training (Toolbox Talks)	Conducted daily and before hazardous work is carried out	Attendance Register
Health and Safety Committee Meetings	Monthly	Minutes signed by the employer (Contractor) covering: a) Health and Safety Representative Checklist
Health and Safety Reports	Monthly	Report covering: a) Incidents/Accidents and Investigations b) Non conformance c) Health and Safety Training d) HIRA Updates e) Internal and External Audits
General Inspections	As per Health and Safety Specification and OHSA	Report on Health and Safety Specification and OHSA compliance: a) Scaffolding b) Lifting Machinery c) Excavation
General Inspections	Monthly	Covering: a) Fire fighting Equipment b) Portable Electrical Equipment c) Ladders
Record keeping	Ongoing	Covering: a) General complaints b) Fines c) General incidents d) MSDS e) Surveillance Medicals f) Inspection Register g) Dept of Labour Notices
Permits	Before commencement with certain activities	As stipulated by the Health and Safety Specification and the OHSA / Construction Regulations
COVID-19 Weekly Reports	Weekly	As stipulated by the OHS Directive

Key:

OHSA – Occupational Health and Safety Act, 1993

ANNEXURE A

HEALTH AND SAFETY FILE INDEX

1. Health and Safety Policy
2. COVID-19 Policy
3. COVID-19 Workplace Plan
4. COVID-19 Procedures
5. SANRAL: Health and Safety Specification
6. SANRAL: Baseline Risk Assessment
7. Principle Contractor COVID-19 Risk Assessment: Issue Base Risk Assessment – Principle Contractor
8. 37.2 Agreement (SANRAL & Principle Contractor)
9. Principle Contractor Appointment Letter (CR.5.1(K))
10. Health and Safety Plan
11. Letter of Good Standing
12. Project Site Team Organogram
13. Legal Appointments
14. Method Statements
15. Registers
16. Sub-Contractors Register
17. Induction Programmes (Employees/Visitors/Sub-Contractors)
18. Waste Management Procedure
19. Environmental Management Plan
20. Emergency Response and Recovery Procedure
21. Incident Management
 - a. Notifications
 - b. Investigation reports
 - c. Safety Flash
 - d. Incident register
22. Toolbox Talks Topics
23. Health and Safety Committee Meeting
24. Medicals: Annexure 3
25. List of Safe Work Procedures
26. Competency Certificates
27. Man-Hours Recorded
28. Lesson Learnt Register

Note: Any other items may be required should there be changes to the risk assessment.

ANNEXURE B - The contractor shall make the following appointments, as required:

Chief Executive Officer (OSHACT 16(1))
COVID-19 Compliance Officer
Contract Director/Manager (OSHACT 16(2))
Construction Manager (CR 8(1))
Construction Supervisor (CR 8(7))
Assistant Construction Supervisor (CR 8(8))
Construction Safety Officer (CR 8(5))
Traffic Safety Officer
Safety Representative (where > 20 employees on site)
Temporary work Designer (CR 12(1))
Temporary work Supervisor (CR12(2))
Construction risk assessor (CR 9(1))
Excavation Supervisor (CR13(1)(a))
Demolition Supervisor (CR14(1))
Scaffold Supervisor (CR16(1))
Suspended Platform Supervisor (CR17(1))
Material Hoist Inspector (CR19(8)(a))
Material Hoist Operator (CR19(6))
Bulk Mixing Plant Supervisor (CR20(1))
Bulk Mixing Plant Operator (CR20(2))
Controller of Explosive Actuated Fastening Devices Nails, Cartridges or Studs Issue and Collection (CR21(2)(g)(1) – only if applicable
Construction Vehicle and Mobile Plant Operator (CR23(1)(d)(i))
Controller of Temporary Electrical Installations (CR24(c))
Stacking Supervisor (CR28(a))
Fire Extinguishing Equipment Inspector (CR29(h))
Fall Protection Plan Developer (CR 10(1)(a))
Incident Investigator (OSHACT 9(2))
Competent Person – Confined Spaces (GAR 5(1))

ANNEXURE C – COVID-19 OHS DIRECTIVES

The Principal Contractor and sub-contractors shall be responsible for the Health & Safety on all construction/maintenance and health and safety requirements of any activities may not be compromised during this time. If any activity cannot be undertaken in a health and safety manner due to lack of suitable qualified personnel being available or social distancing being implemented, the activity should not commence

1. REFERENCES

The OHS Act read with the Hazardous Biological Agents Regulations requires the employer to provide and maintain as far as is reasonably practicable a working environment that is safe and without risks to the health of employees.

Section 8(2)(b) requires steps such as may be reasonably practicable to eliminate or mitigate any hazard or potential hazard before resorting to personal protective equipment (PPE). However, in the case of COVID-19, a combination of controls is required, although the main principle is to follow the hierarchy of controls.

Section 14 of the Occupational Health and Safety, (OHS) Act obliges employees to take reasonable care for health and safety of him- or herself and others who may be affected by their acts or omissions. This obliges employees to comply with any duty or requirement imposed by the employer or any other person by OHS Act to co-operate with the employer or person to enable that duty or requirement to be performed or complied with. Employees are also required by OHS Act to carry out lawful orders and obey the health and safety rules and procedures laid down by his employer or by anyone authorized by his employer in the interest of health and safety. However, before the implementation of control measures, current risk assessments need to be reviewed and updated, considering the new hazards posed by exposure to COVID-19 in the workplace. This is in accordance with all above mentioned references.

2. RISK ASSESSMENT

The Principal Contractor/Contractor significant health and safety requirements and aspects of the construction project must focus on the following:

2.1 HIRA Methodology

The HIRA methodology is to provide specific focus on COVID-19 and adapt the measures required and taking into account the specific circumstances of the workplace. The Principal contractor must focus on the identification of different exposure level, high contact activities and identification of vulnerable workers e.g. immunocompromised employees and employees 60 years and above and special measures for their protection, including protection against unfair discrimination or victimization

3. SCREENING

- Screening of all employees entering the Construction site is vital in ensuring that all the SANRAL Construction site remains COVID-19 free. The Principal contractors preventative control measures must include travel declaration questionnaire must be completed by all security personnel,

professional teams, client teams, principal contractor employees and contractors before entering the site gate.

- Adequately train (directly or indirectly) identified employee/s to perform daily workplace COVID-19 symptom screening. The average normal body temperature is generally accepted as (37°C).
- Provide compulsory medical screening equipment example: No-contact Thermometers.
- Provide prescribed personal protective equipment (PPE) to those assigned to perform the screening. Face Shields and masks will be made available to screening personnel.
- All required items to operate safely must be available at the screening desk, these includes, hand sanitizers, pens for filling in registers and travel declaration questionnaire Should employees or visitors fail the questionnaire to be completed they should not be allowed to enter site.
- Any employee/team member displaying a temperature between 37.1°C and 37.9°C will be isolated and place either next to the Security Guardhouse or in his/her vehicle until second temperature testing is done.
- The employee/team member temperature will be taken again after 15 min. If the temperature has increased the person will be required to leave and go to the closest Clinic, access to site will be denied.
- If the employee/team member temperature has decreased to an acceptable/normal level, access will be granted.
- Any employee/team member with a temperature of 38°C or above will be denied access and will be required to leave immediately and be advised to visit a Doctor;
- All cases where persons were denied access a detailed register kept on site of the date, name of contractor, name of employee, contact number.
- Principal contractor should keep record of all such screening, and should an employee show any positive symptoms related to COVID-19, then such an employee must be isolated from other employees, provided with gloves and mask, and the Department of Health Hotline 0800 029 999 immediately contacted.

4. COMMUNICATION AND TRAINING INFORMATION STRATEGIES

The Principal Contractor must provide workers with information that raises awareness in any form or manner, including where reasonably practicable leaflets and notices placed in conspicuous places in the workplace informing workers of the:

- dangers of the virus
- manner of its transmission
- the measures to prevent transmission such as personal hygiene
- social distancing
- use of masks
- cough etiquette
- where to go for screening or testing if presenting with the symptoms

5. HEALTH AND SAFETY COMMITTEES

The requirements and the role of the health and safety committee should not deviate from the requirements and functions set in Section 19 and 20 of the OHS Act. Above and beyond what is described as the

functions of the health and Committee in Section 20 of the OHS Act the health and safety committee must assist with recommendations and guidance on handling the impact of COVID-19 on the specific project

6. SECURITY & ACCESS CONTROLS

Public access to any construction site is to be limited at all times, and non-essential visitors are not to be allowed entry. Principal contractor must ensure access to site are managed at all times. The following aspects must be included in the Health and Safety plan:

- Introduce staggered start and finish times to reduce congestion.
- Monitor site access points to enable social distancing.
- Require all workers to wash and clean their hands before arriving at security control to sign in the register.

7. INDUCTION

The Principal contractor must ensure induction to all security personnel, professional teams, client teams, principal contractor employees and contractors educating all on COVID-19 , signs, symptoms, processes on site, social distancing before entering the site gate and a register must be provided to sign.

8. EMPLOYEE MEDICALS

Principal contractor must ensure that all employees medical certificates of fitness are still valid. In a case where medicals expired, the Principal contractor must provide a list of which employees, occupation and when they will be scheduled for medicals.

9. FACILITIES

Principal Contractor must ensure that sanitizers must be one that has at least 70% alcohol content and is in accordance with the recommendations of the Department of Health.

The Principal Contractor must ensure there are sufficient quantities of hand sanitizer based on the number of workers or other persons who access the workplace at the entrance of, and in, the workplace which the employees and other persons.

