

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL: X.002-208-2025/9

PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

ISSUE DATE: **13 JANUARY 2025**

BRIEFING SESSION DATE: **22 JANUARY 2025@10H00**

CLOSING DATE: **24 FEBRUARY 2025**

CLOSING TIME: **12:00 PM**

BASE DATE: JANUARY 2025
VOLUME 3

BOOK 2 & 3 OF 3

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PART C1: AGREEMENTS & CONTRACT DATA

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C1.1 FORMS OF OFFER AND ACCEPTANCE

C1.1.1 FORM OF OFFER

The South African National Roads Agency SOC Limited
PO Box 415
PRETORIA
0001

Dear Sir,

CONTRACT NRA: X.002-208-2025/9
PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

1. I/we, by signing this part of the forms of offer and acceptance, confirm that I/we practise the principles of corporate governance that abhors corruption and fraud and that we have examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules and am/are duly authorised to represent and commit the tenderer to the contractual obligations contained therein.

2. I/we further confirm that by submitting this offer the tenderer accepts the conditions of tender and offers to perform all of the obligations and liabilities of the service provider under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of tender and the conditions of contract identified in the contract data.

3. /we further confirm that by submitting this offer the tenderer accepts the conditions of tender and offers to perform all of the obligations and liabilities of the contractor under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of tender and the conditions of contract identified in the contract data.

A. PRICE OFFERED

THE OFFERED TOTAL OF THE PRICES (INCLUSIVE OF VALUE ADDED TAX) BROUGHT FORWARD FROM SECTION C2.3 PRICING SCHEDULE SUMMARY IS

……...(in words)

R…….……...(in figures).

I/we confirm that if any difference between the total of the Bill of Quantities Summary and the amounts stated above exists, the total in the Bill of Quantities Summary shall apply.

B. PREFERENCE CLAIMED

I/we claim the following B-BBEE contributor status level ..... as per Returnable Schedule Form A12: Tenderer's B-BBEE Verification Certificate subject to Tender Data C.3.11 In the event of any difference between the above stated status level and the Verification Certificate attached to Form A12, the Verification Certificate shall apply.

You may accept this offer by signing and returning to the tenderer one copy of the acceptance part of the forms of offer and acceptance before the end of the period of validity stated in the tender data, (or at the end of any agreed extension thereof), whereupon the tenderer becomes the party named as the service provider in the conditions of contract identified in the contract data.

Notwithstanding anything contained in a covering letter to this tender, I/we declare this offer is submitted entirely without deviations or qualifications other than those stipulated in Form A10: Schedule of Deviations or Qualifications by the tenderer and that it is made free from any fraud, corruption and misrepresentation.

Yours faithfully

SIGNATURE: ..... DATE: .....

NAME (IN CAPITALS): .....

CAPACITY: .....

Date and minute reference of Board resolution if different from returnable schedule Form A2.1:

Certificate of Authority for signature.....

NAME AND ADDRESS OF ORGANISATION: .....

.....

NAME AND SIGNATURE OF WITNESSES:

SIGNATURE: ..... DATE: .....

NAME (IN CAPITALS): .....

SIGNATURE: ..... DATE: .....

NAME (IN CAPITALS): .....

C1.1.2 FORM OF ACCEPTANCE (Incorporating SBD7)

To ***(Name of successful tenderer)***

Dear Sir,

CONTRACT SANRAL: X.002-208-2025/9
PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

ACCEPTANCE OF OFFER

1. It is our pleasure to inform you that the South African National Roads Agency SOC Ltd (the Employer) accepts your ***select if applicable corrected/corrected alternative/alternative*** offer in the amount of R…….. (i.e. including VAT but excluding CPA, and any contingent sum not in the priced schedule) for a contract period of ..... months and with a Base date of .....(***28 days prior to the closing date of tender)***

2. The amount due may not be the accepted price but payment shall be made in accordance with the conditions of contract identified in the contract data.

3. This Form of Acceptance is the equivalent of the Letter of Acceptance as defined in clause 1.1.1.3 of 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).

4. Acceptance shall form an agreement between us according to the terms and conditions contained in this form and in the contract that is comprised of:

Proforma

Part C1: Agreements and Contract Data (including this form of acceptance),
Part C2: Pricing Data,
Part C3: Scope of the Work,
Part C4: Project Information, and
Part C5: Annexures

together with issued drawings and other documents, or parts thereof, which may be incorporated by reference into the Parts listed above.

5. Deviations and/or qualifications included in your offer as well as any changes to the terms of the offer agreed by us during the process of offer and acceptance shall not be valid unless contained in the appended schedule of deviations. In the event that an alternative offer is accepted, it is a fundamental condition of acceptance that all responsibilities and concomitant liabilities arising from

the alternative design pass from us to you. ***(Note to compiler: If no deviation/alternative tender then replace the above part of this paragraph with "There are no alternatives, deviations, qualifications or changes to the documents")*** Addenda issued during the tender period are deemed not to be deviations to the tender documents and schedules.

6. Notwithstanding the need to agree the mandate required by Section 37 of the Occupational Health and Safety Act (Act 85 of 1993), a proforma of which is attached for your reference, we hereby appoint you as the principal contractor in terms of Regulation 5(1)(k) of the Construction Regulations, GNR. 84 of 2014.

7. A SARS compliance check has been done on you and you are found to be ….. ***(select: "***compliant***" or "***non-compliant***"). Note to compiler: check SARS website for compliance. If not compliant add the following sentence: "***Within 7 calendar days of the date of this Form of Acceptance you shall provide proof that you are SARS compliant. Failure to fulfil this obligation shall constitute a repudiation of this agreement.*")*

8. At least 7 days prior to the Commencement Date you shall deliver to us:
   i. A Performance Security (per clause 4 of the FIDIC Conditions of Contract), a proforma of which is attached for your reference. The 10% calculation for the Performance Security shall be based on the accepted contract value (excluding VAT) as contained in this form and there shall be no deviations from the wording of the proforma Performance Security.
   ii. Proof of insurance in terms of the information provided in the contract data and clause 18 of the FIDIC Conditions of Contract. Proof of currency of insured cover shall be provided on a monthly basis until contract completion.
   iii. Fully completed and signed Form C1.1.4.3 together with your Health and Safety plan (including Risk Assessment), proof of appointment of the Construction Manager (including CV and registration) proof of appointment of the Construction Health and Safety Officer (including proof of registration with SACPCMP), proof of appointment of Temporary works designer (if applicable) including ECSA registration, and Evidence of necessary competencies to carry out construction work safely viz. company profile, schedule of activities, relevant appointments and proofs of competency.
   iv. Fully completed and signed Form C1.1.4.1 – Mandatary Agreement.
   v. Fully completed and signed Form C1.1.4.9 – Appointment of Principal Contractor
   vi. Proof that you are registered and in good standing with the compensation fund or with a licensed compensation insurer.
   vii. A completed Form of Banking Details. ***Note to compiler: only include this if the successful tenderer has not previously been registered as a vendor with the Employer***
   viii. Proof of registration on the Employer's Project Information Module (ITIS).
   ix. Proof of notification to the Chief Inspector of Mines, of appointments as per Form C1.1.4.7 and C1.1.4.8. ***Note to compiler: only include this if applicable.***
   x. Nominated DAB member details. ***Note to compiler: only include this if a standing DAB is specified under Conditions of Contract clause 20.2***

xi. Fully completed Form C1.1.3 Appendix to Form of Acceptance.

xii. Proof of registration on SAP Ariba. The link and information to register the Ariba account is provided on https://www.nra.co.za/sap-ariba/ , Contact: supplierenablement@nra.co.za or ***(Note to compiler: Insert relevant Procurement Officer generic email address)*** for queries regarding SAP Ariba registration.

xiii. A full breakdown of all rates (as per clause 14.1 of the FIDIC Conditions of Contract as amended).

xiv. A programme for the Mobilisation Period (as per clause 8.3 of the FIDIC Conditions of Contract as amended).

Note to compiler: The completed Form A3.5, Form A3.6 and Form C1.1.2 of the successful tenderer is to be forwarded to the Department of Trade and Industry (Industrial Procurement Unit) after award

Failure to fulfil either of the obligations (i), (ii) and (iii) above shall constitute a repudiation of this agreement and we may at our discretion apply any rights of remedy including barring you from tendering on any of our future tenders for a period to be determined by us, but not less than twelve (12) months, from the date of tender closure.

Proforma

9. The effective date of the contract shall be the date of this Form of Acceptance unless you, within four (4) calendar days of the effective date, notify us in writing of any justification why you cannot accept the contents of this agreement.

10. The Commencement Date shall be the day on which the commencement meeting is held, which shall not be later than …. ***(Note to compiler: the commencement meeting date indicated above is usually within 28 calendar days after the date of this form, as circumstances demand and as agreed between tenderer and Employer. The above can also be amended by fixing the day on which the commencement meeting is held here. The compiler also to consider to only have the commencement meeting commence after the PLC is established else the Mobilisation Period will have to be extended)*** All the requirements of the Mobilisation Period shall be complied with within …. ***(Note to compiler: include the Mobilisation Period duration – typically 2, 3 or 4 months.*** months of the Commencement Date.

11. Access to the Site shall be

Note to compiler: Option 1: For contracts where an application for a permit to do construction work is required from Department of Labour i.t.o. Construction Regulation 3(2), add the following wording: on the date stated on the Letter of Access to the Site, which date shall be after the Employer being in possession of the Construction Work Permit and after the requirements of the Mobilisation Period have been complied with.

Note to compiler: Option 2: For contracts where no application for a permit to do construction work is required from the Department of Labour i.t.o. Construction Regulation 3(2), add the

following wording: on the date stated on the Letter of Access to the Site, which date shall be after the requirements of the Mobilisation Period have been complied with.

12. Notwithstanding that a full, original-signed copy of the contract document containing all contract data and schedules (including that of accepted deviations) will be delivered to you, this Form of Acceptance constitutes the binding contract between us.

13. Messrs …….. act as our agent to fulfil the functions of the engineer in the administration of this contract. Please contact …… at ……. to make arrangements for the signing of the contract documents and commencement meeting.

SIGNATURE:…….. DATE: ……..

NAME (IN CAPITALS): ……

CAPACITY: Regional Manager ***TBC***

EMPLOYER'S NAME AND ADDRESS: The South African National Roads Agency SOC Limited
48 Tambotie Avenue Val De Grace.Pretoria, 0184

AUTHORITY TO ACT: SANRAL's Delegation of Powers Item 2.4.1.2

NAME & SIGNATURE OF WITNESSES:

WITNESS 1:

SIGNATURE:…….

NAME (IN CAPITALS):……..

WITNESS 2:

SIGNATURE:…….

NAME (IN CAPITALS): ……..

C1.1.3 APPENDIX TO FORM OF ACCEPTANCE

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL: X.002-208-2025/9

PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

Schedule of Deviations

1. **The extent of deviations from the tender documents issued by the Employer before the tender closing date is limited to those permitted in terms of the conditions of tender.**
2. **A tenderer's covering letter shall not be included in the final contract document. Should any such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.**
3. **Any other matter arising from the process of offer and acceptance, either as a confirmation, clarification or change to the tender documents and which it is agreed by the parties, becomes an obligation of the contract, shall also be recorded here.**
4. **Any change or addition to the tender documents arising from the above agreements and recorded here, shall also be incorporated into the final Contract.**

The deviations listed below constitute agreed deviations/amendments to the tender document negotiated between the tenderer and Employer based on information provided in Form A4: Schedule of Deviations or Qualifications by Tenderer or imposed conditions of award. Addenda issued during the tender period are deemed not to be deviations to the tender.

Proforma

1. Subject: .....

   Details: .....

2 Subject: .....

   Details: .....

3 Subject: .....

   Details: .....

4 Subject: .....

   Details: .....

By the duly authorised representatives signing this agreement, the Employer and the tenderer agree to and accept the schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the returnable schedules, as well as any confirmation,

clarification or changes to the terms of the offer agreed by the tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this agreement shall have any meaning or effect in the contract between the parties arising from this agreement.

C1.1.5 TAX COMPLIANCE PERMISSION DECLARATION

Note to Tenderer:

In terms of National Treasury Instruction, No 3 of 2017/2018 with reference to the Public Finance Management Act, 1999 (Act No 1 of 1999) and Regulations, the Service Provider and sub-contractors are required to provide the employer with written confirmation to access the SARS Electronic Tax Compliance Status (TCS) system to verify and continuously track the tax compliance status of all persons conducting business with the State.

The Service Provider shall complete the declaration below.

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 .....

In addition, the Service Provider shall obtain written consent from each of its sub-contractors, undisclosed principals and partners involved in this contract confirming that SARS may, on an ongoing basis during the contract term disclose the sub-contractors' tax compliance status to the Employer. For this purpose the Service Provider shall provide the Employer with the unique security personal identification number (PIN) for each of its sub-contractors, undisclosed principals and partners involved in this contract.

In the event of a Targeted Enterprise each member shall comply with the above requirement.

..... **.....**

SIGNATURE **DATE**

C1.2 CONTRACT DATA

C1.2.1 CONDITIONS OF CONTRACT

Note to tenderer:

The Conditions of Contract comprise the "General Conditions", which form part of the "Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer, First Edition 1999", published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC), and the "Particular Conditions", which include amendments and additions to such General Conditions.

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PART A: GENERAL CONDITIONS - FIDIC AMENDMENTS

Up to March 2019 the following amendments have been issued by FIDIC.

ERRATA to the First Edition, 1999

The following significant errata are corrected in this reprinting of the First Edition of the Construction Contract. Several minor typographical errors and layout irregularities have also been corrected.

GENERAL PROVISIONS

Foreword	In figure "Typical sequence of Payment Events envisaged in Clause 14", change "14.11 Contractor issues Final Statement ..." to "Contractor submits Final Statement ...".
Page 2	In the middle of the third line of Sub-Clause 1.1.2.9, delete "under".
Page 26	In the title of Sub-Clause 8.1, substitute "Works" for "Work".
Page 56	In the penultimate line, delete the parentheses "(" and ")".
Page 60	Sub-Clause 20.3, in the line following sub-paragraph (d), delete "Particular Conditions" and substitute "Appendix to Tender".
Page 68	In the third line of Clause 9, delete the two words "notice to".