The Principal contractor must ensure that there are:

- adequate facilities for the washing of hands with soap
- clean water available on site
- only paper towels are provided to dry hands after washing
- the use of fabric towelling is prohibited the workers are required to wash their hands and sanitize their hands regularly while at work
- the workers interacting with the public are instructed to sanitize their hands between each interaction with public
- surfaces that employees and teams come into contact with are routinely cleaned and disinfected.
- Provision of such facilities for safekeeping to be accompanied with a procedure which includes:
- Employees should avoid bringing personal items to site.
- Food bought from home must be placed in an enclosed container, packet, and returned home for cleaning.
- Do not share any food or water.
- Training and awareness to address the importance of good hygiene practice.
- Apart from extra clean personal clothing no other personal belongings allowed on site accept if kept in area provided by the Principal contractor or in the designated works area.
- Employees should also be required to stay on site once they have entered it and avoid using local shops.
- Consider increasing the number or size of facilities available on site if possible, especially depending on the amount of employees currently and taking into account the social distancing requirements of 1.5m
- The capacity of each rest area should be clearly identified at the entry to each

- facility, and where necessary attendants provided to supervise compliance with social distancing measures.
- Break times should be staggered to reduce congestion and contact at all times.
- Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced.
- Frequently clean surfaces that are touched regularly.
- Hand cleaning facilities or hand sanitiser should be available at the entrance to any facility where people eat and should be used by employees when entering and leaving the area.
- All rubbish should be put straight in the bin and not left for someone else to clear up.
- Tables should be cleaned between each use.
- Crockery, eating utensils, cups etc. should not be used unless they are disposable or are washed and dried between use.
- Principal contractor must ensure that social distancing measures are implemented through supervision in common areas.

10. REPORTING OF INCIDENTS FOR REGULATORY PURPOSES

If a worker has been diagnosed with COVID-19, the principal contractor must-

- Report it to the Department of Health, the Department of Employment and Labour and SANRAL
- Investigate the cause including any control failure and review its risk assessment to ensure that the necessary controls and PPE requirements are in place; and It must give administrative support to any contact-tracing measures implemented by the Department of Health.

11. MEDICAL SURVEILLANCE PROGRAMME

Principal contractor must ensure that all employees on site undergo routine medical examinations specific to the work to be performed taking into account the hazard and risk exposures. This is to address pre-employment examination, periodic examination as required, and exit examinations.

Where medical examinations are governed by legislation, the principal contractor to ensure that legislative requirements are complied with by all employees.

Principal contractor must ensure that all the employees performing work on site are declared medically fit for the work they are to perform. Copies of valid medical certificates of fitness to be available in the occupational health and safety file.

12. ACCOMMODATION ARRANGEMENTS

Where accommodation is provided by the Principal contractor/sub-contractor, factors to be considered in the procedure include, inter alia:

- Density of occupants to allow for adequate social distancing (minimum 1.5m) in sleeping and dining quarters;
- Restriction on the number of persons using the same sanitary/hygiene facilities;
- Provision of dedicated crockery and cutlery for each occupant, together with a procedure for effective cleaning and safe storage of same and a prohibition on the sharing of utensils;
- Dedicated facilities for safekeeping of personal belongings and abovementioned utensils for each person. Such facilities are to allow for total segregation of belongings and must be easy to sanitize.

Provision of such facilities for safekeeping to be accompanied with a procedure for the use and sanitizing of the storage facility to reduce the risk of cross-contamination

- Facilities for accommodation provided by the contractor to have in place stringent procedures for personal hygiene, ongoing maintenance of sanitizing and social distancing, and
- Additional rules to include a prohibition on the sharing of clothing, towels and other personal belongings, as well as the laundering of clothing for multiple persons at the same time.
- Handwashing / Sanitizing stations to be available at contractor accommodation. Employees to ensure washing and disinfecting of hand before entering the accommodation.
- Sealable bags provided to each person for keeping PPE requiring laundering, such as gloves and overalls, to ensure each person's PPE is contained and not cross contaminate other employees PPE.

13. DEEP CLEANING AT CONSTRUCTION SITES

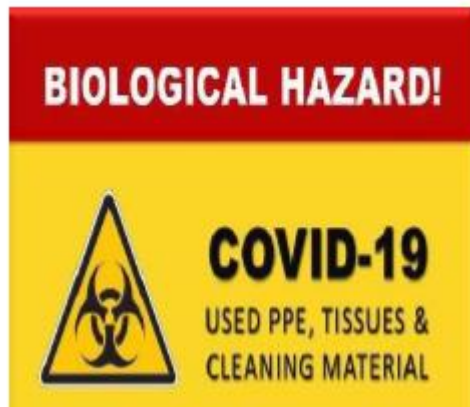
The Principal contractor must ensure that the construction site, particularly in communal areas such as security access control room, site office, working areas, ablution facilities, welfare facilities, eating facilities, hand washing facilities and confined spaces are disinfected and cleaned, regularly, in addition, this must include, all touch points such as taps, toilets flushers and seats, door handles and push plates, handrails and corridors, lift and hoist controls, machinery and equipment controls, eating area chairs, telephone equipment, keyboards, photocopiers and other office equipment.

Employees that are appointed to conduct deep cleaning must be trained on all the Health and Safety protocols, including the Handling of Hazardous Chemical Substances, the Material Safety Data sheet and must be provided with the correct PPE and supervision in accordance with Regulations for Hazardous Biological Agents 4 Information and Training.

14. WASTE DISPOSAL

Principal contractor must ensure that all waste is disposed in the correct and required manner. All disposal masks and gloves are biological waste and must be disposed:

- Separate waste bins (must be labeled) for used PPE (gloves, masks) must be supplied by the principal contractor.
- Dust masks and Gloves to be disposed as hazardous waste.



- Waste must be disposed at a registered waste facility.
- Proof of waste disposal must be kept for record keeping.
- Employees handling waste must comply to the PPE requirements before handling such.

15. PPE

Principal contractor must ensure that all accessing the Construction site will be required to sanitize or wash hands at the entry and exit point of the site. The Principal contractor is responsible to issue the appropriate PPE as per the job description and according to HIRA critical task activities, with a minimum of two cloth masks which complies with the requirements set out in the Guidelines issued by the Department of Trade, Industry and Competition. Before construction, the Principal contractor must ensure that he has made

arrangements for PPE to be available at site with construction start-up. The Principal contractor must enforce that:

- No employees are allowed to share any of their PPE.
- PPE must be worn at all times on site.
- PPE such as face masks is required for all employees or member entering the site, the said masks are to be worn on site.
- Masks should fit properly, completely covering the face from bridge of nose to chin.
- Always clean hand before putting on or removing face masks.
- Only touch the cord or elastic at the back when removing the masks.
- Principal contractor must ensure that a PPE procedure are implemented for the usage and the disposing (if applicable) of PPE.
- Principal contractor must ensure that the employees are informed, instructed, trained how to use the mask correctly.

16. TRANSPORTATION OF EMPLOYEES

Wherever possible Principal contractor employees must travel to site alone making use of their own transport. If principal contractor employees have no option but to share transport the following must be adhered to:

- Journeys should be shared with the same individuals and with the minimum number of people at any one time as per Government guidelines.
- Good ventilation (i.e. keeping the windows open) and facing away from each other may help to reduce the risk of transmission.
- The vehicle should be cleaned regularly, using gloves and standard cleaning products, with particular emphasis on handles and other areas where passengers may touch surfaces.
- Hand cleaning facilities must be provided at entrances and exits.

17. TRAVELLING TO AND FROM CONSTRUCTION SITE

Professional teams, Principal contractor management and SANRAL project team to minimize travelling to site. Work from home should be priority as far as reasonably practicable especially for office staff. Progress and Technical meetings must be scheduled through available technology platforms such as Microsoft teams, Zoom or Skype.

Professional teams travelling to sites by vehicle will be limited to 2 persons, if 1 person drives/operate the vehicle and another person need to be seated at the back. If the vehicle is a single cab, strictly only 1 person will be allowed in the vehicle. Bus services and e-hailing services shall not carry more than 50% of the licensed capacity and taxi services shall not carry more than 70% of the licensed capacity.

All Vehicles/public transport must be disinfected. Before entering public transport ensure to sanitize or wash your hands with soap, as soon as arrival on site ensure to wash your hands with soap or sanitize before entering the construction area

18. GENERAL

Compliance to the OHS Act 85 of 1993 and its regulations should not be limited to this amendment made to the Health and Safety Specifications. The amendment must be read in concurrence with the COVID-19 Occupational Health and Safety Measures in Workplaces COVID-19 (C19 OHS), 2020 and Section 27 (2) of the Disaster Management ACT, 2002 (ACT NO. 57 OF 2002).

Once construction has commenced the appointed Construction Health and Safety Agent, Health and Safety Consultant will conduct a compliance audit to ensure compliance. Due to the Risk level of COVID-19 spreading in the communities, all non-compliant sites will be stopped with immediate effect.

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 recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part.
- 5.5 The Member shall not, for the duration of the Dispute Adjudication Agreement, be employed as a consultant or otherwise by the Employer, the Contractor, any member/partner of the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members. Notwithstanding this restriction, the Member shall not be restricted to be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer on another contract or matter, but shall disclose to the Employer, the Contractor, and the Other Members, before he/she consult, advises or accepts any instructions from either the Employer, the Contractor, any member/partner of the Contractor, or the Engineer and confirming that such advice, consultation or other instruction taken from such person shall not affect the Member's ability to be unbiased in relation to his/her duties under the Dispute Adjudication Agreement.
- 5.6 The Member shall comply with the annexed procedural rules and Sub-Clause 20.4 of the conditions of Contract.
- 5.7 The Member shall not give advice to the Employer, the Contractor, the Employer's personnel or the Contractor's personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules.
- 5.8 The Member shall not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under this Dispute Adjudication Agreement.
- 5.9 The Member shall ensure his/her availability for all site visits and hearings as are necessary.

- 5.10 The Member shall become conversant with the Contract and with the progress of the Works (and of any parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file.
- 5.11 The Member shall treat the details of the Contract and all the DAB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members.
- 5.12 The Member shall be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members.

6. GENERAL OBLIGATIONS OF THE EMPLOYER AND THE CONTRACTOR

- 6.1 The Employer, the Contractor, the Employer's personnel and the Contractor's personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DAB's activities under the Contract and the Dispute Adjudication Agreement, and except to the extent that prior agreement is given by the Employer, the Contractor and the Other Members. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's personnel and the Contractor's personnel respectively.
- 6.2 The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members:
- a) be appointed as an arbitrator in any arbitration under the Contract;
 - b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract;
 - c) be called as a witness or act on behalf of the Employer or Contractor, concerning any dispute that became the subject of litigation under the Contract; or
 - d) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Members functions unless the act or omission is shown to have been in bad faith.
- 6.3 The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he/she is relieved from liability under the preceding paragraph.

7. PAYMENT

- 7.1 The Member shall be paid a retainer fee of R... (excluding VAT) per calendar month, which shall be considered as payment in full for:
- i) being available on 28 days' notice for all site visits and hearings;
 - ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his/her duties; and
 - iv) all services performed hereunder except those referred to in sub-paragraphs 7.4, 7.5, 7.6 and 7.7 of this Clause.
- 7.2 The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Adjudication Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.
- 7.3 With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by 50%. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Adjudication Agreement is otherwise terminated.
- 7.4 The Member shall be paid a site visit daily fee of R... (excluding VAT), (reduced to an hourly fee of one eighth the daily fee, for part of a day), which shall be considered as payment in full for:
- i) each day or part of a day up to a maximum of one day's travel time in each direction for the journey between the Member's home and the site or another location of a meeting with the Other Members, as agreed by the Parties.
 - ii) each working day or part of a day on site visits.
- 7.5 The Member shall be paid a dispute analysis daily fee of R... (excluding VAT), (reduced to an hourly fee of one eighth the daily fee, for part of a day), which shall be considered as payment in full for:
- i) each day or part of a day spent on dispute analysis, hearings or preparing decisions; and

- ii) each day or part of a day spent reading submissions in preparation for a hearing.
- 7.6 The Member shall be paid a pupillage daily fee of R... (excluding VAT), (reduced to an hourly fee of one eighth the daily fee, for part of a day), which shall be considered as payment in full for:
- i) each day or part of a day spent on preparation for pupillage.
 - ii) each day or part of a day spent on offering practical experience and mentoring to assigned pupil.
- 7.7 The Member shall be paid all reasonable expenses incurred in connection with the Member's duties, including the cost of the following:
- i) Travel expenses :–
 - Own car - motor vehicle travel expenses will be recovered at the relevant South African Automobile Association rates,
 - Car hire – group B or similar,
 - Flights – economy class.
 - ii) Accommodation – any type of accommodation up to R1,300.00 per day all inclusive,
 - iii) Subsistence costs.
- 7.8 The Member shall be paid all Value Added Taxes as per the law.
- 7.9 The retainer fee and daily fees shall remain fixed for the 1st 24 calendar months and shall thereafter be adjusted by the twelve-month year on year CPI index (as published in the monthly bulletin P0141 of Statistics South Africa under table B) at each anniversary of the Effective Date. The base month shall be the 12th month following the Effective Date.
- 7.10 The Member shall be paid in South African Rands.
- 7.11 The member shall submit invoices for payment of the monthly retainer and may include an estimate of the next month's airfares which will be incurred (and which will be reconciled and adjusted in the subsequent invoice). Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a DAB fee claim containing records of previous fee claims and a breakdown of activities performed during the relevant period and shall be addressed to the Contractor.
- 7.12 Notwithstanding the fact that the appointment is of the Member in his/her personal capacity the Member may invoice and receive payment to a legal entity of which he/she is a member, shareholder or partner.
- 7.13 The Contractor shall pay the Member's invoices in full within 30 calendar days after receiving each valid invoice, half of which shall be recovered by the Contractor from the Employer.
- 7.14 If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received and/or (ii) resign his/her appointment by giving notice under Clause 8.

8. TERMINATION

- 8.1 At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Adjudication Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for under Clause 2.
- 8.2 If the member fails to comply with the Dispute Adjudication Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.
- 8.3 If the Employer or the Contractor fails to comply with the Dispute Adjudication Agreement, the Member may, without prejudice to his/her other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.
- 8.4 Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

9. DEFAULT OF THE MEMBER

- 9.1 If the Member fails to comply with any obligation under Clause 5, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members, for proceedings or decisions (if any) of the DAB which are rendered void or ineffective.

10. DISPUTES

- 10.1 Any dispute or claim arising out of or in connection with the Dispute Adjudication Agreement, or the breach, termination or invalidity thereof, shall be finally settled by arbitration under the Rules of Arbitration of the Association of Arbitrators of Southern Africa by one Arbitrator appointed by agreement of the Member, the Employer and the Contractor or, failing such agreement, by the Chairman for the time being of the Association of Arbitrators.

11. DOMICILIA AND NOTICES

- 11.1 The Parties choose as their *domicilia citandi et executandi* for all purposes under the Dispute Adjudication Agreement, whether in respect of notices or other documents or communications of whatsoever nature (including the exercise of any option), the following addresses:

- 11.1.1 Employer (*domicilia citandi et executandi*):

Address: South African National Roads Agency SOC Limited
48 Tambotie Avenue, Val de Grace, Pretoria, 0184
Reference: ... CEO

Employer (*General Communication*)

Address: South African National Roads Agency SOC Limited
... Region, ..., ..., ...
Fax Number: ...
Tel. Number: ...
Reference: ... Regional Manager, ... Region

- 11.1.2 Contractor:

Address: ...
...
Fax Number: ...
Tel. Number: ...
Reference: ..., Contract Director

- 11.1.3 Member:

Address: ...
...
Fax Number: ...
Tel. Number: ...
Reference: ...,

- 11.2 Any notice or communication required or permitted to be given in terms of the Dispute Adjudication Agreement shall be valid and effective only if in writing, but it shall be competent to give notice by telefax or registered mail.

- 11.3 Any Party may by notice to the other Party change the physical address chosen as its *domicilium citandi et executandi* vis-à-vis that Party to another physical address in the Republic of South Africa or its telefax number, provided that the change shall become effective vis-à-vis that addressee on the 7th business day from the deemed receipt of the notice by the addressee.

- 11.4 Notwithstanding anything to the contrary herein contained a written notice or communication actually received by a Party shall be an adequate written notice or communication to it notwithstanding that it was not sent to or delivered at its chosen *domicilium citandi et executandi*.

12. SIGNATORIES

12.1 Signed for and on behalf of the Employer by:

.....
Name Signature of duly authorised representative
.....
Date

In the presence of Witness:

.....
Name Signature
.....
Date

12.2 Signed for and on behalf of the Contractor by:

.....
Name Signature of duly authorised representative
.....
Date

In the presence of Witness:

.....
Name Signature
.....
Date

12.3 Signed by the Member:

.....
Name Signature
.....
Date

In the presence of Witness:

.....
Name Signature
.....
Date

ANNEXURE 1

PROCEDURAL RULES

1. Unless otherwise agreed by the Employer and the Contractor, the DAB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DAB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
2. The timing of and agenda for each site visit shall be as agreed jointly by the DAB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DAB. The purpose of site visits is to enable the DAB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims.
3. Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DAB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
4. The Employer and the Contractor shall furnish to each member of the DAB one copy of all documents which the DAB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DAB and the Employer or the Contractor shall be copied to the other Party.
5. If any dispute is referred to the DAB in accordance with Sub-clause 20.4 of the GCC, the DAB shall proceed in accordance with Sub-clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DAB shall:
 - a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
6. The DAB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
7. Except as otherwise agreed in writing by the Employer and the Contractor, the DAB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party whom the DAB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.
8. The Employer and the Contractor empower the DAB, among other things, to:
 - a) establish the procedure to be applied in deciding a dispute,
 - b) decide upon the DABs' own jurisdiction, and as to the scope of any dispute referred to it,
 - c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Rules,
 - d) take the initiative in ascertaining the facts and matters required for a decision,
 - e) make use of its own specialist knowledge, if any,
 - f) decide upon the payment of financing charges in accordance with the Contract,
 - g) decide upon any provisional relief such as interim or conservatory measures, and
 - h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.

9. The DAB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties, unless requested by both the Employer and Contractor. Prior to giving notice to its decision:
- a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
 - b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members' who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
 - c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - i) either the Employer or the Contractor does not agree that they do so, or
 - ii) the absent Member is the chairman and he/she instructs the other Members not to make a decision.

Thereafter, the DAB shall make and give notice to its decision in accordance with Sub-clause 20.4 or as otherwise agreed by the Employer and the Contractor in writing.