GUIDANCE FOR THE PREPARATION OF PARTICULAR CONDITIONS

Page 14	Under Sub-Clause 14.9, delete "EXEMPTION" and substitute "RETENTION".
Annexes	Delete "© FIDIC".

PART B: PARTICULAR CONDITIONS OF CONTRACT

The following additional amendments to the FIDIC Conditions of Contract 1999 apply to this contract.

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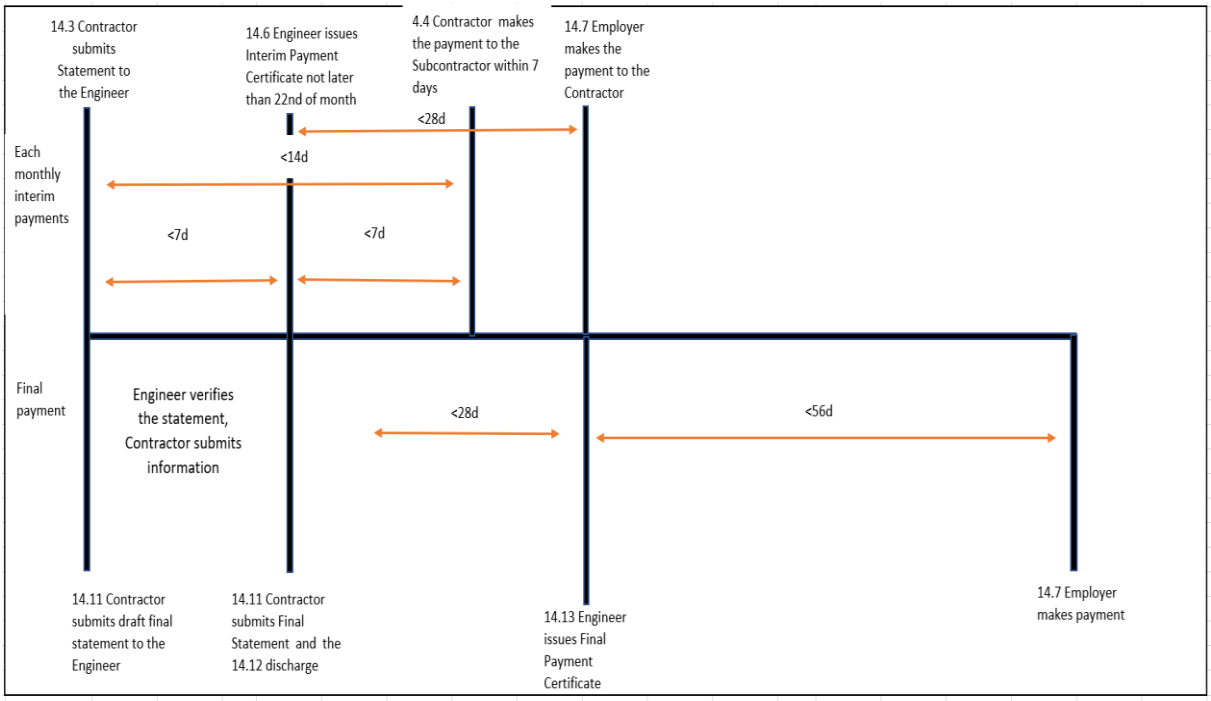
PARTICULAR CONDITIONS AMENDING THE GENERAL CONDITIONS OF FIDIC


14.3 Contractor submits Statement to the Engineer
14.6 Engineer issues Interim Payment Certificate not later than 22nd of month
4.4 Contractor makes the payment to the Subcontractor within 7 days
14.7 Employer makes the payment to the Contractor
<28d
Each monthly interim payments
<14d
<7d
<7d
Final payment
Engineer verifies the statement, Contractor submits information
<28d
<56d
14.11 Contractor submits draft final statement to the Engineer
14.11 Contractor submits Final Statement and the 14.12 discharge
14.13 Engineer issues Final Payment Certificate
14.7 Employer makes payment

PARTICULAR CONDITIONS AMENDING THE GENERAL CONDITIONS OF FIDIC

1.1 Definitions

1.1.1 **The Contract**

Replace 1.1.1.1 with:

" "Contract" means the Form of Offer and Acceptance, Contract Data, these Conditions, the Specifications, the Drawings, the Schedules, and the further documents (if any), which are listed in the Form of Offer and Acceptance, and further includes drawings and documents or parts thereof, which any of the aforesaid documents incorporate by reference."

Replace 1.1.1.3 with:

" "**Letter of Acceptance**" means the Form of Acceptance as contained in part C1.1.2 of the contract documents."

Replace 1.1.1.4 with:

" "Letter of Tender" means the Form of Offer as contained in part C.1.1.1 of the contract document."

Replace 1.1.1.5 with:

" "**Specification**" means that document entitled Scope of Work, as included in the Contract, and any additions and modifications to the Scope of Work in accordance with the Contract. Such document specifies the Works."

Replace 1.1.1.7 with:

" "**Schedules"** means the document(s) completed by the Contractor and submitted with his tender offer, as included in the Contract. Such document(s) may include the Bill of Quantities, data lists and schedules of rates and/or prices."

Replace 1.1.1.8 with:

" "Tender" means that section of the Form of Offer and Acceptance called 'Offer' and all other documents which the Contractor submitted as Returnable Documents, as included in the Contract."

Replace 1.1.1.9 with:

" "**Appendix to Tender**" means the completed section entitled C1.2.2 Contract Data – Information provided by the Employer included in the Contract Data:"

1.1.1.10 - Add the following:

" "**Bill of Quantities**" shall also mean the Pricing Schedule as contained in section C2.2 of the contract document.

"1.1.1.11 "**Letter of Access to the Site**" means a letter issued by the Employer to give the Contractor right of access in accordance with Sub-Clause 2.1 [Right of Access to the Site]"

1.1.2 **Parties and Persons**

Add the following:

"1.1.2.11 "**Supplie**r" means a sole trader, partnership or legal entity that owns, operates or maintains a store, warehouse or other establishment in which goods are bought kept in stock and regularly sold to wholesalers, retailers or the public (or all three) in the usual course of business.

"1.1.2.12 "**Targeted Enterprise**" means an enterprise defined in Part Dstakeholder and community liaison, and targeted labour and targeted enterprises utilisation and development.

1.1.3 **Dates, Tests, Periods and Completions**

Replace 1.1.3.9 with:

"A **"day"** means a calendar day, except for any extension of time that is granted under sub-clause 8.4, [Extension of Time for Completion], in which case a day means a working day. A "year" means 365 calendar days".

1.1.6 Other Definitions

1.1.6.5 **Laws"**

In the 1st line, replace "(or state)" with "(or other spheres of government)" and in the 2nd line, after "other laws", insert "including the South African Common Law".

Add the following:

"1.1.6.10 "**Supplementary Agreement"** means an agreement between the Employer and the Contractor for executing work, supplemental to the original Contract, which was not contemplated in the original Contract and is also not required for the proper completion of the original Contract."

1.2 **Interpretation**

Replace the contents of (d) with:

"The expression "written", "in writing", "notify", "the giving of notice", "giving consent", "as instructed" or "at the request of" means that communication, either hand-written or printed by whatever means, including transmission by telefax or e-mail, and resulting in a permanent record. However, such notice, instruction, consent or request is not deemed to have been delivered by virtue of its appearance in the minutes of meetings."

1.5 **Priority of Documents**

Insert the following at the end of the first paragraph before the colon:

"… unless specifically stated otherwise in the contract:".

Replace sub-paragraphs items (a) to (h) with:

"(a) the Forms of Offer and Acceptance
(b) the Appendix to Tender within the Contract data
(c) the Particular Conditions of Contract
(d) the General Conditions
(e) the Scope of Works (Part C3)
(f) the project Drawings,
(g) the standard Specifications,
(h) the Bill of Quantities (Part C2); and
(i) the Schedules and any other documents forming part of the Contract."

1.6 **Contract Agreement**

Replace the 1st two sentences with the following:

"The Parties shall enter into a Contract Agreement when the Employer issues the Form of Acceptance (see Particular Condition 1.1.1.3). The Contract Agreement shall be in the form prescribed in the tender documents"

1.7 **Assignment And Cession**

“Neither Party is allowed to transfer any or all of its rights and obligations in or under the Contract.

However, either Party may, Cession cede its right to payment of any moneys due, or to become due, under the Contract, only in the event that:

a) the Cession is in favour of a registered Financial Services Provider (FSP) or a State Institution established for the express purpose of providing funding to businesses and entities; and
b) the written request for Cession is made by the Party and not a third party; and
c) the written request by the Party is accompanied by a cession agreement; and
d) the other Party agrees to the Cession.”

1.8 **Care and Supply of Documents**

In the 1st paragraph, 2nd line, change “two copies” to “one copy”.

In the 2nd paragraph, 3rd line, change “six” to “two”.

1.11 **Contractor’s Use of Employer’s Documents**

Add the following new paragraph:

“The Employer shall also retain the intellectual property rights for research, innovation, industry cutting edge technology and any form of trials undertaken as part of the contract. Any research, conference papers and presentations shall require the approval of the Employer before any such information can be published and/or presented.”

2.3 **Employer’s Personnel**

In the 1st sentence delete “and the Employer’s other contractors”.

3.1 **Engineer’s Duties and Authority**

After the 3rd paragraph insert the following:

“In addition to the actions stipulated in the General Conditions whereby the Engineer shall first obtain the approval of the Employer, the Employer’s approval shall also be obtained before taking any action under sub-clauses 8.1, 8.4, 8.8, 10.1,11.9, 13.3 and 20.1 as amended in these Particular Conditions”.

4.1 **Contractor’s General Obligations**

Add the following sentence to the 1st paragraph:

“With regard to the Contractor’s proposals submitted under the item of the Scope of Works entitled “Stakeholder and Community Liaison and Targeted Labour and Targeted Enterprise utilisation and development”, if the Contractor fails to provide the employment or training to the extent proposed, the Employer may impose penalties as set out in the above-mentioned Scope of Works.”

4.2 **Performance Security**

Replace the 2nd paragraph with:

“The Contractor shall deliver the Performance Security to the Employer within 14 days of the date of issue of the Form of Acceptance and shall send a copy to the Engineer. The Performance Security shall be issued by a bank or insurance company registered or licensed as a bank or insurance company to do business in the Republic of South Africa and approved by the Employer and having an office or banking facility in the Republic of South Africa. The Performance Security shall be subject to approval by the Employer and shall be in the form prescribed in the tender documents.

The employer is entitled to utilise the performance security for the intended purpose, to hold same as security for the Contractor’s performance. However, the Employer is likewise entitled to negotiate with the

bank or insurance company registered or licenced as a bank or insurance company in order to allow for the cession of the contract agreement to a replacement contractor, in terms of sub clause 1.7, as agreed between the said bank or insurance company and the insured contractor, subject to the approval of the Employer.

The basis for the cession of the insured contractor, to a replacement contractor, must accord with the Employer's internal Supply Chain Management and Procurement policies. "

In the last line of the last paragraph replace the words "Performance Certificate" with "Taking-Over Certificate".

4.4 **Subcontractors**

Change the title to read "Subcontractors and suppliers"

In the first paragraph delete "the whole of the Works" and add "any percentage of the Works without the express approval of the Employer".

In the 1st line of the 2nd paragraph, after the word "Subcontractor" replace the expression "his agents or employees" with "suppliers, their agents or employees".

Add the following sub-paragraphs:

"(e) The Contractor shall enter into a written subcontract agreement with the Subcontractor. The subcontract agreement between the Contractor and the Subcontractor shall be the standard FIDIC subcontract agreement (version 2011).

(f) If the Contractor is required to employ one or more Subcontractors under his targeted enterprise development, then the provisions of Sub-Clause 5.4 [Evidence of Payments] shall apply as if such Subcontractor is a Nominated Subcontractor.

(g) Each subcontract shall include the provisions:
The Contractor undertakes to pay the Subcontractor the full value as certified by the Engineer as being due to the Subcontractor in each Interim Payment Certificate, without any deduction for plant, equipment, materials or fuel supplied by the Contractor. Any assistance that the Contractor may have made to the Subcontractor that requires recovery from the Subcontractor, will be recovered by the Contractor through normal commercial debt repayment processes;

The Contractor undertakes to make payment to Subcontractors within 7 days after the date on which the Engineer has issued the Main Contractor's payment certificate.

(h) The Contractor shall disclose all subcontracting arrangements.

(j) The total retention money held for all subcontractors shall not exceed the maximum value of the retention money as specified under Sub-Clause 14.3(c) and shall be held pro-rata per subcontractor.

(k) 50% of the retention money held for each Subcontractor shall be released on completion of the subcontract works. The remainder of the Subcontractor's retention money shall be released when a Subcontractor's work does not show any defect within 6 (six) months after the completion of the subcontract. However, the Subcontractor's retention money may be withheld but only if the Performance Certificate is unable to be issued because of defective workmanship attributable to the Subcontractor.

(l) All Subcontractors and suppliers shall be registered on the National Treasury's Central Supplier Database (CSD).

(m) All Subcontractors shall be in good standing in terms of COIDA and shall be registered with the Bargaining Council for the Civil Engineering Industry (Government Notice R.490 – Part III contained in Government Gazette No. 37750) or other relevant Bargaining Council.

(n) All Subcontractors shall be registered with the CIDB in the appropriate category for the class of work to be performed.

(o) The procurement and appointment of all subcontractors shall follow the process as stipulated in Part D: Stakeholder and community liaison, and targeted labour and targeted Enterprises utilisation and development.