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	
---	--

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)

Full name of principal	Identity number	Personal tax reference number

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 5: IMPORTED CONTENT DECLARATION

Note to compiler: Include the Excel files of Annex C, D and E in Tender QD (available in EDMS #5495479)

ANNEX D: IMPORTED CONTENT DECLARATION – SUPPORTING SCHEDULE TO ANNEX C

(D1)	Tender No.:						
(D2)	Tender Description:						
(D3)	Designated Product(s):						
(D4)	Tender Authority:						
(D5)	Tendering Entity Name:						
(D6)	Tender Exchange Rate:	Pula	P	EU	€	GBP	£

Note: VAT to be excluded from all calculations

A. Exempted imported content				Calculation of imported content						Summary	
Tender item no's	Description of imported content	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl. VAT	Tender Qty	Exempted imported value
(D7)	(D8)	(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)
(D19) Total exempt imported value										R0	
This total must correspond with Annex C - C 21											

B. Imported directly by the Tenderer				Calculation of imported content						Summary	
Tender item no's	Description of imported content	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl. VAT	Tender Qty	Exempted imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)
(D45) Total imported value by 3 rd party										R0	

C. Imported by a 3 rd party and supplied to the Tenderer				Calculation of imported content						Summary	
Description of imported content	Unit of measure	Local supplier	Overseas Supplier	Foreign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl. VAT	Quantity imported	Total imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)
(D45) Total imported value by 3 rd party										R 0	

D. Other foreign currency payments			Calculation of foreign currency payments		Summary of payments
Type of payment	Local supplier making the payment	Overseas beneficiary	Foreign currency value paid	Tender Rate of Exchange	
(D46)	(D47)	(D48)	(D49)	(D50)	
(D52) Total of foreign currency payments declared by tenderer and/or 3 rd party					R 0

Signature of tenderer from Annexure B:
(SATS 1286.2011)

Date:

(D53) Total of imported content & foreign currency payments -
(D32), (D45) & (D52) above

R 0

This total must correspond with Annex C - C 23

ANNEX E: IMPORTED CONTENT DECLARATION - SUPPORTING SCHEDULE TO ANNEX C

(E1)	Tender No.:		Note: VAT to be excluded from all calculations
(E2)	Tender Description:		
(E3)	Designated Product(s):		
(E4)	Tender Authority:		
(E5)	Tendering Entity Name:		

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	(E7)	(E8)
(E9) Total local products (Goods, Services and Works)			R 0

(E10) **Manpower costs** (Tenderer's manpower cost) R 0

(E11) **Factory overheads** (Rental, depreciation & amortisation, utility costs, consumables etc.) R 0

(E12) **Administration overheads and mark-up** (Marketing, insurance, financing, interest etc.) R 0

(E13) Total local content R 0

This total must correspond with Annex C - C24

**Signature of tenderer from Annexure B:
(SATS 1286.2011)**

Date:

Process when requesting exemption letters

For exemption requests on designated products and the minimum threshold for local content cannot be met for various reasons, bidders must apply for exemption per tender. After checking with the industry, **the dti** will decide whether to grant an exemption or not.

In the official request (signed letter), the following information should be included:

- Procuring entity/government department/state owned company.
- Tender/bid number.
- Closing date.
- Item(s) for which the exemption is being requested for.
- Description of the goods, services or works for which the requested exemption item will be used for and the local content that can be met.
- Reason(s) for the request.
- Supporting letters from local manufacturers and suppliers.

NB - Exemption letters are tender specific and applications are not transferrable.

The turnaround time in response to exemption letters for all designated products is five working days with the exception of rail and boats/vessels which is seven working days.

Request for exemption letters are to be directed to:

Dr Tebogo Makube

Chief Director: Industrial Procurement

Tel: 012 394 3927

E-mail: tmakube@thedti.gov.za.

The turnaround time in response to textile, clothing, leather and footwear exemption letters request is two working days and requests are to be directed to:

Patricia Khumalo

Tel: 012 394 1390

E-mail: khumaloP@thedti.gov.za.

Guidance Document for the Calculation of Local Content

1. DEFINITIONS

Unless explicitly provided in this guideline, the definitions given in SATS 1286:2011 apply.

2. GENERAL

2.1. Introduction

This guideline provides tenderers with a detailed description of how to calculate local content of products (goods, services and works) by components/material/services and enables them to keep an updated record for verification requirements as per the SATS 1286:2011 Annexure A and B.

The guideline consists of two parts, namely:

- a written guideline; and
- three declarations that must be completed:
 - Declaration C: “Local Content Declaration – Summary Schedule” (see Annexure C);
 - Declaration D: “Imported Content Declaration – Supporting Schedule to Annex C” (see Annexure D); and
 - Declaration E: “Local Content Declaration – Supporting Schedule to Annex C” (see Annexure E).

The guidelines and declarations should be used by tenderers when preparing a tender. A tenderer must complete Declarations D and E, and consolidate the information on Declaration C.

Annexure C must be submitted with the tender by the closing date and time as determined by the Tender Authority. The Tender Authority reserves the right to request that Declarations D and E also be submitted.

If the tender is successful, the tenderer must continuously update Declarations C, D and E with actual values for the duration of the contract.

NOTE:

Annexure A is a note to the purchaser in SATS 1286:2011; and
Annexure B is the Local Content Declaration IN SATS 1286:2011.

2.2. What is local content?

According to SATS 1286:2011, the local content of a product is the tender price less the value of imported content, expressed as a percentage. It is, therefore, necessary to first compute the imported value of a product to determine the local content of a product.

2.3. Categories: Imported and Local Content

The tenderer must differentiate between imported content and local content.

Imported content of a product by components/material/services is separated into two categories, namely:

- products imported directly by the tenderer; and
- products imported by a third party and supplied to the tenderer.

2.3.1. Imported Content

Identify the imported content, if any, by value for products by component/material/services. In the case of components/materials/services sourced from a South African manufacturer, agent, supplier or subcontractor (i.e. third party), obtain that information and Declaration D from the third party.

Calculate the imported content of components/materials/services to be used in the manufacture of the total quantity of the products for which the tender is to be submitted.

As stated in clause 3.2.4 of SATS 1286:2011: "If information on the origin of components, parts or materials is not available, it will be deemed to be imported content."

2.3.1.1. Imported directly by the tenderer:

When the tenderer import products directly, the onus is on the tenderer to provide evidence of any components/materials/services that were procured from a non-domestic source. The evidence should be verifiable and pertain to the tender as a whole. Typical evidence will include commercial invoices, bills of entry, etc.

When the tenderer procures imported services such as project management, design, testing, marketing, etc and makes royalty and lease payments, such payments relating to the tender must be included when calculating imported content.

2.3.1.2. Imported by a third party and supplied to the tenderer:

When the tenderer supplies components/material/services that are imported by any third party (for example, a domestic manufacturer, agent, supplier or subcontractor in the supply chain), the onus is on the tenderer to obtain verifiable evidence from the third party.

The tenderer must obtain Declaration D from all third parties for the related tender. The third party must be requested by the tenderer to continuously update Declaration D. Typical evidence of imported content will include commercial invoices, bills of entry etc.

When a third party procures imported services such as project management, design, testing, marketing etc. and makes royalty and lease payments, such payments relating to the tender must be included when calculating imported content.

2.3.1.3. Exempt Imported Content:

Exemptions, if any, are granted by the Department of Trade and Industry (**the dti**). Evidence of the exemptions must be provided and included in Annexure D.

2.3.2. Local Content

Identify and calculate the local content, by value for products by components/materials/services to be used in the manufacture of the total quantity of the products.

3. ANNEXURE C

3.1. Guidelines for completing Annexure C: Local Content Declaration – Summary Schedule

Note: The paragraph numbers correspond to the numbers in Annexure C.

C1. Tender Number

Supply the tender number that is specified on the specific tender documentation.

C2. Tender description

Supply the tender description that is specified on the specific tender documentation.

C3. Designated products

Supply the details of the products that are designated in terms of this tender (i.e. buses).

C4. Tender Authority

Supply the name of the tender authority.

C5. Tendering Entity name

Provide the tendering entity name (for example, Unibody Bus Builders (Pty) Ltd).

C6. Tender Exchange Rate

Provide the exchange rate used for this tender, as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

C7. Specified local content %

Provide the specified minimum local content requirement for the tender (i.e. 80%), as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MDB) 6.2.

C8. Tender item number

Provide the tender item number(s) of the products that have a local content requirement as per the tender specification.

C9. List of items

Provide a list of the item(s) corresponding with the tender item number.
This may be a short description or a brand name.

Calculation of local content

C10. Tender price

Provide the unit tender price of each item excluding VAT.

C11. Exempted imported content

Provide the ZAR value of the exempted imported content for each item, if applicable. These value(s) must correspond with the value(s) of column D16 on Annexure D.

C12. Tender value net of exempted imported content

Provide the net tender value of the item, if applicable, by deducting the exempted imported content (C11) from the tender price (C10).

C13. Imported value

Provide the ZAR value of the items' imported content.

C14. Local value

Provide the local value of the item by deducting the Imported value (C13) from the net tender value (C12).

C15. Local content percentage (per item)

Provide the local content percentage of the item(s) by dividing the local value (C14) by the net tender value (C12) as per the local content formula in SATS 1286.

Tender Summary

C16. Tender quantity

Provide the tender quantity for each item number as per the tender specification.

C17. Total tender value

Provide the total tender value by multiplying the tender quantity (C16) by the tender price (C10).

C18. Total exempted imported content

Provide the total exempted imported content by multiplying the tender quantity (C16) by the exempted imported content (C11). These values must correspond with the values of column D18 on Annexure D.

C19. Total imported content

Provide the total imported content of each item by multiplying the tender quantity (C16) by the imported value (C13).

C20. Total tender value

Total tender value is the sum of the values in column C17.

C21. Total exempted imported content

Total exempted imported content is the sum of the values in column C18. This value must correspond with the value of D19 on Annexure D.

C22. Total tender value net of exempted imported content

The total tender value net of exempt imported content is the total tender value (C20) less the total exempted imported content (C21).

C23. Total imported content

Total imported content is the sum of the values in column C19. This value must correspond with the value of D53 on Annexure D.

C24. Total local content

Total local content is the total tender value net of exempted imported content (C22) less the total imported content (C23). This value must correspond with the value of E13 on Annexure E.

C25. Average local content percentage of tender

The average local content percentage of tender is calculated by dividing total local content (C24) by the total tender value net of exempted imported content (C22).

4. ANNEXURE D

4.1. Guidelines for completing Annexure D: “Imported Content Declaration – Supporting Schedule to Annexure C”

Note: The paragraph numbers correspond to the numbers in Annexure D.

D1. Tender number

Supply the tender number that is specified on the specific tender documentation.

D2. Tender description

Supply the tender description that is specified on the specific tender documentation.

D3. Designated products

Supply the details of the products that are designated in terms of this tender (i.e. buses).

D4. Tender authority

Supply the name of the tender authority.

D5. Tendering entity name

Provide the tendering entity name (i.e. Unibody Bus Builders (Pty) Ltd).

D6. Tender exchange rate

Provide the exchange rate used for this tender, as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

Table A. Exempted Imported Content

D7. Tender item number

Provide the tender item number(s) of the product(s) that have imported content.

D8. Description of imported content

Provide a list of the exempted imported product(s), if any, as specified in the tender.

D9. Local supplier

Provide the name of the local supplier(s) supplying the imported product(s).

D10. Overseas supplier

Provide the name(s) of the overseas supplier(s) supplying the exempted imported product(s).

D11. Imported value as per commercial invoice

Provide the foreign currency value of the exempted imported product(s) disclosed in the commercial invoice accepted by the South African Revenue Service (SARS).

D12. Tender exchange rate

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D13. Local value of imports

Convert the value of the exempted imported content as per commercial invoice (D11) into the ZAR value by using the tender exchange rate (D12) disclosed in the tender documentation.

D14. Freight costs to port of entry

Provide the freight costs to the South African Port of the exempted imported item.

D15. All locally incurred landing costs and duties

Provide all landing costs including customs and excise duty for the exempted imported product(s) as stipulated in the SATS 1286:2011.

D16. Total landed costs excl VAT

Provide the total landed costs (excluding VAT) for each item imported by adding the corresponding item values in columns D13, D14 and D15. These values must be transferred to column C11 on Annexure C.

D17. Tender quantity

Provide the tender quantity of the exempted imported products as per the tender specification.

D18. Exempted imported value

Provide the imported value for each of the exempted imported product(s) by multiplying the total landed cost (excl. VAT) (D16) by the

tender quantity (D17). The values in column D18 must correspond with the values of column C18 of Annexure C.

D19. Total exempted imported value

The total exempted imported value is the sum of the values in column D18. This total must correspond with the value of C21 on Annexure C.

Table B. Imported Directly By Tenderer

D20. Tender item numbers

Provide the tender item number(s) of the product(s) that have imported content.

D21. Description of imported content:

Provide a list of the product(s) imported directly by tender as specified in the tender documentation.

D22. Unit of measure

Provide the unit of measure for the product(s) imported directly by the tenderer.

D23. Overseas supplier

Provide the name(s) of the overseas supplier(s) supplying the imported product(s).

D24. Imported value as per commercial Invoice

Provide the foreign currency value of the product(s) imported directly by tenderer disclosed in the commercial invoice accepted by the South African Revenue Service (SARS).

D25. Tender rate of exchange

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D26. Local value of imports

Convert the value of the product(s) imported directly by the tenderer as per commercial invoice (D24) into the ZAR value by using the tender exchange rate (D25) disclosed in the tender documentation.

D27. Freight costs to port of entry

Provide the freight costs to the South African Port of the product(s) imported directly by the tenderer.

D28. All locally incurred landing costs and duties

Provide all landing costs including customs and excise duty for the product(s) imported directly by the tenderer as stipulated in the SATS 1286:2011.

D29. Total landed costs excl VAT

Provide the total landed costs (excluding VAT) for each item imported directly by the tenderer by adding the corresponding item values in columns D26, D27 and D28.

D30. Tender quantity

Provide the tender quantity of the product(s) imported directly by the tenderer as per the tender specification.

D31. Total imported value

Provide the total imported value for each of the product(s) imported directly by the tenderer by multiplying the total landed cost (excl. VAT) (D29) by the tender quantity (D30).

D32. Total imported value by tenderer

The total value of imports by the tenderer is the sum of the values in column D31.

Table C. Imported by Third Party and Supplied to the Tenderer

D33. Description of imported content

Provide a list of the product(s) imported by the third party and supplied to the tenderer as specified in the tender documentation.

D34. Unit of measure

Provide the unit of measure for the product(s) imported by the third party and supplied to tenderer as disclosed in the commercial invoice.

D35. Local supplier

Provide the name of the local supplier(s) supplying the imported product(s).

D36. Overseas supplier

Provide the name(s) of the overseas supplier(s) supplying the imported products.

D37. Imported value as per commercial invoice

Provide the foreign currency value of the product(s) imported by the third party and supplied to the tenderer disclosed in the commercial invoice accepted by SARS.

D38. Tender rate of exchange

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D39. Local value of imports

Convert the value of the product(s) imported by the third party as per commercial invoice (D37) into the ZAR value by using the tender exchange rate (D38) disclosed in the tender documentation.

D40. Freight costs to port of entry

Provide the freight costs to the South African Port of the product(s) imported by third party and supplied to the tenderer.

D41. All locally incurred landing costs and duties

Provide all landing costs including customs and excise duty for the product(s) imported by third party and supplied to the tenderer as stipulated in the SATS 1286:2011.

D42. Total landed costs excluding VAT

Provide the total landed costs (excluding VAT) for each product imported by third party and supplied to the tenderer by adding the corresponding item values in columns D39, D40 and D41.

D43. Quantity imported

Provide the quantity of each product(s) imported by third party and supplied to the tenderer for the tender.

D44. Total imported value

Provide the total imported value of the product(s) imported by third party and supplied to the tenderer by multiplying the total landed cost (D42) by the quantity imported (D43).

D45. Total imported value by third party

The total imported value from the third party is the sum of the values in column D44.

Table D. Other Foreign Currency Payments

D46. Type of payment

Provide the type of foreign currency payment. (i.e. royalty payment for use of patent, annual licence fee, etc).

D47. Local supplier making the payment

Provide the name of the local supplier making the payment.

D48. Overseas beneficiary

Provide the name of the overseas beneficiary.

D49. Foreign currency value paid

Provide the value of the listed payment(s) in their foreign currency.

D50. Tender rate of exchange

Provide the exchange rate used for this tender as per the Standard Bidding Document (SBD) and Municipal Bidding Document (MBD) 6.2.

D51. Local value of payments

Provide the local value of each payment by multiplying the foreign currency value paid (D49) by the tender rate of exchange (D50).

D52. Total of foreign currency payments declared by tenderer and/or third party

The total of foreign currency payments declared by tenderer and/or a third party is the sum of the values in column D51.

D53. Total of imported content and foreign currency payment

The total imported content and foreign currency payment is the sum of the values in column D32, D45 and D52. This value must correspond with the value of C23 on Annexure C.

5. ANNEXURE E

5.1. Guidelines to completing Annexure E: “Local Content Declaration-Supporting Schedule to Annexure C”

The paragraph numbers correspond to the numbers in Annexure E

E1. Tender number

Supply the tender number that is specified on the specific tender documentation.

E2. Tender description

Supply the tender description that is specified on the specific tender documentation.

E3. Designated products

Supply the details of the products that are designated in terms of this tender (for example, buses/canned vegetables).

E4. Tender authority

Supply the name of the tender authority.

E5. Tendering entity name

Provide the tendering entity name (for example, Unibody Bus Builders (Pty) Ltd) Ltd).

Local Goods, Services and Works

E6. Description of items purchased

Provide a description of the items purchased locally in the space provided.

E7. Local supplier

Provide the name of the local supplier that corresponds to the item listed in column E6.

E8. Value

Provide the total value of the item purchased in column E6.

E9. Total local products (Goods, Services and Works)

Total local products (goods, services and works) is the sum of the values in E8.

E10. Manpower costs:

Provide the total of all the labour costs accruing only to the tenderer (i.e. not the suppliers to tenderer).

E11. Factory overheads:

Provide the total of all the factory overheads including rental, depreciation and amortisation for local and imported capital goods, utility costs and consumables. (Consumables are goods used by individuals and businesses that must be replaced regularly because they wear out or are used up. Consumables can also be defined as the components of an end product that are used up or permanently altered in the process of manufacturing, such as basic chemicals.)