If the Contractor fail to disclose all subcontracting agreements, or fail to comply with the requirements of this clause he shall be given 14 days to make representation as to why the contract shall not be terminated;

However, a failure of the Contractor to disclose all subcontracting agreements or to comply with the requirements contained under this clause, shall attract a penalty up to 10% of the value of the contract.

4.7 **Setting Out**

Amend the second line of the second paragraph to read:

"……reference, provided that the Contractor shall provide proof of their inaccuracy before they are used."

4.10 **Site Data**

In the 1st paragraph, 1st sentence, replace "prior to the Base Date" with "either as part of or by reference in the Tender Documents or, otherwise, not later than 7 days before the latest date for submission of the Tender Documents", and delete the 2nd sentence.

4.17 **Contractor's Equipment**

Add the following paragraph:

"The Contractor shall notify the Engineer, in writing, of the names and addresses of the owners of all major items of equipment not owned by the Contractor within 21 days of it arriving on Site.

4.18 **Protection of the Environment**

In the 1st paragraph, 1st sentence add "and shall ensure compliance with all the environmental requirements indicated in part C3 Scope of Work."

Add the following paragraph:

"The Contractor shall indemnify the Employer against any liability arising from or in relation to any of the above matters."

4.19 **Electricity, Water and Gas**

In the 1st paragraph, 1st line, delete "except as stated below", and delete the 2nd and 3rd paragraphs.

4.21 **Progress Reports**

In the 1st paragraph, 2nd line, delete "in six copies".

Add the following at the end of the 3rd paragraph:

"(i) Comparison of estimated Contract Price and the original Contract Price as stated in the form of Acceptance, with details of any events or circumstances which may result in the original Contract Price to be exceeded, and the measures being (or to be) adopted to prevent this.
(j) SHE audits, SHE incidents, traffic accidents, Environmental management report, employment, empowerment and training reports (extracted from Employer system), training plan, communication plan, media information, site memos, drawings issued, mix designs, work authorisations, daywork, programme, sub-standard work, cashflow and expenditure, claims, risk report and penalties."

4.22 **Security of the Site**

Replace the fullstop at the end of subclause (b) with a comma and continue this clause as follows:

"... on the Site, or utility or service owners whom the Employer or the Engineer identifies as having also been authorised. Without said notice, the Contractor may refuse access to such utility or service owners; and"

Add the following subclause:

"(c) The Contractor shall indemnify the Employer against any liability for damage incurred to, or loss of, property within the site identified in the contract documents as not belonging to the Employer regardless of whether or not such damage or loss is caused by the Contractor's equipment."

4.24 **Fossils**

In the 1st paragraph, 1st sentence after "fossils" insert "and graves" and in the 2nd sentence, add "and shall indemnify the Employer against any liability arising from such loss or damage."

6.5 **Working Hours**

Replace the 1st sentence with the following:

"No work shall be carried out on Site on Sundays or on any special non-working day stated in the Contract Data or between sunset and sunrise on any day, unless:"

6.7 **Health and Safety**

Replace the 1st paragraph with the following:

"The Contractor shall provide and maintain on the Site adequate and suitable sanitary and first aid services (including the provision at all times of a person qualified to render medical first aid) and a supply of potable water for the Contractor's, the Employer's and the Engineer's personnel engaged on the Contract and, if necessary, similar facilities elsewhere for such personnel off the Site."

Add the following sub-clause:

6.9 **CONTRACTOR'S PERSONNEL**

Add the following new subparagraphs to the 1st paragraph:

"(e) is found, based on reasonable evidence, to have engaged in corrupt, fraudulent, collusive or coercive practice; or
(f) has been recruited from the Employer's Personnel in breach of sub-clause 6.3 [Persons in the Service of Employer]."

Add the following as a final paragraph:

"The requirements for key personnel as stated in the Appendix to Tender shall also apply."

"6.12 **Indemnity by Contractor**

The Contractor shall indemnify the Employer against and from all damages, losses and expenses (including legal fees and expenses) resulting from:

(a) 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 Contractor's workforce as a result of a dispute between all or any of the Contractor's workforce and the Contractor; or
all or any of the Contractor's suppliers' difficulty or impossibility to deliver goods or materials needed to perform the Works;

(b) any unlawful, riotous or disorderly conduct by or amongst the Contractor's personnel."

8.1 **Commencement of Work**

In the 1st paragraph, delete the 1st sentence, and in the 2nd sentence replace “42 days after the Contractor receives the Letter of Acceptance” with “28 days of the date of issue of the Letter of Acceptance, unless otherwise stated in the Contract Data.”

In the 2nd line of the 2nd paragraph, after the words “Commencement Date”, insert “but within the period stated in the Contract Data.”

8.3 **Programme**

Replace the 1st sentence of the 1st paragraph with “The Contractor shall submit a detailed programme to the Engineer within 14 days of the Commencement Date.”

Add to the items to be included in the programme the following sub-paragraph:

“(e) The Contractor’s cash flow forecast.
(f) Documented details of the contractor’s environmental mitigation measures and health and safety plans in respect of all construction activities”

In the 2nd paragraph replace “21” with “14”.

8.4 **Extension of Time for Completion**

Replace the word “Engineer” with “Employer” in the last sentence of the last paragraph.

8.7 **Delay Damages**

Change the marginal heading of this clause to read “Delay Damages and Other Non-compliance Charges” and insert the following as a first paragraph to this clause:

“Delay damages and other payments to the Employer for late delivery, failure to achieve intra-programme due dates or non-compliance events shall apply as follows:”

Keep the existing two paragraphs unchanged as subclause (a) and add the following subclause relating to other non-compliance charges:

“(b) If the Contractor fails to achieve programmed completion dates that result in extended duration of accommodation of traffic closures, or fails to adhere to specified controls and targets, penalties shall be levied by deductions from relevant Interim Payment Certificates in terms of subclause (f) of clause 14.3 [Application for Interim Payment Certificates] at the rates stated in the Appendix to Tender.”

10.2 **Taking Over of Parts of the Works**

Delete the 2nd paragraph.

Between the 3rd and 4th paragraphs insert the following paragraph:

“The Employer may make use of any part of the Permanent Works prior to the issue of a Taking Over-Certificate.”

Delete the 5th paragraph.

11.9 **Performance Certificate**

In the 1st paragraph, 2nd line and in the 2nd paragraph, 1st line, replace the word “Engineer” with “Employer”.

Delete the last sentence of the 2nd paragraph.

11.11 **Clearance of Site**

Replace the 1st paragraph with the following:

“With the exception of Plant, Materials and Contractor’s Equipment required to complete any outstanding work or to remedy defects or damage as notified by, or on behalf of, the Employer and which Plant, Materials and Contractor’s Equipment have been agreed by the Engineer and the Contractor, the Contractor shall, upon receipt of the Taking-Over Certificate, remove all Contractor’s Equipment and surplus material, wreckage, rubbish and Temporary Works, from the Site unless otherwise instructed by the Engineer.”

In the 2nd paragraph, replace “after the Employer receives a copy of the Performance Certificate” with “after the issue of the Taking-Over Certificate”.

12.3 **Evaluation**

Replace the second sentence of paragraph two with the following:

“However a new rate or price shall be appropriate for an item of work only if notice has been given and if ...”

In sub-paragraph (a)(iv) replace the word “Contract” with “Appendix to Tender”.

13.3 **Variation Procedure**

Replace the 3rd paragraph with the following:

“Each instruction to execute a Variation, unless the Variation is to be executed on a Daywork basis, shall be a written instruction presented in the form of a Works Authorisation (WAF). The Works Authorisation Form shall be presented to the Employer, who shall signify his approval before the order is signed by the Engineer and issued to the Contractor, who shall acknowledge his acceptance by signing the order. The Contractor shall not accept a Works Authorisation that is not approved and signed by the Employer”.

If the Contractor considers that an instruction constitutes a Variation, the Contractor shall immediately, and before commencing any work related to an instruction, give a notice to the Engineer with reasons for deeming such instruction a Variation and furnish the Employer with a copy thereof. If the Engineer does not respond within seven days confirming, revoking or varying the instruction, the Engineer shall be deemed to have revoked the instruction.”

13.5 Provisional Sums

In the 1st line of sub-paragraph (b) after “services” insert “and including items for which a prime cost sum has been provided in the Bill of Quantities”.

Add the following after the last paragraph:

“The Contractor and Engineer shall follow the procedure as specified in the Project Specification for each Provisional Sum and Prime Cost Sum, prior to any work performed under a Provisional Sum or Prime Cost Sum.”

13.6 **Daywork**

Replace the 2nd and 3rd sentences in the 1st paragraph with “The following procedure shall apply.”

Add the following as the 5th paragraph of this sub-clause:

“The work shall be valued in accordance with the Daywork Schedule included in the Contract or, in the absence of a Daywork Schedule or for items not included in the Daywork Schedule the Contractor shall be paid the aggregate of:

(i) the gross remuneration of the workmen for the time they are actually engaged on the work concerned,

(ii) the net cost of Materials actually used,
(iii) an amount in respect of Contractor's Equipment which shall be charged on a time basis at the rates stated in the Tender, failing which at rates, to be agreed between the Contractor and the Engineer or, failing agreement, to be determined by the Engineer on the basis of ruling equipment hire rates and
(iv) the percentage allowances stated in the Contract Data, which allowances shall be held to cover all charges for the Contractor's and/or Subcontractor's profits, timekeeping, clerical work, insurance, establishment, superintendence and the use of hand tools."

13.8 **Adjustments for Changes in Costs**

Replace this sub-clause with the following:

"The value of certificates issued in terms of Sub-clause 14.6 (excluding the value of those special Materials specified in the Contract Data) shall be increased or decreased by applying a Contract Price adjustment factor calculated according to the formula and the conditions set out in the Contract Price adjustment Schedule appended to these Particular Conditions.

Price adjustments for variations in the costs of special Materials specified in the Contract Data shall be made in the manner set out in the Contract Price adjustment schedule."

14.1 **The Contract Price**

In clause (d), replace "a proposed breakdown of each lump sum price" with "a breakdown of all rates."

Add the following new clause (e):

"(e) the Contractor shall submit to the Engineer within 28 days after the Commencement Date a full breakdown of all rates. The Engineer may take account of the breakdown when evaluating claims and making Determinations."

14.3 **Application for Interim Payment Certificates**

In the 1st line of the 1st paragraph, delete "in six copies."

In the 4th line of the 1st paragraph, change "the report" to "reports."
In the 2nd paragraph, sub-paragraph (c), after "above amounts" insert "and 80% of the value of Materials on Site" and add the following as a final paragraph:

"If, as stated in the Contract Data, a Retention Money Guarantee is permitted and the Contractor elects to furnish it, the guarantee shall, at the cost of the Contractor, be executed by an insurance company or bank in a form approved by the Employer.

The said company or bank shall be registered or licensed to do business in the Republic of South Africa and shall have an office and banking facility in the Republic of South Africa and shall be subject to approval by the Employer.

The aggregate liability under the guarantee shall be the maximum amount of retention monies to be retained by the Employer, which amount shall be as stated in the Contract Data.

Other conditions, if any, additional to the above standard conditions shall be as stated in the Contract Data.

The guarantee shall expire on the date on which the last of the retention monies (which, but for the guarantee, would have been retained by the Employer) becomes payable to the Contractor.

The guarantee shall be returned to the guarantor upon final payment of the aggregate liability or on the date of expiry, whichever is the earlier."

14.5 **Plant and Materials intended for the Works**

In the 1st paragraph delete “If this Sub-Clause applies”.

In the 1st paragraph, after the words, “… sent to the Site for incorporation in the Permanent Works,” add “or if so agreed in writing by the Employer, Plant and Materials intended for incorporation in the Permanent Works and stored at places other than the Site, and clearly demarcated and identified it as the Employer’s property,”

Delete the 2nd paragraph.

In the existing 3rd paragraph add under sub-paragraph (a):
“(iii) ensured that the relevant Plant and Materials have been delivered to and are properly stored on the Site, are protected against, loss, damage, deterioration, and appear to be in accordance with the Contract; and
(iv) provided proof of ownership of the Plant and Materials; and
(v) for Plant and Materials kept off-site, clearly demarcated and identified it as the Employer’s property.”

In the existing 3rd paragraph, delete sub-paragraphs (b) and (c)

14.6 **Issue of Interim Payment Certificates**

In the 2nd line of the 1st paragraph replace “28” with “7”

Add the following new sentences at the end of the first paragraph:

“The date on which the Contractor submits his Statement to the Engineer shall not be later than the 15th of a calendar month. Interim Payment Certificate issued by the Engineer shall not be later than the 22nd of a month. The Contractor shall not delay interim payment certificates for any reason. No measurement and payment dispute by the contractor shall delay an Interim Payment Certificate. Disputes can be evaluated in the following month and if found valid can be corrected and incorporated in the subsequent certificates. If the Contractor fails to make payment to subcontractors of any sum properly due and payable Clause 14.9 Delayed Payment under the Subcontract in the FIDIC Conditions of Subcontract will apply.”

14.7 **Payment**

In sub-paragraphs (b) and (c) of the 1st paragraph replace “56” with “28”.

In sub-paragraphs (b) of the 1st paragraph replace “supporting documents” with “all supporting documents required in terms of the contract;”

Delete the 2nd paragraph.

14.8 **Delayed Payment**

Replace the 2nd paragraph with the following:

“These financing charges shall be at the rate prescribed in terms of the Prescribed Rate of Interest Act, 1975 (Act No 55 of 1975)”.

14.9 **PAYMENT OF RETENTION MONEY**

In the 1st sentence of the 1st paragraph, after the word “Works”, add the following:

“and all outstanding work and defects as stated in the Taking-Over Certificate have been completed”

14.10 **Statement at Completion**

In the 2nd line of the 1st paragraph delete “six” and replace with “three”.

14.11 **Application for Final Payment Certificate**

In the 2nd line of the 1st paragraph delete “six” and replace with “three”.