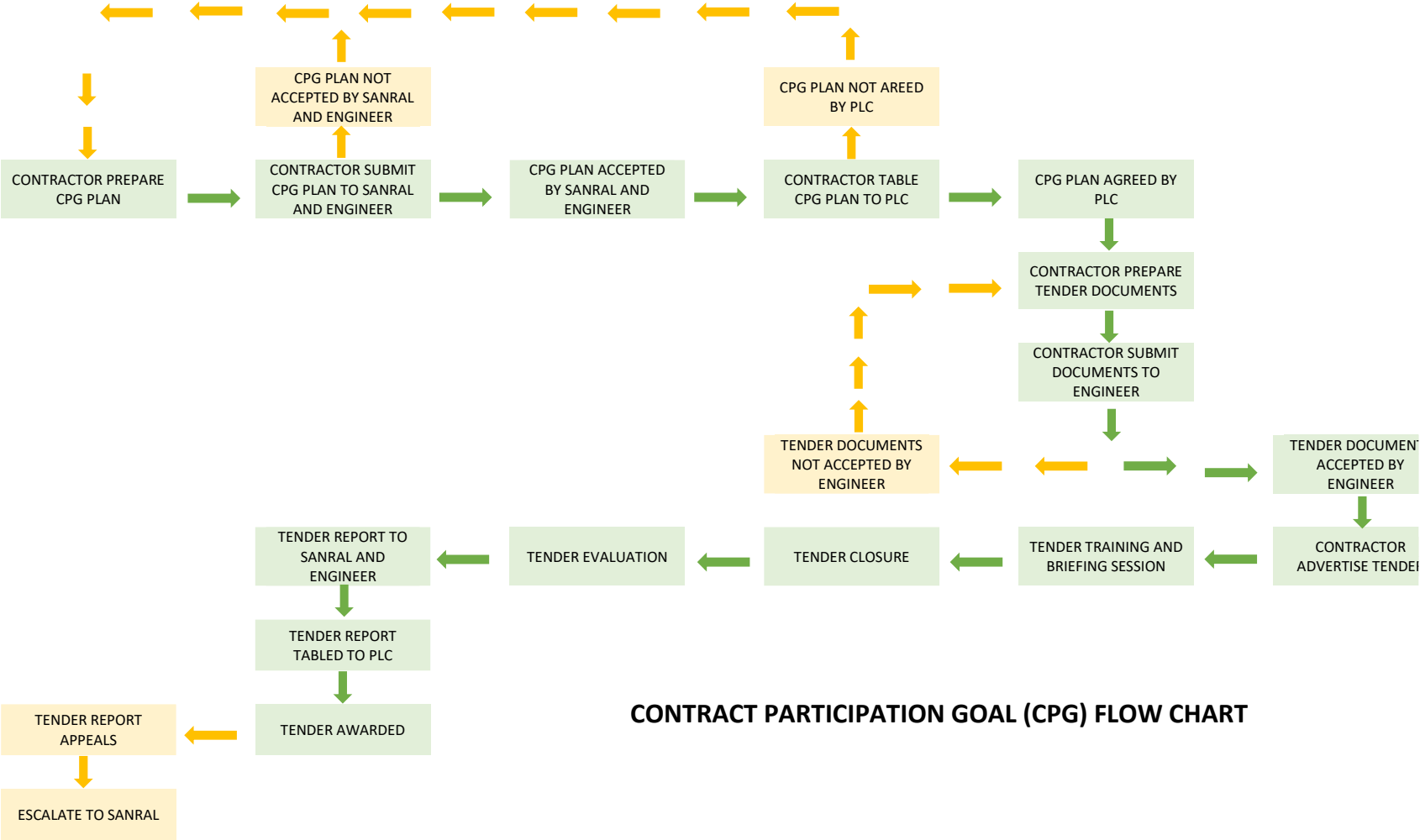
E12. Administration overheads and mark-up:

Provide the total of all the administration overheads, including marketing, insurance, financing, interest and mark-up costs.

E13. Total local content:

The total local content is the sum of the values of E9, E10, E11 and E12. This total must correspond with C24 of Annexure C.

APPENDIX 6: CONTRACT PARTICIPATION GOAL (CPG) PLAN FORMAT



Contractor Logo and details

Contract Participation Goal Plan

SANRAL Contract Number: XXXX

Contract Name: XXXX

(SANRAL Logo)



Author:
Date:
Version

1.INTRODUCTION

2.OBJECTIVE

3.TARGETED ENTERPRISES

- a. List of Work Packages for Targeted Enterprises
- b. List of Work Packages for Main Contractor

Table 1: CPG Expenditure Breakdown

Project Number				
Project Name				
Designated Groups	Final Contract Value	R		
	Min (TE) CPG Target	%		
	Min (TE CPG Target Amount	R		
Description of CPG Category	CPG Target as per Contract		CPP Planned Achievement	
	Min. Target % as per Contract	Target Amount	Min. Allocated % as per Market Analyses	Expected Amount
Targeted Labour (TL)	Min. xx% of Final Contract Value	R	%	R
Youth				
Women				
Disabled				
Other				
Targeted Enterprise (TE)	Min. xx% of Final Contract Value	R	%	R
Youth				
Women				
Military Veterans				
Disabled				
CIDB 1 and 2				
CIDB 3 and 4				
Other				

c. Breakdown of Work Packages

The table below describes the work package breakdown with reference to Designated Groups and Functionality:

Table 1: Breakdown of Work Packages

Project Number															
Project Name															
Contract Price															
CPG Target %															
CPG Target Value															
No.	Type of Work Package	EME or QSE	TE Amount	% of CPG Value	Proposed CIDB Grading	Tender Value Limit	Proposed No. of Work Packages	Proposed TE Target Group Amount					CIDB Expenditure		
								Black Youth	Black Woman	Black Military Veterans	Black Disabled	Other	Black 1&2CE	Black 3&4 CE	Comment
TE Sub-contractors															
1															
2															
3															
TE Suppliers and Service Providers															
4															
5															
6															
TE Sub-contractor Sub-total															
TE Supplier/Service Provider Sub-total															
Provisional Total															
Provisional %															
Target Amount															
Target %															

d. Schedule of works and CPG Expenditure Plan

i. Schedule of work (Insert Programme)

ii. CPG Expenditure Plan

Table 3: Example: CPG Expenditure Plan

Planned CPG Expenditure					
Final Contract Value	R 100 000 000				
CPG (TE) Value	R 30 000 000				
Timeline	2021/2022	2021/2022	2021/2022	2021/2022	Total
Project Expenditure	R 20 000 000	R 30 000 000	R 30 000 000	R 20 000 000	R 100 000 000
Work Packages (CPG %) Expenditure	R 6 000 000	R 9 000 000	R 9 000 000	R 6 000 000	R 30 000 000
Cumulative % Spend	20%	50%	80%	100%	
Cumulative Amount Spend	R 6 000 000	R 6 000 000	R 6 000 000	R 6 000 000	R 6 000 000
Package 1	R 2 000 000				
Package 2	R 2 000 000				
Package 3	R 2 000 000				
Total	R 6 000 000	R	R	R	R

e. Targeted Enterprises Procurement Program

Table 4: Example: Targeted Enterprise Procurement program

Item	Activity Name	Duration (Days)	Start	Finish

--	--	--	--	--

f. Procedures for Targeted Enterprises Sub-contracting (*As Per Section D1000 of the Specifications*)

i. Tender Preparation

1. Compilation of TE Work Packages
2. Establishment of a Help Desk
3. Market Analysis and Resources and Skills Audit
4. Compilation of Tender Documents

ii. Tender Process

1. Advertising of Works Packages
2. Tender Briefing Sessions
3. Minimum Tender Submission Documents
4. Tender Closure and Opening of Tenders

iii. Tender Evaluation

1. Eligibility
2. Functionality
3. Price and Preference
4. Compliance Check

iv. Appointment of Successful Targeted Enterprise

1. Price and Rates Discussion
2. Sub-contract Agreement

2. TARGETED LABOUR

- a. Appointment of Targeted Labour

3. TRAINING DEVELOPMENT AND IMPLEMENTATION PLAN

- a. General Overview
- b. Purpose of the Training Interventions
- c. Proposed Training for Targeted Enterprises and Targeted Labour

The table below depicts the proposed training for the Targeted Enterprises.

Table 5: Proposed Targeted Enterprise Training

Training Summary							
No.	Course Content	Facilitator or Mentor	No. of Participants	Duration of the Course	Training Type	Start Date	Comments
1							
2							
3							
4							
5							
Etc.							

The table below depicts the proposed training for the Targeted Labour.

Table 6: Proposed Targeted Labour Training

Training Summary

No.	Course Content	Facilitator or Mentor	No. of Participants	Duration of the Course	Training Type	Start Date	Comments
1							
2							
3							
4							
5							
Etc.							

- d. Training Methodology
- e. Selection of Participants
- f. Targeted Participants
- g. Training Materials
- h. Training Times
- i. Training Implementation Plan
- j. Supporting Documents

APPENDIX 7: SANRAL PROJECT LIAISON COMMITTEE GUIDELINES AND PROJECT LIAISON OFFICER FORMS

FORM A1: PROJECT LIAISON COMMITTEE – MEMBER NOMINATION FORM

Notes to Nominators and Nominees:

- a) General Principles of Membership:
 - i) Membership is open to any person residing within the boundaries of the Project Area and that are duly nominated by their constituency.
 - ii) Persons nominated as co-opted members do not necessarily have to reside within the boundaries of the Project Area (see explanation in c) below).
 - iii) The nomination process will be conducted in consultation with the Local Municipalities within the Project Area.
- b) Nominations for Membership
 - i) Nominators will submit this prescribed nomination form and include the following information:
 - a. Name of the nominee,
 - b. Name of the proposer and five (5) seconders,
 - c. Residential address of the nominee,
 - d. Constituency whom the nominee will represent, and
 - e. Acceptance of nomination by the nominee.
- c) Co-opted Members
 - i) Co-opted members are members that the PLC chooses to add in addition to PLC members selected through the representative nomination process.
 - ii) Co-opted members may include a PLC member from the RRM PLC within the Project Area, Councillors, and specialists such as environmental specialists, etc.
 - iii) Co-opted members will have limited participation rights in PLC meetings, will not have voting rights and will not receive any seating allowance for participating in the PLC meeting.
- d) Duration of Membership
 - i) The duration of a nominee's membership of the PLC will depend on the duration of the project or the duration of the PLC, whichever occurs first.
 - ii) A nominee's membership will end with immediate effect in terms of the Rules of Engagement for PLC members.

1. Details of individual or organisation making the nomination:

I,, representing

hereby nominate

to be a member of the PLC for Project

.....

Signature Date

2. Details of the seconders (individuals supporting the nomination):

	Name	Surname	Organisation	Signature
1				
2				
3				
4				
5				

3. Details of the individual accepting the nomination (nominee):

Name and Surname	
Organisation	
Residential Address	
Ward Number	
Municipality	

I,, I.D. number

hereby accept the nomination to be a member of the PLC for Project

.....

I further accept to be bound by the rules, responsibilities and duties prescribed for the Project Liaison Committee Members and the Project Liaison Officers and will always act in good faith.

Signature Date

Witnesses:

Name and Surname Signature

Name and Surname Signature

FORM A2: PROJECT LIAISON COMMITTEE – RULES, RESPONSIBILITIES AND DUTIES (Derived from D1004.03)

The PLC is the official communication channel through which SANRAL, the 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.

1. Establishment of the PLC

The PLC will be established prior to commencement of the Contract or as soon as possible by SANRAL. The PLC consists of SANRAL, the Engineer, Contractor and representatives of project Stakeholders and affected Communities. To ensure that all relevant Stakeholders are represented in the PLC, SANRAL 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:

- a) A PLC member from the relevant RRM PLC.
- b) Local Municipality LED Office.
- c) Traditional leadership representation.
- d) Forums representing people with disabilities.
- e) Forums representing women.
- f) Forums representing youth.
- g) Forums representing business sector.
- h) Forums representing transport sector.
- i) Any other Stakeholder forum/organisation recognised by SANRAL and the Local Municipality's LED Office.

Every forum/organisation/constituency may have one (1) representative on the PLC, which representation will 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.

2. Seating Allowance for PLC Members

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

Provision has been made in the Contract for a seating allowance (stipend) to PLC members for actual costs incurred in executing their PLC duties (other than time or work 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 will be increased annually based on the CPI figure contained in Table B2 of Statistical Release P0141 by StatsSA.

3. Induction of the PLC

SANRAL will conduct an induction meeting with the PLC to acquaint PLC members with the following information:

- a) SANRAL's Horizon 2030 Strategy.

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

2. 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.

a) General Matters and Membership

- i) A PLC member may not be a politically elected representative, and political party representation will not be allowed in the PLC.
- ii) Ward Councillors may interact with the project team through the Mayor's Office.
- iii) If required, and in consultation with SANRAL, 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.

b) Term of Office for the PLC

- i) The duration of PLC members' participating in the PLC (term of office) shall depend on the duration of the project.
- ii) If SANRAL 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.

c) Targeted Enterprise and Targeted Labour

PLC members shall:

- i) 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.
- ii) not have private or business interests in any of the sub-contract tenders tabled to the PLC or considered in this Contract.
- iii) 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.
- iv) 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.
- v) 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).
- vi) 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.

d) Confidentiality

- i) 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.
 - ii) Information for public dissemination shall be clearly indicated by the committee to ensure that sensitive information is only disseminated to the correct audience.
- e) Removal from Office
 - i) 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 SANRAL.
 - ii) SANRAL reserves the right to recover any costs from PLC members whose actions can be regarded as detrimental to SANRAL or to the execution of the project.
 - iii) SANRAL also reserves the right to recommend criminal prosecution if the offence warrants such action.
 - iv) SANRAL 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. SANRAL will not be obliged to reconstitute the PLC if such a dissolution occurs.

3. Responsibilities and Duties of the PLC

The PLC will 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 will execute the following duties:

- a) Project Design Stage
 - i) 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.
 - ii) Peruse the Project Liaison Committee rules, responsibilities and duties outlined in this Form and agree on the rules, responsibilities, and duties of, and procedures to be followed by, the PLC to fulfil its duties.
Note: The principles outlined in this Form shall not be amended, but duties and procedures may be altered to be project specific and to improve the functionality of the PLC.
 - iii) Act in accordance with the agreed terms of reference for the PLC.
 - iv) Inform SANRAL of any training that project Stakeholder and affected Community representatives of the PLC require to execute their duties.
 - v) Assist the Engineer to source suitable candidates, based on SANRAL's qualifying criteria, for the position of PLO.
 - vi) 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.
 - vii) 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.
 - viii) Assist the Engineer to identify the project's Target Groups for inclusion in the Tender Documents and agree to and support the identified Target Groups.
- b) Project Construction Stage
 - i) Meet formally prior to SANRAL'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.

- ii) Assist the Contractor to establish the selection criteria and process to employ Targeted Labour
- iii) Assist the Contractor to identify the eligibility, functionality, preference, and compliance criteria to select and sub-contract Targeted Enterprises.
- iv) Agree to and support 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.
- v) 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 SANRAL's Policies.
- vi) 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 SANRAL's employment and sub-contracting requirements.
- vii) 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.
- viii) Verify that training and skills development programmes, which the Contractor committed to, are implemented, and executed as approved and intended.
- ix) Inform the entities whom they represent of any project matters which the respective party to the PLC wishes to communicate with each other.
- x) 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.
- xi) Inform the Contractor of Stakeholder and/or Community requests and/or needs, which could possibly be addressed within the project's Scope of Work.
- xii) Inform the SANRAL, the 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.
- xiii) Agree on a dispute resolution mechanism to resolve any disputes that may arise between the parties to the PLC.
- xiv) 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.

4. PLC Meetings

- a) Frequency
 - i) Meetings will be conducted monthly or as required by the Stakeholders or the project matters.
- b) Notice of meetings
 - i) The notice of the PLC meeting shall be given at least seven (7) calendar days prior to the meeting date.
 - ii) 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.
 - iii) Where a PLC member has missed any meeting, he/she bears the onus of establishing the date and venue of the next meeting.
- c) Venue
 - i) 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 SANRAL.
 - ii) 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, Teams, Zoom or similar.

- d) Agenda
 - i) 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.
 - ii) The agenda shall not be amended without prior approval from SANRAL.
- e) Chairperson
 - i) PLC meetings shall be chaired by SANRAL which will typically be the SANRAL's Project Manager, or a SANRAL staff member with decision-making delegation, or the Engineer.
 - ii) The Chairperson shall:
 - a. chair all meetings of the PLC,
 - b. co-ordinate all the activities of PLC,
 - c. ensure that members are fulfilling their tasks as assigned by the PLC,
 - d. see to the execution of decisions taken by the PLC,
 - e. ensure the validity of members' claim for allowance,
 - f. ensure compliance of all activities of the PLC with current rules, law and general SANRAL policy, and
 - g. be a co-signatory to all official documents of the PLC.
- f) Secretariate
 - i) The Engineer's staff shall provide a secretarial service to take minutes of PLC meetings.
 - ii) Secretarial support other than taking minutes at PLC meetings shall be provided by the PLO.
- g) Quorum
 - i) The quorum for PLC meetings shall be constituted by 50%+1 ratio excluding co-opted members.
- h) Apologies and Non-attendance
 - i) Apologies shall be in writing except in emergency where the member apologising cannot communicate the apology in writing.
 - ii) Apologies may be sent through any media agreed to prior by the PLC for example through SMS or WhatsApp messaging or similar application.
 - iii) 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.
- i) Language
 - i) The meetings will be conducted in English to enable all participants at the meeting to understand the discussions of the meeting.
 - ii) 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.
- j) Other
 - i) The PMT shall provide a finger lunch for PLC members at PLC meetings.

5. Amendments or Additions

The rules, responsibilities, and duties for PLC members in this Form are adopted and will be in force with effect from this day of 20.....

	Name and Surname	Signature	Date
Accepted for SANRAL			
Accepted for Engineer			
Accepted for Contractor			
Accepted for PLC			
Accepted by PLC			

FORM A3: CHECKLIST – PROJECT LIAISON COMMITTEE – MEMBER APPOINTMENT

Notes:

- a) The checklist consists of several sections. Only print the relevant sections.
- b) Indicate what has been completed and sign off at the end.
- c) While other individuals can assist in this process, the Project Manager (PM) remains accountable for all deliverables.
- d) All forms/records to be kept by the PM and availed to line management upon request.

Form No.	Item	Explanatory Note for Compliance Check	Responsibility	Complete (Yes/No or N/A)
A3.1	PLC Member Appointment:			
1	Nomination forms completed.	a)	Form must indicate the nominee and the individual or organisation making the nomination.	Stakeholder Coordinator (SC) /Contracts Engineer (CE)
		b)	Forms circulated with the assistance of Municipality's LED office.	SC/CE
		c)	All completed forms collected from the Municipality's LED office.	SC/CE
2	Members selected.	a)	Confirm the membership of the PLC.	SC/Project Management Team (PMT)
		b)	Where there are multiple entries, the team can select the member with the highest number of nominations.	SC/PMT
		c)	Where there is an equal number of nominations, the team will request the nominating organisation to confirm the member who should join the PLC.	SC/PMT
		d)	The last alternative is to allow for a snap election in a community meeting.	SC/PMT
		e)	Communicate the PLC membership to the affected stakeholders.	SC/PMT
3	Formal appointment to PLC signed.	a)	Ensure that the PLC membership is confirmed in line with Form A3.2	SC/Project Manager (PM)

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Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)
		b)	All members must be provided with a copy of the PLC Duties and Responsibilities (extract from D1004.03). The signed duties and responsibilities must be scanned and shared with all members. The PM retains a copy for future reference.	SC/PMT	
		c)	Document must be signed again when the membership changes. The PM must add the version of the document to ensure that the various versions can be tracked.	PM	
Stakeholder Coordinator:					
Name		Sign		Date	
Project Manager:					
Name		Sign		Date	

FORM A3.2: PROJECT LIAISON COMMITTEE – MEMBER LIST

No.	Sector/Entity/Forum	Name and Surname	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

FORM A4: CHECKLIST – PROJECT LIAISON OFFICER – APPOINTMENT

Notes:

- The checklist consists of several sections. Only print relevant sections.
- Indicate what has been completed and sign off at the end.
- While other individuals can assist in this process, the Project Manager (PM) remains accountable for all deliverables.
- All forms/records to be kept by the PM and availed to line management upon request.