15.1 **NOTICE TO CORRECT**

Add the following at the end of the paragraph:

“The Notice to correct shall:

describe the Contractor’s failure;
state the Sub-clause and/or provisions of the Contract under which the Contractor has the obligation; and specify the time within which the Contractor shall remedy the failure, which shall be reasonable, taking due regard of the nature of the failure and the work and/or other action required to remedy it.

After receiving a Notice to Correct the Contractor shall immediately respond by giving a Notice to the Engineer describing the measures the Contractor will take to remedy the failure and stating the date on which such measures will be commenced in order with the time specified in the Notice to correct.

The time specified in the Notice to Correct shall not imply any extension of Time for Completion.”

15.2 **Termination by the Employer**

In the 1st paragraph replace the 1st sentence with the following:

“The Employer shall be entitled to give a Notice to Terminate to the Contractor of the Employer’s intention to terminate the Contract or, in the case of sub-paragraph e) or f) below, a Notice of Termination, if the Contractor:”

In sub-paragraph (d), after the words “…the requirement agreement,” add the following “fails to disclose its subcontractor agreements,”

In sub-paragraph (e), after the words “… or carries on business under a receiver,” add the following “or under a business rescue practitioner,”

Delete the word “or” at the end of sub-paragraph (e) and replace sub-paragraph (f) with the following:

"(f) gives or has given, offers to give or has offered to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:

(i) for doing or forbearing to do any action in relation to the Contract or any other contract with the Employer or State Department or Organ of State, or

(ii) for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other contract with the Employer or State Department or Organ of State,

or if any of the Contractor’s Personnel, agents or Subcontractors gives or has given, offers to give or has offered to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor’s Personnel shall not entitle termination,"

17.1 INDEMNITIES

In the 1st paragraph delete “and” at the end of sub-paragraph (b)(i).

Delete the full stop at the end of sub-paragraph (b)(ii) and substitute "," and insert the following sub-paragraphs:

"(c) the loss of output and delay caused by the slowing down or partial or total stoppage of work caused by:

i) all or any of the Contractor's Personnel or ex-Personnel as a result of a dispute between all or any of the Contractor's Personnel or dismissed Contractor's Personnel and the Contractor, or all or any of the Subcontractor's Personnel and the Subcontractor, and

all or any of the Contractor's Suppliers' difficulty or impossibility to deliver goods or materials needed to perform the Works,
any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel or dismissed Contractor's Personnel,
any liability for damage incurred to, or loss of, property within the site identified in the contract documents as not belonging to the Employer regardless of whether or not such damage or loss is caused by the Contractor's equipment,
all damages, losses and expenses (including legal fees and expenses) resulting from 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 Contractor's workforce (or dismissed Contractor's Personnel) as a result of a dispute between all or any of the Contractor's Personnel (or dismissed contractor's Personnel) and the Contractor; or
(ii) all or any of the Contractor's suppliers' difficulty or impossibility to deliver goods or materials needed to perform the Works, and
harm or damage to the environment caused in the performance of the Works."

Add the following final paragraphs:

"To the extent, if any, that the Contractor is responsible for the design of part of the Permanent Works under Sub-Clause 4.1 [Contractor's General Obligations], and/or any other design under the Contract, the Contractor shall also indemnify and hold harmless the Employer against all acts, error or omissions by the Contractor in carrying out the Contractor's design obligations that result in the Works (or Section or Part or major item of Plant, if any), when completed, not being fit for the purpose(s) for which they are intended under Sub-Clause 4.1 [Contractor's General Obligations].

The Contractor shall indemnify the Employer against any liability for physical damage incurred to, or loss of, property within the Site identified in the Contract as not belonging to the Employer regardless of whether or not such damage or loss is caused by the Contractor's equipment.

17.4 **CONSEQUENCES OF EMPLOYER'S RISKS**

In the first sentence of the second paragraph, insert "to the Works, Good or Contractor's Documents" after the word "damage".

17.6 **LIMITATION OF LIABILITY**

In the third line of the first paragraph delete the remainder of the sentence after the comma and substitute:

"other than as specifically provided for in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 12.5 [Non-compliance Damages]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4 [Consequences of Employer's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights]."

18.2 **Insurance for Works and Contractor's Equipment**

In the 4th paragraph, delete the wording of sub-paragraph (d) and replace with the following:

"(d) shall also cover loss or damage to a part of the Works which is attributable to the use or occupation by the Employer of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (g) and (h) of Sub-Clause 17.3 [Employer's Risks], and shall include insurance with the South African Special Risks Insurance Association (SASRIA) that cover loss or damage from the risks listed in sub-paragraph (c) of Sub-Clause 17.3 [Employer's Risks], and"

19.1 Definition of Force Majeure

In the third line of subclause 19.1(iii) insert "or suppliers," after the word "Subcontractors".

19.4 **CONSEQUENCES OF FORCE MAJEURE**

Insert the following after the 1st paragraph:

"If, however, the Contractor is prevented from performing any of his obligations under the Contract by Force Majeure events of the kind listed in clause 19.1 sub-paragraph (iii), the Contractor shall not be entitled to any extension of time for any such delay and shall not be entitled to payment of any such Cost, if all the following conditions are not satisfied:

1. The Contractor has engaged with the persons responsible for the riot, commotion, disorder, strike or lockout; has met with the persons or leaders; and has recorded the persons or leaders details, their grievances, the organisations involved, all threats made; and has requested the persons or leaders to cease all unlawful conduct; and
2. The Contractor has obtained proof of the riot, commotion, disorder, strike or lockout, and of any unlawful conduct; and
3. The Contractor has reported all threats and unlawful conduct to the South African Police Service; and
4. The Contractor has brought an urgent application to the court on an ex parte basis that correctly identify the respondents and define the unlawful conduct to be interdicted; and
5. The Contractor has exhausted all available legal and other remedies to ensure that the court order is enforced."

19.5 Force Majeure Affecting Subcontractor

Amend the title to read "Force Majeure Affecting Subcontractor and Supplier".

In the first line insert "or supplier" after the word "Subcontractor"

20.1 Contractor's Claims

In paragraph 5, insert the following after the first sentence:

"If an extension of time is granted the Contractor shall be paid such time-related Preliminary and General allowances as are appropriate having regard to any other compensation which may already have been granted in respect of the circumstances concerned. Payment of costs additional to the above will only be considered if the costs derive from claims that fall within the terms of Clause 13 [Variations and Adjustments] and/or Sub-clause 17.3 [Employer's Risks]."

Replace the 6th paragraph with the following:

"After receiving a claim or any further particulars supporting a previous claim, the Engineer shall present such claim or particulars to the Employer, together with his recommendations, for a ruling, which ruling shall be given to the Contractor within 42days after receiving a claim or any further particulars, provided that the said period of 42days may be extended by application from one Party and approval of the other. If the Employer fails to give his ruling within the specified period, or agreed extension thereto, it shall be deemed that the Employer has dismissed the claim."

Delete the 8th paragraph.

20.2 to 20.8

Replace these sub-clauses with the following:

20.2 Settlement of Disputes

(a) The Contractor shall have the right to dispute any ruling given or deemed to have been given by the Employer or the Engineer, provided that, unless the Contractor shall, within 42 days after his receipt of a ruling or after a ruling shall have been deemed to have been given, give written notice (hereinafter referred to as a "Dispute Notice") to the Engineer, referring to this Clause, disputing the validity or correctness of the whole or a specified part of the ruling, he shall have no further right to dispute that ruling or the part thereof not disputed in the said Dispute Notice.

(b) All further references herein to a ruling shall relate to the ruling, or part thereof, specified in the Dispute Notice, as varied or added to by agreement between the Contractor and the Engineer or by the Engineer's decision in terms of sub-paragraph (c) or by the Mediator's opinion to the extent that it has become binding in terms of Sub-clause 20.3(f).

(c) The Engineer shall

i) before giving his decision on the dispute, consult the Employer thereon and give the Contractor a reasonable opportunity to present written or oral submissions thereon, which latter shall be confirmed in writing within 7 days
ii) deliver his decision in writing to the Employer and to the Contractor, and
iii) give his decision within 56 days of his receipt of the Dispute Notice, or within any further period as may be agreed between the Engineer and the Contractor, failing which, he shall be deemed to have given a decision affirming, without amendment, the ruling concerned.

(d) Unless either the Employer or the Contractor, shall, within 28 days after his receipt of notice of the decision in terms of sub-paragraph (c)(ii) or after the decision is deemed to have been given in terms of sub-paragraph (c)(iii), have given notice in writing to the Engineer, with a copy to the other Party, disputing the Engineer's decision or a specific part thereof, he shall have no further right to dispute any part of the ruling not specified in his said notice.

(e) If either Party shall have given written notice in compliance with sub-paragraph (d), the dispute shall be referred to mediation in terms of Sub-Clause 20.3 unless either Party has given written notice to the other Party of its intention to refer the matter in dispute to court, which notice shall be given either:

i) within 28 days of receipt of notice of the Engineer's decision, or

ii) within 14 days of receipt by the one Party of the other Party's notice of dispute of the Engineer's decision.

If notice of intention to refer the matter in dispute to Court has been served by either party, the matter in dispute shall not be referred to mediation but shall be referred to Court.

(f) Notwithstanding that the Contractor may, in respect of a ruling, have given a Dispute Notice, the ruling shall be of full force and carried into effect unless and until otherwise agreed by both Parties in terms of Sub-Clause 20.3(f) or as determined in a court judgement.

20.3 Mediation

(a) The mediation referred to in Sub-Clause 20.2(e) shall be conducted by a mediator selected by agreement between the Parties or, failing such agreement within 7 days after a written request by either Party for such agreement, nominated on the application of either Party by the President for the time being of the South African Institution of Civil Engineering.

If, for any reason, the person appointed fails to assume or to continue in the office concerned:

(i) the provisions of Sub-Clause 20.3 shall apply mutatis mutandis in the appointment of a successor, and

(ii) in making his nomination in terms of this sub-clause, the president for the time being of the South African Institution of Civil Engineering shall, at his own discretion, act in consultation with the presidents for the time being of Consulting Engineers South Africa and the South African Federation of Civil Engineering Contractors, and

(iii) if the president required to make a nomination in terms of this sub-clause shall have a direct or indirect interest in the subject matter of the dispute, the nomination shall be made by the chief executive officer or the next senior officer of the body concerned who has no such interest.

(b) Neither Party shall be entitled to be represented at any hearing before, or at, any meeting, or in any discussion, with the mediator except by any of the following:

the Party himself, if a natural person,
a partner in the case of a partnership,
an executive director in the case of a company,
a member in the case of a close corporation,
the Engineer,
a bona fide employee of the party concerned, and
a professional engineer appointed for the purpose by the Party concerned.

(c) The mediator shall, as he deems fit, follow formal or informal procedure and receive evidence or submissions orally or in writing, sworn or unsworn, at joint meetings with the Parties or separately or from any person whom he considers can assist in the formulation of his opinion, provided that:

each Party shall be given reasonable opportunities of presenting evidence or submissions and of responding to evidence or submissions of the other Party, and

each Party shall be given full details of any evidence or submissions received by the Mediator from the other Party or any other person otherwise than at a meeting where both Parties are present or represented.

(d) The mediator shall have the power to propose to the Parties compromise settlements of or agreements in disposal of the whole or portion of the dispute.

(e) The mediator shall, as soon as reasonably practical, give to each of the Parties his written opinion on the dispute, setting out the facts and the provisions of the Contract on which the opinion is based and recording the details of any agreement reached between the Parties during the mediation.

(f) The mediator's opinion shall become binding on the Parties only to the extent correctly recorded as being agreed by the Parties in the mediator's written opinion or otherwise as recorded as being agreed in writing by both Parties subsequent to the receipt of the mediator's opinion.

(g) The dispute on any matter still unresolved after the application of the provisions of sub-paragraph (f) shall be resolved by court proceedings.

(h) Save for reference to any portion of the mediator's opinion which has become binding in terms of sub-paragraph (f), no reference shall be made by or on behalf of either Party, in any proceedings subsequent to mediation, to the mediator's opinion, or to the fact that any particular evidence was given, or to any submission, statement or admission made in the course of the mediation.

Irrespective of the nature of the mediator's opinion:

each Party shall bear his own costs arising from the mediation, and

(ii) the Parties shall in equal shares pay the mediator the amount of his expenses and the amount of his fee based on a scale of fees as agreed between the mediator and the Parties before the commencement of the mediation.

20.4 **Reference to Court**

If a dispute is still unresolved as provided for in sub-paragraph (g) of sub-clause 20.3 or the dispute is one described in sub-clause 20.5, the dispute shall be determined by court proceedings, provided that:

(a) nothing herein contained shall deprive the Contractor of the right to institute immediate court proceedings in respect of failure by the Employer to pay the amount of a payment certificate on its due date or to refund any amount of retention money on its due date for refund,
(b) no ruling or decision given by the Engineer in accordance with the provisions of the Contract shall disqualify him from being called as a witness and giving evidence before the court on any matter whatsoever relevant to the dispute concerned, and
(c) the court shall have full power to open up, review and revise any ruling, decision, order, instruction, certificate or valuation of the Engineer relevant to the matter in dispute.
(d) nothing herein precludes the Employer from approaching the Courts, as a matter of first instance, with regards to any disputes it believes it has against the Contractor and/or in defence to claims made by the latter.

20.5 **Special Disputes**

Notwithstanding anything elsewhere provided in sub-clauses 20.2, 20.3 and 20.4, any dispute between the Contractor and the Employer,

(a) not relating to a ruling, decision, order, instruction or certificate by the Engineer, or
(b) arising after the completion of the Contract or, if a Defects Notification Period is provided, after the termination of that period,

shall be determined, without the application of the provisions of sub-clauses 20.2 and 20.3 by court proceedings which may be initiated by either Party, in which event the provisions of sub-clause 20.4 shall apply.

20.6 **Continuing Validity of sub-clauses 20.2 to 20.6**

Sub-clauses 20.2 to 20.6 inclusive constitute a separate, divisible agreement from the rest of the Contract and shall remain valid and applicable, notwithstanding that the Works may have been completed or that the rest of the Contract may be void or voidable or may have been cancelled for any reason."

APPENDIX: General Conditions of Dispute Adjudication Agreement

Delete this appendix

ANNEX: Procedural Rules

Delete this annexure

APPENDIX TO THE PARTICULAR CONDITIONS: CONTRACT PRICE ADJUSTMENT SCHEDULE

1. Contract Price Adjustment

In accordance with sub-clause 13.8, the value of each certificate issued in terms of sub-clause 14.6 shall be increased or decreased by the amount obtained by multiplying "Ac", defined in clause 2 of this Schedule, by the Contract Price adjustment factor, rounded off to the sixth decimal place (or the fourth decimal place if expressed as a percentage), determined according to the formula:

$$(1 - x) * [(aLt/Lo) + (bEt/Eo) + (cMt/Mo) + (dFt/Fo) - 1]$$

in which the symbols have the following meanings:

"x" is the proportion of "Ac" which is not subject to adjustment. Unless otherwise stated in the Appendix this proportion shall be 0,15.

"a", "b", "c" and "d" are the co-efficients determined by the Engineer and specified in the Appendix to Tender, which are deemed, irrespective of the actual constituents of the work, to represent the proportionate value of labour, equipment, materials (other than "special materials" specified, in terms of sub-clause 13.8, in the Appendix to Tender) and fuel respectively. The arithmetical sum of "a", "b", "c", and "d" shall be unity.

"L" is the "Labour Index" and shall be the price index for "Consumer Price Index" for the Province specified in the Appendix to Tender, as published in the Statistical Release P0141, Table A, of Statistics South Africa.

"E" is the "Equipment Index" and shall be the price index for "Plant and Equipment", as published in the Statistical Release P0151.1, Table 4, of Statistics South Africa.

"M" is the "Materials Index" and shall be the price index for the "Civil Engineering Materials" product specified in the Appendix to Tender, as published in the Statistical Release P0151.1, Table 6, of Statistics South Africa.

"F" is the "Fuel Index" and shall be the price index for "Coal and Petroleum Products", for "Diesel", as published in the Statistical Release P0142.1, Table 1, of Statistics South Africa.

The suffix "o" denotes the basic indices applicable on the Base Date as defined in sub-clause 1.1.3.1 of the General Conditions of Contract.

The suffix "t" denotes the current indices applicable to the month in which the last day of the period falls to which the relevant payment certificate relates.

If any index relevant to any particular Payment Certificate is not known at the time when the certificate is prepared, the Engineer may estimate the value of such index. Any correction which may be necessary when the correct indices become known shall be made by the Engineer in subsequent Payment Certificates.

2. Assessment of amount subject to adjustment

For the purpose of calculating the adjustment to the value of the relevant certificates, the amount "Ac" shall be determined by the formula:

$$Ac = T - S - D - W - G - Ap$$

In which formula the symbols have the following meanings:

"T" is the summation of the total value of the:

(i) preliminary and general items,
(ii) work done, and
(iii) Materials on Site,

as certified in the Payment Certificate under consideration without any deduction whatsoever and before any adjustment made in terms of this Schedule

"S" is the aggregate of (i), (ii), (iii) and (iv), referred to below, and included in "T":

(i) the amounts actually expended and substituted for any prime cost sums;
(ii) the value of any work done by Nominated Subcontractors;
(iii) the value of any work done against Provisional Sums;
(iv) the value of any extra or additional work done under a Works Authorisation,

where special arrangements for price adjustments in respect of those amounts were made and recorded at the time the work was ordered.

"D" is the value of work included in "T" and done at new rates fixed in terms of sub-clause 12.3, where those rates are not based on labour, Contractor's Equipment or Materials costs in force at the time of tendering. Generally new rates may be based on current costs and de-escalated to the Base Date of the indices, in which case work done at these rates shall not be included in the value of "D".

"W" is the amount included in "T" and paid for any Daywork executed at Cost plus percentage allowances as set out in sub-clause 13.6 as amended by Particular Condition.

"G" is the amount included in "T" for Materials classified and dealt with as "special materials" in terms of sub-clause 13.8 as amended by Particular Condition.

"Ap" is the summation of all "Ac" amounts determined in terms of Clause 2 of this Schedule for all Payment Certificates preceding in time the Payment Certificate under consideration.

3. Reduction of CPAF after Time for Completion has expired — Save only for Variations ordered to be carried out after the Time for Completion has expired, the Contract Price adjustment factor to be applied to certificates relating to work done or materials supplied after the expiry of the Time for Completion shall be half the factor calculated by inserting in the formula referred to in Clause 1 of this Schedule the indices Lt, Et, Mt and Ft applicable at the date of expiry of the Time for Completion.

4. Special materials — The price of each "special material" specified in the Appendix to Tender shall be increased or decreased by the net amount of any variation incurred after the date of the Tender on the basis set out in the Contract, provided that any claim for adjustment in terms hereof shall be substantiated by the submission of acceptable invoices and any other supporting documents which the Engineer considers necessary for that purpose. However, except for Variations ordered in terms of Clause 13 (Variations and Adjustments) all adjustments after expiry of Time for Completion shall be increased or decreased by half the net amount of such calculated variation.

For the purpose of this clause, "the net amount of any Variation" in respect of a particular material referred to as a "special material" in terms of sub-clause 13.8 shall be calculated by multiplying the difference between the rate or price entered in the Contract by the Contractor for that Material and the equivalent rate or price actually paid by the Contractor for the Material by the quantity of the Material in question.

5. Assessment of indices if certificates are not issued monthly — If more than one month intervenes between the month applicable to any Payment Certificate and the month applicable to the immediately succeeding payment certificate, then the indices "Lt", "Et", "Mt" and "Ft" applicable to the succeeding Payment Certificate shall each be taken as the arithmetic mean, rounded off to the second decimal place, of the relevant indices applicable to the month of measurement and to such intervening months.

C1.2.2 CONTRACT DATA - INFORMATION PROVIDED BY THE EMPLOYER

Notes to tenderer:

1. **This form is the equivalent of the Appendix to Tender as defined in Sub-Clause 1.1.1.9 of the FIDIC Conditions of Contract.**
2. **Clause numbers (Cl. No.) refer to the FIDIC Conditions of Contract. The prefix A refers to an amendment to these conditions.**

Sub-Clause	Item	Data
1.1.2.2	Employer	means the South African National Roads Agency SOC Limited instituted in terms of the South African National Roads Agency Limited and National Roads Act (Act No. 7 of 1998) or a person delegated by the South African National Roads Agency SOC Limited to act on its behalf. The Employer's address is: The South African National Roads Agency SOC Limited 48 Tambotie Avenue Val De Grace Pretoria, 0184
1.1.2.4	Engineer	means The engineer's address to be used for this contract is: *Physical address*:TBA *Postal address:TBA*
1.3	Communications	The addresses for communication between the parties shall be: The addresses for communication between the parties shall be: Employer: SANRAL Physical address: The South African National Roads Agency SOC Limited 48 Tambotie Avenue Val De Grace Pretoria, 0184
1.1.3.3	Time for Completion	60 months
1.1.3.7	Defects Notification Period	6 months
1.1.6.5	Laws	The law governing this contract is South African Law.
2.1	Right of Access to the Site	Shall be the Commencement Date.

Sub-Clause	Item	Data
PC4.2	Performance Security	5% of the accepted contract amount excluding VAT (Cl no. 4.11)
4.3	Contractor's representative	Where the Contracts Manager is the key person but will not be employed on the works full time, his powers will be delegated to the approved construction manager (Contractor's Representative).
PC4.4	Subcontractors and Suppliers	The Contractor shall disclose all subcontracting arrangements. If the Contractor fails to disclose, he shall be given 14 days to make representation as to why: the contract shall not be terminated; and the Contractor shall not be penalised up to 10% of the value of the contract. The Contractor shall not subcontract more than 25% of the value of the contract to any enterprise that does not have an equal or higher B-BBEE status level of contributor, unless the contract is subcontracted is an Exempted Micro Enterprise that has the capability and ability to execute the subcontract. The total retention money held for subcontractors shall not exceed the maximum value of the retention money as specified under 14.3(c) and shall be held pro-rata per subcontractor. 50% of the retention money held for each subcontractor shall be released on completion of the subcontract works. All subcontractors and suppliers counting towards the subletting percentage, shall be registered with National Treasury's Central Supplier Database (CSD) as made available by the Employer.
6.2	Rates of Wages and Conditions of Labour	The Contractor and his Subcontractors shall be registered with the National Bargaining Council for the Electrical Engineering Industry of South Africa (Government Notice R.3423 – Part II contained in Government Gazette N0. 48627) and rates for Wages and Conditions of labour agreed by the Bargaining Council for the Electrical Engineering Industry shall apply except where a specific industry publishes its own Wage rates and Conditions of Labour.
6.5	Working Hours	Special non-working days are the designated public holidays (including all foreseeable statutory declared election days)
6.9	Contractor's personnel	Where the key personnel are no longer available to undertake the necessary work after the award of the contract, the Contractor shall within a period of 14 working

<table>
<tr><th>Sub-Clause</th><th>Item</th><th>Data</th></tr>
<tr><td></td><td></td><td>days replace the key personnel stated in the Appendix to Tender with personnel with equivalent competencies and subject to approval by the Employer. Such approval shall not be unreasonably withheld.</td></tr>
<tr><td>PC8.1</td><td>Commencement of Works</td><td>As stated in the Form of Acceptance.</td></tr>
<tr><td>PC8.1</td><td>Period in which work must commence</td><td>The Commencement Date shall be the date on which the site hand-over meeting is held.</td></tr>
<tr><td>8.7</td><td>Delay Damages</td><td>As per Table C3.1.9/3 in part C3 per occurrence or as stipulated otherwise in the contract document.</td></tr>
<tr><td>PC12.3</td><td>Evaluation</td><td>The term “fixed rate item” shall apply to all items of work listed in the Pricing Schedule (Including agreed items of work listed in Works Authorisations).</td></tr>
<tr><td>PC13.6</td><td>Daywork Allowances</td><td>Not required (Dayworks provided for in the pricing schedule).</td></tr>
<tr><td>PC13.8</td><td>Adjustments for Changes in Cost</td><td>Statistical Releases published by Statistics South Africa
Base Date: 28 days prior to Tender closure
CPA factor rounded to fourth decimal</td></tr>
<tr><td></td><td colspan="2">
<table>
<tr><th colspan="5">TABLE OF ADJUSTMENT DATA</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Coefficient</td><td>Resource</td><td>Definition</td><td>Publication</td><td>Table</td></tr>
<tr><td>x = 0,15</td><td>Fixed</td><td></td><td></td><td></td></tr>
<tr><td>a = 0,20</td><td>Labour (L)</td><td>Province of Gauteng, Northwest, Mpumalanga and Limpopo</td><td>P0141</td><td>A</td></tr>
<tr><td>b = 0,10</td><td>Equipment (E)</td><td>Electrical Engineering Plant</td><td>P0151.1</td><td>4</td></tr>
<tr><td>c = 0,65</td><td>Material (M)</td><td>Electrical Engineering Street lighting infrastructure material (excl. Bitumen)</td><td>P0151.1</td><td>5</td></tr>
<tr><td>d = 0,5</td><td>Fuel (F)</td><td>Diesel (Coal and Petroleum products)</td><td>P0142.1</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>PC14.3
(c)</td><td>Retention Money
- Percentage

- Limit</td><td>
10% of value of completed work

5% of contract value</td></tr>
<tr><td>PC14.6</td><td>Minimum amount of Interim Payment Certificate</td><td>R 100,000.00</td></tr>
<tr><td>14.15</td><td>Currencies of Payment</td><td>South African Rand</td></tr>
<tr><td>PC17.3
(c)</td><td>Contractor to insure with SASRIA</td><td>Required</td></tr>
</table>

Sub-Clause	Item	Data
PC18.1	Minimum insurance cover for loss of or damage to property (except the Works, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the Contractor) caused by activity in connection with the contract	R 20,000,000.00
C3.3.4.4	Environmental Management Plan (EMPl)	DEO means: Designated Environmental Officer
Part D	Target Area(s)	For Targeted Labour: For Targeted Enterprises: i) Suppliers of goods and services: South Africa ii) CIDB 1 to 2 contractors: Through the PLC and market analysis relevant target areas will be identified iii) CIDB 3 and higher contractors: Through the PLC and market analysis relevant target areas will be identified If a sufficient number of contractors are not found in the specified target area, the target area will be expanded to allow sufficient participation to ensure a competitive tender process. For Targeted Enterprises:
Part D	Contract Participation Goals (CPG) Targeted Enterprise Sub-targets: CIDB level 1 to 2 CIDB level 3 to CIDB 5	Any portion of the Works subcontracted under this Contract, shall be done in terms of Part D: Stakeholder and Community liaison, and Targeted labour and Targeted Enterprises utilisation and development. Min 30% of contract value to be sublet to Targeted Enterprises. Minimum of 10% to a maximum 15% of the Contract Value must be advertised for CIDB level 1 to 2 in the Target Area. Maximum package duration 18 months without the option to extend. Minimum of 25% of Contract Value must be advertised for CIDB level 3 to 5. Maximum package duration 30 months.

C1.3.1 AGREEMENT IN TERMS OF THE OCCUPATION HEALTH AND SAFETY ACT 1993 (ACT NO. 85 OF 1993) AND CONSTRUCTION REGULATIONS, 2014

This AGREEMENT made at .....

on this ..... day of ..... in the year .....

between THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED (hereinafter called "the Employer") on the one part, herein represented :……..TBC

in his capacity as ……..TBC

and delegate of the Employer in terms of the Employer's standard powers of delegation pursuant to the provisions of Act No. 7 of 1998, and .....

(hereinafter called "the Mandatary") on the other part, herein represented by .....

.....

in his capacity as

WHEREAS the Employer is desirous that certain works be constructed, viz.