Form No.	Item	Explanatory Note for Compliance Check	Responsibility	Complete (Yes/No or N/A)	
A4	PLO Appointment:				
1	Post advertised in local media.	a)	Job profile prepared.	CE/PMT	
		b)	Post advertised in the media.	CE/PMT	
		c)	Copy of advert kept on file.	CE/PMT	
2	Shortlisting completed.	a)	All CVs received collated.	CE/PMT	
		b)	Shortlisting done by the PMT.	CE/PMT	
		c)	PLC provided with the final shortlist.	CE/PMT	
3	Interviews held.	a)	Candidates invited.	CE/PMT	
		b)	Interview grid prepared.	CE/PMT	
		c)	The PLC can nominate a member to sit on the interview panel as an observer to ensure transparency in the process.	CE/PMT	
		d)	Formal interviews carried out.	CE/PMT	
		e)	Interview scores collated.	CE/PMT	
4	Formal appointment of PLO.	a)	PLO appointment letter issued.	CE	
		b)	PLO employment contract signed.	CE	
		c)	PLO performance agreement signed.	CE	
Stakeholder Coordinator:					

Form No.	Item	Explanatory Note for Compliance Check		Responsibility		Complete (Yes/No or N/A)
Name		Sign		Date		
Project Manager:						
Name		Sign		Date		

FORM A5: CHECKLIST – PROJECT LIAISON COMMITTEE – MEETINGS

Notes:

- The checklist consists of several sections. Only print relevant sections.
- Indicate what has been completed and sign off at the end.
- While other individuals can assist in this process, the Project Manager (PM) remains accountable for all deliverables.
- All forms/records to be kept by the PM and availed to line management upon request.

Form No.	Item	Explanatory Note for Compliance Check	Responsibility	Complete (Yes/No or N/A)	
A5	PLC Meeting Checklist:				
1	Attendance register completed.	a)	All members of the PLC to sign the attendance register in ink.	PLO/PM	
		b)	Where meetings are on an online platform such as MS Teams, the attendance list must be downloaded from that platform.	PLO/PM	
2	Quorum met.	a)	The quorum for PLC meetings shall be constituted by 50% + 1 ratio excluding co-opted members.	PLO/PM	
3	Agenda approved.	a)		PM	
4	Previous minutes approved.	a)	Minutes must be prepared, signed off and dated by the Chairperson at the following meeting.	PLO/PM	
5	Minutes and resolutions captured.	a)		RE/PLO	
6	Declaration of interest completed.	a)	All members of the PLC to sign the DOL in ink.	PLO/PM	
Stakeholder Coordinator:					
Name		Sign		Date	
Project Manager:					
Name		Sign		Date	

FORM A6: PROJECT LIAISON COMMITTEE – DECLARATION OF INTEREST

Notes:

- a) This declaration of interest shall be signed by all attendees at every PLC meeting.

THE SOUTH AFRICAN NATIONAL ROADS AGENCY LTD		
PROJECT LIAISON COMMITTEE - DECLARATION OF INTEREST		
<p>We, as members of the PLC and persons present in the meeting, hereby solemnly swear and declare that we have no private or business interest or stake in any of the Work Packages or Tender Reports tabled here today or to be discussed in this project.</p> <p>If one of us is of the opinion/view that some people may, rightly or wrongly construe as improper/irregular, his/her participation/involvement in deliberations that may lead to the award of a tender to a tenderer known to him/her, that person shall then recuse himself/herself from the proceedings/discussions that deal with that Work Package or Tender Report. Additionally, such a member shall recuse himself/herself from the operations of this PLC going forward and shall cease to be a PLC member for this project.</p> <p>We certify that we, during the process neither deliberately favoured nor prejudiced and person or tenderer, as intended or contemplated in treasury Regulation 16, A8.3 (a), (b) & (c).</p> <p>We further accept that all information, documentation, and decisions regarding any matter serving before the Committee are confidential. We, therefore, undertake not to communicate decisions/discussions of the meeting to external or internal parties unless so directed and approved by the Project Manager.</p>		
Members	Signature	Date

FORM B: CHECKLIST – TARGETED ENTERPRISE TENDERING PROCESS

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
B1	Target Area:					
1	Target Area Defined by PLC.	a)	Target Area for Targeted Labour and Targeted Enterprises identified and disseminated to the PLC.	PLO/PM		
		b)	Target Groups identified and disseminated to the PLC.	PLO/PM		
2	Database of Contractors and Suppliers.	a)	Database criteria setup and disseminated to the PLC.	PLO/PM		
		b)	Signed off database criteria handed over to PLC.	PLO/PM		
B2	Tender Phase:					
1	Tender Advert.	a)	Copy of advert on file.	Contractor		
		b)	Proof of publication in selected local publications.	Contractor		
		c)	Proof of publication on SANRAL website.	Contractor		
2	Tender Document.	a)	Copy of specification available on file, copy of the Tender CD, or printed.	Contractor		
3	Clarification Meeting Attendance register.	a)	Attendance register signed by all attendees of the clarification meeting	Contractor		
4	Clarification Meeting Minutes.	a)	Minutes must be prepared, signed off and dated by the Chairperson	Contractor		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
			within 14 days of the date of the meeting			
5	Clarification Meeting Presentation.	a)	Copy of the presentation on file.	Contractor		
6	Addenda	a)	All addenda issued must be recorded on the file.	Contractor		
		b)	Proof (e-mail) of those persons that the addenda was sent to (if applicable).	Contractor		
7	Register of tenders issued (if applicable).	a)	Record the names of persons / companies that collected tender documents (website/by hand).	Contractor		
B3	Tender Opening:					
1	Register of Tenders Received.	a)	Record the names of persons / companies that submitted tender offers.	Contractor		
2	Tender Opening, Declaration of Interest.	a)	Declaration by SANRAL officials at the opening.	Contractor		
3	Tender Opening, Attendance Register.	a)	Record the names of persons present at the opening of tenders.	Contractor		
4	Register for late tenders received.	a)	Record names and time of late tenders received.	Contractor		
5	Tender Opening, Opening Data.	a)	Register of the opening of the Technical Offer on the Tender Data sheet.	Contractor		
B4	Tender Evaluation:					
1	Extension of validity period.	a)	Confirmation of issue of letters of extension of validity period.	Contractor		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
		b)	Confirmation of response on extension of validity period by the bidders.	Contractor		
2	Declaration of Interest.	a)	All members of the Bid Evaluation Committee to sign the DoI in ink.	Contractor		
3	Attendance Register.	a)	All members of the BEC to sign the attendance register in ink.	Contractor		
4	Minutes	a)	Minutes must be prepared, signed off and dated by the Chairperson within 14 days of the date of the meeting.	Contractor		
5	Signed evaluation report.	a)	Report signed by the Chairperson of the BEC detailing deliberations and discussions of the BEC meeting.	Contractor		
6	PPPFA Scoring sheet	a)	Scoring sheet detailing the scores of all tenders evaluated as per the PPPFA.	Contractor		
7	CSD Compliance Report.	a)	Printout of the CSD Report for compliance verification for the successful tenderer.	Contractor		
8	CIDB grade confirmation (if applicable).	a)	Verification of active status.	Contractor		
		b)	JV calculator for Joint Ventures.	Contractor		
9	B-BBEE Certificate.	a)	B-BBEE Certificate of winning tenderer on file for verification of preference points.	Contractor		
10	SANRAL List of Restricted Bidders.	a)	Verification that the winning tenderer is not restricted from doing business with SANRAL.	Contractor		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
11	Clarification correspondence after tender closing (individual tenderers or all).	a)	All correspondence relating to RFT correction of arithmetic errors/balancing of rates etc.	Contractor		
12	Report for the award of the contract.	a)	Report detailing information from tender phase to evaluation phase, and a recommendation with motivation for the approval of the winning tenderer.	Contractor		
13	Review Report.	a)	Receive high level reports and ensure transparency in the appointment of Targeted Enterprises. The reports must exclude sensitive evaluation information.	PLC /PLO/PM	Report not to be supplied to PLC*.	
B5	Award of Contract:					
1	BAC Declaration of Interest.	a)	All members of the BAC to sign the DoI in ink.	Project Bid Adjudication Committee Secretariat (PBAC)		
2	BAC Attendance Register.	a)	All members of the BAC to sign the attendance register in ink.	PBAC Secretariat		
3	BAC Minutes.	a)	Minutes must be prepared, signed off and dated by the Chairperson within 14 days of the date of the meeting.	PBAC Secretariat		

FORM C: CHECKLIST – TARGETED ENTERPRISE CONTRACT ADMINISTRATION

Form No.	Item	Explanatory Note for Compliance Check	Responsibility	Complete (Yes/No or N/A)	Source Document
C	Contract Administration Phase				
1	Letter of award / Letter of Acceptance.	a) Copy of letter issued to the successful bidder.	Contractor		
2	Letters to unsuccessful bidder(s).	a) Standard letter informing unsuccessful bidders of the tender outcome with proof of emails.	Contractor		
3	Publication of award, within 7 working days from date of award.	a) Proof of publication on SANRAL website.	Contractor / PLO / Project Manager		
4	Contract document.	a) Original signed contract on file.	End-User / Contractor		
5	Closure of contract.	a) Copy of close-out report (SIPDM).	End-User / Contractor		
6	Performance report (for Engineering contracts).	a) Copy of contractor performance report.	End-User / Contractor		
Project Manager:					
Name		Sign		Date	

APPENDIX 8: PROFORMA SUBCONTRACT DOCUMENT FOR TARGETED ENTERPRISES

This document will be supplied to the successful tenderer.

PART C5: ANNEXURES

ANNEXURES

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ANNEXURE A:

MINUTES OF TENDER CLARIFICATION MEETING

ANNEXURE B:

CORRESPONDENCE AND ADENDA ISSUED DURING TENDER STAGE