CONTRACT SANRAL X.002-208-2025/9

ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE.

and has accepted a tender by the Mandatary for the construction, completion & maintenance of such works and has appointed the Mandatary in terms of Regulation 5(1)(k) of the Construction Regulations 2014, and whereas the Employer and the Mandatary have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatary with the provisions of the Occupational Health and Safety Act 1993 (Act 85 of 1993);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. The Mandatary shall execute the work in accordance with the contract documents pertaining to this contract.

2. This Agreement shall hold good from its commencement date, to either :

   a) the date of the Performance Certificate issued in terms of sub-clause 11.9 of the Conditions of Contract for Construction for Building and Engineering Works designed by the Employer (1999) published by Federation Internationale des Ingenieurs-Conseils (FIDIC), as contained in Volume 1 of the contract documents pertaining to this contract, or

   b) the date of termination of the contract in terms of clauses 15, 16 or 19 of the GCC.

3. The Mandatary declares himself to be conversant with the following:-

a) All the requirements, regulations and standards of the Occupational Health and Safety Act (Act 85 of 1993), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of The Act.

i) Section 8: General duties of employers to their employees.
ii) Section 9: General duties of employers and self-employed persons to persons other than employees.
iii) Section 37: Acts or omissions by employees or mandataries and
iv) Sub-section 37(2) relating to the purpose and meaning of this Agreement.

b) The procedures and safety rules of the Employer as pertaining to the Mandatary and to all his subcontractors.

4. In addition to the requirements of sub-clause 4.8, 6.7 and 17.1 of the GCC and all relevant requirements of Volume 3 of the contract documents pertaining to this contract, the Mandatary agrees to execute all the works forming part of this contract and to operate and utilize all machinery, plant and equipment in accordance with The Act.

5. The Mandatary is responsible for the compliance with the Act by all his subcontractors, whether or not nominated and/or approved by the Employer.

6. The Mandatary warrants that all his and his subcontractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act 1993, which cover shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.

7. The Mandatary undertakes to ensure that he and/or his subcontractors and/or their respective employees will at all times comply with the following conditions:

a) The Mandatary shall assume the responsibility in terms of Section 16.1 of The Act. The Mandatary shall not delegate any duty in terms of Section 16.2 of The Act without the prior written approval of the Employer. If the Mandatary obtains such approval and delegates any duty in terms of section 16.2 a copy of such written delegation shall immediately be forwarded to the Employer.

b) All incidents referred to in The Act shall be reported by the Mandatary to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.

c) The Employer hereby obtains an interest in the issue of any formal enquiry conducted in terms of section 32 of The Act into any incident involving the Mandatary and/or his employees and/or its subcontractors.

In witness thereof the parties hereto have set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF EMPLOYER: .....

WITNESS 1: .....

NAME (IN CAPITALS) .....

WITNESS 2: .....

NAME (IN CAPITALS) .....

SIGNED FOR AND ON BEHALF OF THE MANDATARY .....

WITNESS 1: .....

NAME (IN CAPITALS): .....

WITNESS 2: .....

NAME (IN CAPITALS) .....

C1.3.1 FORM OF GUARANTEE

Note to tenderer:
This pro-forma guarantee is included for information purposes only. Where required in terms of the Contract, a separate form of Guarantee will be issued to the successful tenderer for completion and signature

TO: The South African National Roads Agency SOC Limited
PO Box 415
Pretoria
0001

PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

1. I/We, the undersigned,

   ……..and……..

   in our capacity as

   ……and ……..

   and as such duly authorised to represent:……

   …….

   (hereinafter referred to as "the Guarantor")(in the case of a company a Resolution to be attached) do hereby hold at your disposal the amount of …….
   ……..(R……) (the "guaranteed amount") for the due fulfilment by (*insert the name of Service Provider)* (hereinafter referred to as "the Service Provider") of its obligations to The South African National Roads Agency SOC Limited (hereinafter referred to as "SANRAL") in terms of the above stated contract between the Service Provider and SANRAL.

2. We hereby renounce the benefits of the exceptions *non numeratae pecuniae, non causa debiti, excussionis* and *divisionis*, the meanings and effect whereof we declare ourselves to be fully conversant.

3. We undertake and agree to pay to SANRAL the said guaranteed amount or such portion as may be demanded on receipt of a written demand from SANRAL, which demand may be made by SANRAL, if in your opinion and at your sole discretion, the said Service Provider fails and/or neglects to commence the work as prescribed in the contract or if he fails and/or neglects to proceed therewith or if, for any reason, he fails and/or neglects to complete the services in accordance with the condition of contract, or if he fails or neglects to refund to SANRAL any amount found to be due and payable to SANRAL, or if his estate is sequestrated or if he surrenders his estate in terms of the Insolvency Law in force within the Republic of South Africa.

4. Subject to the above and without in anyway detracting from your rights to adopt any of the procedures set out in the contract, the said demand can be made by you at any stage.

5. The said guaranteed amount or such portion as may be demanded may be retained by SANRAL on condition that after completion of the service as stipulated in the contract, SANRAL shall account to the Guarantor showing how this amount has been utilised and refund to the Guarantor any balance due.

6. This guarantee is neither negotiable nor transferable and

   (a) must be surrendered to us at the time when SANRAL accounts to the Guarantor in terms of clause 5 above, or
   (b) shall lapse upon the issue of the Taking-Over Certificate for the construction Works of the project, and

(c) shall not be interpreted as extending the Guarantor's liability to anything more than payment of the amount guaranteed.

7. This guarantee shall be governed by South African Law and subject to the jurisdiction of South African Courts.

THUS DONE AND SIGNED AT …… ON THIS ……DAY

OF …… 20 ……..

GUARANTOR ……..……..

NAME (IN CAPITALS) ……..……..

AS WITNESSES: 1……..…. 2 ……..……

NAMES (IN CAPITALS) 1 ..…..…… 2 ……..

ADDRESSES: 1…..…… 2 ……..……

C1.3.2 AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993 (ACT NO 85 OF 1993) AND CONSTRUCTION REGULATIONS 2014

This AGREEMENT made at .....

on this the ..... day of ..... in the year .....

between THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED (hereinafter called "the Employer") on the one part, herein represented by .....TBA

in his capacity as ..... TBA

and delegate of the Employer in terms of the Employer's standard powers of delegation pursuant to the provisions of Act No. 7 of 1998, and .....

(hereinafter called "the Mandatary") on the other part, herein represented by .....

.....

in his capacity as .....

WHEREAS the Employer is desirous that certain works be designed, viz

PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

and has accepted a tender by the Mandatary for the design and construction supervision of such works and has appointed the Mandatary in terms of Regulation 5(5) of the Construction Regulations 2014, and whereas the Employer and the Mandatary have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatary with the provisions of the Occupational Health and Safety Act 1993 (Act 85 of 1993);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

3. The Mandatary shall execute the work in accordance with the contract documents pertaining to this contract.

4. This Agreement shall hold good from its commencement date, to either :

   a) the date of the construction contract Performance Certificate issued in terms of sub-clause 11.9 of the Conditions of Contract for Construction for Building and Engineering Works designed by the Employer (1999) published by Federation Internationale des Ingenieurs-Conseils (FIDIC), as contained in Volume 1 of the contract documents pertaining to this contract, or
   b) the date of termination of this contract in terms of Clause 8 of the CIDB's Standard Conditions of Contract for Professional Services.

4. The Mandatary declares himself to be conversant with the following:-

   a) All the requirements, regulations and standards of the Occupational Health and Safety Act (Act 85 of 1993), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of The Act.
      i) Section 8: General duties of employers to their employees.
      ii) Section 9: General duties of employers and self-employed persons to persons other than employees.

iii) Section 37: Acts or omissions by employees or mandataries and
iv) Sub-section 37(2) relating to the purpose and meaning of this Agreement.

c) The procedures and safety rules of the Employer as pertaining to the Mandatary and to all his sub-service providers.

4. In addition to the requirements of the agreed contract, the Mandatary further agrees to strictly adhere to his duties and responsibilities as set out in Regulation 6 of the Construction Regulations 2014.

5. The Mandatary is responsible for the compliance with the Act by all his sub-service providers, whether or not nominated and/or approved by the Employer.

6. The Mandatary warrants that all his and his sub-service provider's' employees are covered in terms of the Compensation for Occupational Injuries and Diseases Act 1993, which cover shall remain in force whilst any such employees are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.

7. The Mandatary undertakes to ensure that he and/or his sub-service providers and/or their respective employees will at all times comply with the following conditions:

d) The Mandatary shall assume the responsibility in terms of Section 16.1 of The Act. The Mandatary shall not delegate any duty in terms of Section 16.2 of The Act without the prior written approval of the Employer. If the Mandatary obtains such approval and delegates any duty in terms of section 16.2 a copy of such written delegation shall immediately be forwarded to the Employer.
e) All incidents referred to in Section 24 of The Act shall be reported by the Mandatary to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.
f) The Employer hereby obtains an interest in the issue of any formal enquiry conducted in terms of section 32 of The Act into any incident involving the Mandatary and/or his employees and/or its sub-service providers.

In witness thereof the parties hereto have set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF EMPLOYER: .....

WITNESS 1: .....

NAME (IN CAPITALS) .....

WITNESS 2: .....

NAME (IN CAPITALS) .....

SIGNED FOR AND ON BEHALF OF THE MANDATARY .....

WITNESS 1: .....

NAME (IN CAPITALS): .....

WITNESS 2: .....

NAME (IN CAPITALS) .....

C1.3.5 APPOINTMENT OF PRINCIPAL CONTRACTOR IN TERMS OF SECTION 5.1(k) OF THE CONSTRUCTION REGULATIONS, 2014 INCORPORATED IN THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT 85 OF 1993

APPOINTMENT OF PRINCIPAL CONTRACTOR BY CLIENT (EMPLOYER)

This AGREEMENT made at .....
on this the ..... day of ..... in the year .....
between THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED (hereinafter called "the Client") on the one part, herein represented by ..... *TBC*
in his/her capacity as ..... *TBC*
and delegate of the Client in terms of the Client's standard powers of delegation pursuant to the provisions of Act No. 7 of 1998, and .....
(hereinafter called "the Principal Contractor") on the other part, herein represented by .....
.....
in his capacity as .....

WHEREAS the Client is desirous that certain works be constructed, viz. CONTRACT SANRAL: X.002-208-2025/9
for **PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE**
and has accepted a tender by the Principal Contractor for the construction, completion & maintenance of the works.

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. The Principal Contractor shall execute the work in accordance with the contract documents pertaining to this contract.

2. This Agreement shall hold good from its commencement date, to either :
   a) the date of the Performance Certificate issued in terms of sub-clause 11.9 of the Conditions of Contract for Construction for Building and Engineering Works designed by the Employer (1999) published by Federation Internationale des Ingenieurs-Conseils (FIDIC), as contained in Volume 1 of the contract documents pertaining to this contract, or
   b) the date of termination of the contract in terms of clauses 15, 16 or 19 of the GCC.

3. The Principal Contractor declares himself to be conversant with all the requirements and standards of the Occupational Health and Safety Act (Act 85 of 1993) together with its amendments and incorporated Regulations, hereinafter referred to as "The Act", and with special reference to the Construction Regulation Section 7: Duties of Principal Contractor and Contractor.

4. The Principal Contractor is responsible for the compliance with the Act by all his subcontractors and suppliers when entering the construction site, whether or not nominated and/or approved by the Client.

5. The Principal Contractor warrants that all his and his subcontractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act 1993, which cover shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.

6. The Principal Contractor warrant that adequate provision has been made for the cost of health and safety measures during the execution of the project, and that sufficient resources (including competent personnel) are available to carry out the construction work safely.

7. The Principal Contractor warrants that that the Employer / Client has carried out his duties in terms of Construction Regulation 5.1(a)(b)(f):
   Section 5.1(a): A baseline risk assessment for the intended construction work was prepared by the client and included in the tender documentation.
   Section 5.1(b) & (f): A suitable, sufficiently documented and coherent site specific health and safety specification for the intended construction work based on the baseline risk assessment was included in the tender documentation.

In witness thereof the parties hereto have set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF EMPLOYER: .....

WITNESS 1: .....

NAME (IN CAPITALS) .....

WITNESS 2: .....

NAME (IN CAPITALS) .....

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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 the Standard Specifications as amended in the Scope of Works.

C2.1.2 The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are detailed in the Standard Specifications.

C2.1.3 For the purposes of the Bill of Quantities, the following words shall have the meanings hereby assigned to them.

Unit: The unit of measurement for each item of work as defined in the Standard Specifications or the Scope of Works.

Quantity: The number of units of work for each item.

Rate: The payment per unit of work for which the Contractor tenders to do the work.

Amount: The product of the quantity and the rate tendered for an item.

Lump Sum: An amount tendered for an item, the extent of which is described in the Bill of Quantities, the Scope of Work or elsewhere, but of which the quantity of work is not measured in units.

Prime cost: Is a specific type of Provisional Sum where payment is made on the production of invoices showing the cost price of the implementation or installation of the service required. Services rendered in this manner carry a mark-up for which a rate is offered at tender stage to cover all the Contractor's overhead charges and profit in providing the item or services.

Provisional Sum: A sum (if any) which is specified in the contract as a provisional sum, for the execution of any part of the works or the supply of plant, materials or services under sub-clause 13.5 (Provisional sums).

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 Bill of Quantities 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.stanza.org,za or www.iso.org for information standards).

C2.1.6 The prices and rates in the Bill of Quantities are fully inclusive prices for the work described under the items, and include all duties, taxes (except Value Added Tax) and other levies payable by the Contractor. 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, 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. A complete breakdown of all rates in electronic format (Excel) on a separate Flash drive must be submitted with the completed pricing schedule. The rates are to be clearly referenced to the relevant pay item numbers, with each rate broken down into its labour, materials, plant, fuel, overhead charges and profit components.

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 Bill of Quantities 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.stanza.org.za or www.iso.org for information standards).

C2.1.6 The prices and rates in the Bill of Quantities are fully inclusive prices for the work described under the items, and include all duties, taxes (except Value Added Tax) and other levies payable by the Contractor. 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, 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. A complete breakdown of all rates in electronic format (Excel) on a separate Flash drive must be submitted with the completed pricing schedule. The rates are to be clearly referenced to the relevant pay item 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 An item against which no price is entered will be considered to be covered by the other prices or rates in the Pricing Schedule. 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 Bill of Quantities 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 Bill of Quantities.

C2.1.10 Reasonable compensation will be received where no pay item appears in the Bill of Quantities in respect of work required in terms of the Contract and which is not covered in any other pay item.

C2.1.11 The short descriptions of the items of payment given in the Bill of Quantities 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 Bill of Quantities refer to the corresponding item numbers in the Standard Specifications.

C2.1.13 The pricing schedules are provided electronically on the Compact Disc. A printout of the entire completed Bill of Quantities must be signed and attached to the tender as well as an electronic copy of the priced Bill of Quantities. In the event of any discrepancy between the signed printed copy, and the electronically submitted copy, the tender rates in the signed copy will govern. The item numbers and description of the PDF document will govern. The item numbers and description of the PDF 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)

CONTRACT SANRAL: X.002-208-2025/9

ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE GAUTENG: PACKAGE 3: CITY OF EKURHULENI.

Notes to tenderer:

1) **If the Form of Offer is submitted but the Pricing Schedule is omitted**
    i. **Where rate only items are applicable**
2) **If a signed Form of Offer is submitted with an incomplete pricing schedule (no summary to tender) that does not balance back to the Form of Offer**
    i. ***Pricing Schedule incomplete**
3) **If a signed Form of Offer is submitted with an incomplete pricing schedule that does not balance back to the Form of Offer**
    i. ***Only summary of Pricing Schedule submitted.**

The tender shall be declared non-responsive tender.

C2.3 SUMMARY OF PRICING SCHEDULE (PACKAGE 3: CITY OF EKURHULENI

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(from page ……)

SCHEDULE B: ACCOMMODATION 0F TRAFFIC ..... R.....

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SCHEDULE D: STAKEHOLDER AND COMMUNITY LIAISON.....

R.....

(from page …….)

SUBTOTAL ..... R.....

VALUE ADDED TAX:

15% of Subtotal ..... R..... …….

TOTAL CARRIED TO C.1.1.1: FORM OF OFFER R.....

PART C3: SCOPE OF WORK

PART C3: SCOPE OF WORK

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C3 SCOPE OF WORKS

C3.1 GENERAL REQUIREMENTS

C3.1.1 Scope

This section provides the description of the project and the general requirements for executing the work. The work required is to maintain the sustainable operation and performance of the electrical and lighting infrastructure assets that are to provide uninterrupted electrical and lighting services along the various National Roads identified as forming part of this Contract.

The scope of this routine maintenance Contract is for the Contractor to maintain the sustainable operation and performance of the lighting and electrical infrastructure above key performance indicators. The Contractor is to primarily have a management role, as it is a requirement of the Contract, when facilitating the Contractor Development of Targeted Enterprises as a Contract Participation Goal upon Subcontracting a prescribed portion (CPA of 30% minimum of Contract Value) of the Contract Scope of Works to Targeted Enterprise Subcontractors successfully appointed through the Contractor's tender procurement procedures. The Contractor shall provide sustainable work opportunities and assistance in the form of financial support for the procurement of goods and services, to Targeted Enterprises. In addition, the Contractor shall manage the skills development of Targeted Enterprises by providing training, coaching, guidance, and mentoring.

C3.1.2 Location of the project

The proposed project is located across SANRAL Network.

a) Location of site

The general locality of the site is indicated on the locality plan bound in the back of this volume.

The term "Site" as defined in the FIDIC Conditions of Contract for Construction, 1999, will comprise the road reserve consisting of a number of existing National Route Sections.

These National Route Sections include the National Roads, all interchanges, on-ramps and off-ramps forming part of an interchange, as well as secondary roads, overpasses and underpasses within the National Road reserve up to the limits of SANRAL's responsibility. Excluded are provincial, municipal and private crossroads, which are not accessible from the National Road reserve of the National Road, however the overpass and underpass structures do form are part of the "Site" that is to be maintained.

The "Site" will also include all road signs within 500 metres of an intersection or interchange, which form part of the road signs layout for the National Road.

The “Site” will also include land not provided by the Employer, where existing lighting and electrical infrastructure assets are located, for which the Contractor shall be responsible in obtaining the necessary authorization from the appropriate land stakeholders prior to working in such locations.

The “Site” will also include land not provided by the Employer, where equipment and/or materials for use in the permanent works of the Contract can be stored and/or stockpiled with the proviso that the land selected for this purpose be approved by the Engineer. The Contractor must make the Contractor’s own arrangements for the use of such land and must obtain written approval from the owner(s) concerned. Possible camp sites will be indicated during the Tenderers' clarification meeting.

(b) Access to the site

Access to the site shall be from established interchanges, intersections and approved accesses.

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C3.1.2.2 Nature of work

The description of the project contained in this section is merely an outline of the contract works and shall not limit the work to be carried out by the Contractor under this contract. Approximate quantities of each type of work to be carried out in accordance with the contract documents are listed in the Bill of Quantities bound in this volume.

1. Establishment of camps on site
2. Tag all assets during the mobilisation period and implement and operate an Asset Maintenance Management System tool
3. Safe operation and management of the site and co-ordinated site works
4. Tendering, evaluation, appointment and Subcontracting and management of Targeted Enterprises and Targeted Labourers
5. Maintain the sustainable operation and performance of the lighting and electrical infrastructure above key performance indicators
6. Preventative maintenance of the lighting and electrical infrastructure
7. Planned maintenance and repair of the lighting and electrical infrastructure
8. Unplanned maintenance and repair of the lighting and electrical infrastructure
9. Emergency maintenance and repair of the lighting and electrical infrastructure
10. Reinstatement of damaged or missing infrastructure.
11. Daily inspection, day and night, of the road lighting and electrical infrastructure
12. Provide, operate and manage identification, inspection and security measures to prevent or reduce the impact and damage caused by criminal activities and other incidents that do or may have the potential to affect and damage the operation of the lighting and electrical infrastructure.
13. Provision of safe working sites
14. Provision of traffic accommodation measures for safe working sites
15. Sustainable improvement of lighting and electrical infrastructure
16. Emergency assistance
17. Engage and co-ordinate with multiple stakeholders and power supply authorities

The contractor shall be required to attend meetings relating to the Works and the site, inter alia Road Incident Management System, Disaster Management Forum, Project Liaison Committee, Farmers' Association, and Fire Protection Association.

C3.1.3 Description of the project:

The Works shall be carried out by an experienced and suitably qualified Electrical Contractor.

The Scope of Works is to maintain the sustainable operation and performance of the lighting and electrical infrastructure above key performance indicators on:

Package 3: City Of Ekurhuleni

Site Locality Limits

Route	Section	From Km	To Km	Length (Km's)
N12	18	12.90	17.20	4.30
N12	19	0.00	28.60	28.60
R21	1	0.00	26.00	26.00
R21	2	0.00	7.10	7.10
N3	12	13.10	31.00	17.90
Total				**83.90**

Where sustainable operation and performance of the lighting and electrical infrastructure defines the operation and performance status of the lighting and electrical infrastructure that is to be maintained, upheld, protected by the Contractor to continuously meet, improve upon or exceed the key performance indicators and compliance levels stipulated in the Contract Document and applicable standards stipulating operational, quality and performance criteria and key performance indicators.

The routine maintenance of the lighting and electrical infrastructure requires maintaining sustainable operation and performance of the lighting and electrical infrastructure to provide and promote:

18. An infrastructure that maintains operational status above key operational performance indicators with continuous improvement.
19. An infrastructure that performs above performance indicators efficiently and safely while continuously improving and complying with the respective Regulations, Standards and Specifications.
20. An infrastructure that is secure with minimal risk from incidents or damages resulting from criminal activities and accidents.
21. Maintained lighting levels on the roadways for road users and other SANRAL's services and service providers in accordance with SANS 10098 Part 1 and SANS 10098 Part 2 and other applicable standards.
22. Maintained electrical supply to the lighting infrastructure and other SANRAL assets and services that are dependent on the lighting and electrical infrastructure.
23. Sustainable social improvement and social opportunities; and
24. Sustainable environmental improvement.
25. Sustainable quality lighting to improve the safety of road users on the roadways.

Thus, the Scope of Works involve, but are not limited to:

1. Maintaining sustainable operation and performance of the lighting and electrical infrastructure above key operational performance indicators for a period of sixty (60) months
2. The sustainable management and delegation of Subcontracted Targeted Enterprises and Target Labour to achieve and exceed the Contract Participation Goals
3. Periodic preventative maintenance of the lighting and electrical infrastructure to maintain sustainable operation and performance
4. Planned maintenance and repair of the lighting and electrical infrastructure to maintain sustainable operation and performance
5. Unplanned maintenance and repair of the lighting and electrical infrastructure to maintain sustainable operation and performance
6. Security to protect the sustainable operation and performance of the lighting and electrical infrastructure
7. Improvement and reinstatement of the sustainable operation and performance of the lighting and electrical infrastructure
8. Fulfilling Contractual management and administrative duties
9. The installation of a lighting management system if specified. (The LMS proposals will be evaluated for feasibility. SANRAL, at its discretion, will decide whether to proceed with this aspect of the works or not.)
10. The proposal of design, manufacture, supply, delivery, off-loading, storage, installation, testing, commissioning, aligning, securing, operation, management, maintenance of new and existing lighting and electrical assets, equipment, components and material in its complete and safe operational entirety and the handing over in proper working order of the entire lighting and electrical infrastructure as specified and in all the constituent parts of this set of documents.

The Works are to be implemented within the site location boundaries set out by the various National Route Sections and Section chainages (kilometre distance markers). The Works shall be for the lighting and electrical infrastructure located along the following National Route Sections: Note to compiler insert the route.

The site is located at various locations along the National Route Sections as tabled above, inclusive of secondary site location limits as stipulated in C3.1.2. Description of the site.

The sustainable operation and performance of the lighting and electrical infrastructure is dependent on the quality management, systems, processes, programming, reporting, responsiveness and quality workmanship implemented by the Contractor, which are key to the Contractor maintaining and improving operational performance indicators.

The Contractor shall be capable of fulfilling at least the following maintenance requirements and variations thereof, but not limited to, without delay and with adequate resources available to maintain a safe and sustainable operation and performance of the lighting and electrical infrastructure.

Maintenance Works: The scope of maintenance works involves the periodic inspections, functional checks, interval-based maintenance, conditional maintenance, quarterly and annual preventative maintenance, planned and unplanned or emergency maintenance, servicing, repair, replacement or reinstatement of assets or supporting components or systems. All lighting and electrical infrastructure and subsidiaries to be maintained may be operational, non-operational, defective, faulty, failed, missing, damaged, unsafe, inefficient or not sustainable. Maintenance works are to maintain or improve the sustainable operation and performance of the lighting and electrical infrastructure. The maintenance hierarchy is shown in the figure below.

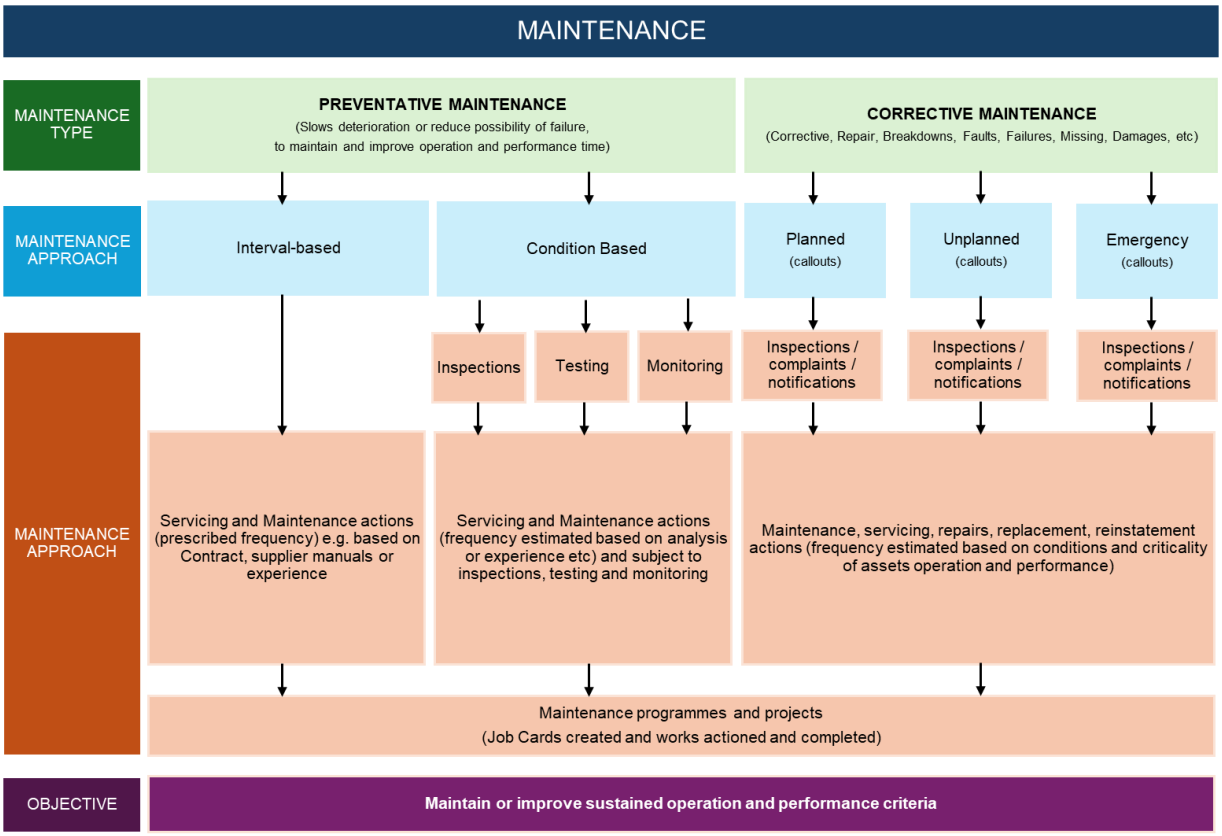

Figure C3.1.2.1: Maintenance Hierarchy

The maintenance of newly installed items (assets, materials, equipment, components and workmanship) will also form part of the scope, however the 12 month defect notification period, warranty and guarantee period of these new items shall be considered for the validity of claimable maintenance works.

The Contractor shall generate a formal notice and Job Card for the identified maintenance works, inclusive of programmed preventative maintenance works. The notice and Job Card will be transmitted to the Engineer in writing. The Contractor shall action the Job Card to maintain the operational status of the affected lighting or electrical infrastructure in accordance with the assigned priority level. The Contractor shall complete the works in the minimum time reasonably practicable. The works are complete once the

affected lighting or electrical infrastructure is operational and performs as intended and safely. On completion of the works, the Contractor shall complete a Job Card with all supporting documentation and submit it to the Engineer. Job Cards will be signed off and certified by the Engineer's Site Agent.

Repair Works: The scope of repair works is a subsidiary to maintenance works and consists of the planned repairs, replacement and reinstatement of faulty, damaged or missing lighting and electrical infrastructure.

The Contractor is to identify the cause of the faulty, damaged, missing lighting and electrical infrastructure; whether it be an accident, component failure, irregular operation, or criminal activity, whether intentional or not. This will form part of the repair works and means of how to prevent such incidents from reoccurring.

Any type of direct or indirect faults, damages or other incidents reported or identified as resulting from the Contractor, shall be for the Contractor to repair, replace or reinstate at the Contractor's own expense.

The repair of newly installed items (assets, materials, equipment, components and workmanship) will also form part of the scope, however the 12 month defect notification period, warranty and guarantee period of these new items shall be considered for the validity of claimable repair works.

The Contractor shall generate a formal notice and Job Card for the identified faults, damages, missing assets or other incidents. The notice and Job Card will be transmitted to the Engineer in writing. The Contractor shall action the Job Card to repair the operational status of the affected lighting or electrical infrastructure in accordance with the assigned priority level. The Contractor shall complete the works in the minimum time reasonably practicable. The works are complete once the affected lighting or electrical infrastructure is operational and performs as intended and safely. On completion of the works, the Contractor shall complete a Job Card with all supporting documentation and submit it to the Engineer. Job Cards will be signed off and certified by the Engineers Site Agent.

Unplanned Maintenance or Repair Works: The scope of unplanned maintenance or repair works is a subsidiary to maintenance works and consists of ad-hoc or unplanned works to be actioned upon request/notification by SANRAL, SANRAL Stakeholder, SANRAL Representative, the Engineer, or the Contractor notifying the Contractor's Representative of any lighting or electrical infrastructure incidents, damages, faults, unsafe operation, or breakdowns identified or about to occur if not attended to promptly.

The Contractor shall generate a formal notice and Job Card for the works to address and resolve the matter identified in the notification. The notice and Job Card will be transmitted to the Engineer in writing. The Contractor shall respond to the notification and action the Engineer accepted Job Card to restore the operational status of the affected lighting or electrical infrastructure in accordance with the assigned priority level. The Contractor shall complete the works in the minimum time reasonably practicable. The works are complete once the affected lighting or electrical infrastructure is operational and performs as intended and safely. On completion of the works, the Contractor shall complete a Job Card with all supporting documentation and submit it to the Engineer. Job Cards will be signed off and certified by the Engineers Site Agent.

Emergency Maintenance or Repair Works: The scope of emergency maintenance or repair works is a subsidiary to maintenance works and consists of emergency works to be actioned urgently actioned upon request/notification by SANRAL, SANRAL Stakeholder, SANRAL Representative, the Engineer, or the

Contractor notifying the Contractor's Representative of any form of emergency incident on site that affects the lighting or electrical infrastructure.

Emergency works involve rendering damaged, faulty, malfunctioning or hazardous assets, equipment or material safe at the scene of the incident. The Contractor shall urgently and safely restore the operational status of the affected lighting or electrical infrastructure.

Emergency works include maintaining and repairing high priority areas, where constant operation of the lighting and electrical services are required, or as instructed by the Engineer.

The Contractor shall urgently respond to and action any emergency notification.

The Contractor shall generate a formal notice and Job Card for the emergency works to address and resolve the matter identified in the notification. The notice and Job Card will be transmitted to the Engineer in writing. The Contractor shall respond to the notification and action the Engineer accepted (not critically required in event of emergency, accepted post works) Job Card to restore the operational status of the affected lighting or electrical infrastructure urgently. The Contractor shall complete the works urgently and safely in the minimum time reasonably practicable for each emergency incident. The works are complete once the affected lighting or electrical infrastructure is operational and performs as intended and safely. On completion of the works, the Contractor shall complete a Job Card with all supporting documentation and submit it to the Engineer. Job Cards will be signed off and certified by the Engineers Site Agent.

The Contractor shall comply with and fulfil the following requirements:

1. The Contractor shall have CIDB grading to correspond to tender amount in pricing schedule for the electrical works, inclusive of VAT.
2. The Contractor shall be registered as a Contractor with the Electrical Contracting Board of South Africa or the Department of Labour to qualify.
3. The Contractor shall have certified Operating Regulations for High/Medium Voltage Systems (ORHVS) responsible and competent person/site supervisor per team. The person must be able to accept a Permit and supervise the team within a Medium Voltage (MV) confined areas.
4. The Contractor shall have competent and able personnel appointed to do the project works who are certified and comply with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), A.1 Regulation 2 of the General Machinery Regulations – Supervision of machinery.
5. The Contractor shall have competent and Certified MV jointers with at least five (5) years' experience in jointing of XPLE and PILC MV cable types with copper and aluminium single or multi-cores inclusive of bi-metal jointing and reducers.
6. The Contractor shall be required to work at heights, thus shall have personnel certified and able to conduct works at height compliance with Section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) - Construction Regulations, 2014, or as amended.

7. The Contractor should be registered as an accepted Contractor for the Municipality or Road Authority, or provide previous experience supporting ability and capability to work in accordance to the required electrical and lighting specifications and meet Contractual performance requirements.

8. The Works may not commence before all registrations, certificates, qualifications and proof of personnel qualifications and registration are received and approved by the Engineer. These registrations shall be maintained active and in good order for the duration of the Contract by the Contractor.

9. The Contractor shall be responsible for establishing a site office and ensuring adherence to the Contract and Safety of the Site, with the approval of the Engineer.

10. The Contractor shall fulfil all Contractual management and administrative duties requested by the Employer or Engineer.

11. The Contractor shall be responsible for establishing, operating, maintaining, and managing an Asset Maintenance Management System (AMMS) tool. The tool shall be used by all Contractor Personnel to account for and record all Job Cards and works on site, to provide efficient and sustainable asset management, accurate and routine reporting, sustainable and routine maintenance with reduced downtime and optimised resource allocation. It shall form part of the Contractor's quality control and management system and ITIS. The AMMS shall be fully accessible to the Employer and Engineer.

12. The Contractor shall attend monthly Contract progress meetings and compile and submit monthly Contractor progress reports and requested supporting documentation timeously.

13. The Contractor shall be audited monthly, and the Contractor shall audit its Subcontractors monthly and confirm Contractual compliance and resolve any noncompliance.

14. Propose, implement operate and manage accepted security measures to prevent or reduce the impact and damage caused by criminal activities and incidents that do or may have the potential to affect and damage the operation of the lighting and electrical infrastructure.

15. The Contractor will be required to work on a site that is occupied by the public, other Contractors and may work along with Contractors on the same site, as such the Contractor may be held responsible for damaged works if the Contractor does not show cognisance nor provide evidence against claims of damage.

16. The Contract shall include for all costs entailed in the design and preparation of drawings for all materials proposed or requested, all costs of manufacturing, supplying and delivery of the works on the site, all costs entailed in maintaining, managing, operating and commissioning the works, and all supervision, plant, equipment, labour, tools and materials necessary fulfil the works necessary to maintain the sustainable operation and performance of the lighting and electrical infrastructure above key performance indicators and to hand over the works in the sustained operational order or improved to the Employer.

17. The Contract also includes for a latent defects liability period of 12 calendar months, which forms part of the tendered rates.

18. Recording and updating asset registers and details for each asset on a monthly basis.

19. Review, maintain, survey and update "As Built" drawings and documentation, operational- and maintenance manuals on changes to the infrastructure and operations.

20. Updated "As Built" drawings and documentation, Compliance Certificates, survey data, operational- and maintenance manuals for the lighting and electrical infrastructure shall be submitted upon handing over and acceptance of the works.

21. Completed works and spare maintenance material is to be handed over to the Employer upon project completion.

The lighting infrastructure works consists of the following luminaires and lighting structures:

1. The Contractor is to maintain sustainable operation and performance of the new and existing lighting infrastructure above key operational performance indicators and to provide safe and uniform lighting that adheres to:
    a. SANS 10098 - Part 1: The Lighting of Public Thoroughfares,
    b. SANS 10098 – Part 2 : The lighting of specific highways and intersections,
    c. SANS 10389-1: Exterior lighting Part 1: Artificial lighting of exterior areas for work and safety
    d. SANS 10389-2: Exterior lighting Part 2: Exterior security lighting
    e. SANS 10389-3: Exterior lighting Part 3: Guide on the limitation of the effects of obtrusive light from outdoor lighting installations
    f. ARP 035: Guidelines for the installation and maintenance of street lighting
    g. Category lighting specifications for maximum traffic of as noted on Form B7
2. Maintain, supply, install, test and commission lighting infrastructure consisting of luminaires and lighting structures and associated control and protection gear.
3. Repair, reinstatement or replacement of faulty, damaged or missing lighting infrastructure.
4. The safe disposal of assets and waste of existing lighting infrastructure to be removed from site.
5. Daily inspection, day and night, of the lighting infrastructure.
6. 40m, 30m, 20m, 15m, 12m lighting structures with foundations or mounted on F-shaped concrete barrier or concrete parapet structure.
7. Up to 12m mounting height lighting structures that are planted in the ground, have a foundation, or mounted on F-shaped concrete barrier or concrete parapet structure.
8. Up to 5m mounting height lighting structures that are planted in the ground, have a foundation, or mounted on F-shaped concrete barrier or concrete parapet structure.
9. Varying Ring and Spigot arrangements with varying mounting arrangements per lighting structure exist and are to be maintained or implemented for the necessary lighting arrangement required and necessary for compliance to SANS 10098 applicable standards. These may consist of:
    a. 9-way, 6-way or 4-way ring arrangements;
    b. 4-way, 3-way, 2-way spigot arrangements;
    c. Back-2-back arrangements; and
    d. Single arrangements.
10. Existing HID luminaires are an obsolete lighting technology that is costly to maintain. Thus, as these luminaires fail, the Contractor is to co-ordinate the relocation and replacement of HID luminaires such that there remains separation between HID and LED lit roadways to maintain safe and uniform lighting.
11. As HID luminaires fail, these are to be replaced with energy efficient LED luminaires that shall provide compliant lighting levels while not consuming more than the maximum power indicated below:
    a. 1000W HID (maximum LED luminaire wattage of 600W)
    b. 600W HID (maximum 2 x LED luminaires of wattage of 225W, 450W)
    c. 400W HID (maximum LED luminaire wattage of 225W)

d. 250W HID (maximum LED luminaire wattage of 150W)

e. 150W HID (maximum LED luminaire wattage of 90W)

12. Existing LED luminaires of varying wattages, age and lighting performance that are either LMS ready or non-LMS ready. LED luminaires that are LMS ready have 7-pin NEMA receptacles and blanking nodes or piloted LMS modules installed. These LED luminaires, installed under the 2022-2025 Contract, are still under manufacturer warranty until 2035, while non-LMS ready LED luminaires are no longer under manufacturer warranty.
13. The Contractor is to submit four (4) acceptable proposals for the Type 1 LED luminaire, with a maximum wattage of 225W, minimum 30 000 total luminaire luminous flux.
14. The Contractor is to submit four (4) acceptable proposals for the Type 2 LED luminaire, with a maximum wattage of 150W, minimum 18 000 total luminaire luminous flux.
15. The Contractor is to submit four (4) acceptable proposals for the Type 3 LED luminaire, with a maximum wattage of 300W, minimum 40 000 total luminaire luminous flux.
16. The Contractor is to submit lighting simulation reports to show compliance of the proposed luminaires for the lighting installation to SANS 10098 and SANS 10389 standards in order to obtain acceptance from the Engineer.
17. The replacement of unsafe and non-compliant lighting structures, spigots or luminaires with compliant materials.
18. Implement new lighting technologies and Lighting Management Systems (LMS) as accepted and indicated by the Engineer.
19. Periodic inspection, testing of lighting levels along each National Route Section to measure and verify lighting level compliance.
20. Commissioning, aiming of luminaires and testing of the system, inclusive of the LMS, to the satisfaction of the Engineer shall form part of this Contract.

The electrical infrastructure works shall include the following:

1. The Contractor is to maintain sustainable operation and performance of the new and existing electrical infrastructure above key operational performance indicators and to provide safe and compliant operating electrical systems.
2. Maintain, supply, install, test and commission electrical infrastructure consisting of cables, power supply points, mini-substations, transformers, kiosks and associated control and protection gear.
3. Repair, reinstatement or replacement of faulty, damaged or missing electrical infrastructure.
4. The safe disposal of assets and waste of existing electrical infrastructure to be removed from site.
5. Daily inspection, day and night, of the electrical infrastructure.
6. Supply, install, test and commission low voltage reticulation cable (including fault finding, jointing, terminations, trenching, concrete encasement, back-fill and compaction).
7. Supply, install, test and commission 3.3kV Armadac reticulation cable (including fault finding, jointing, terminations, trenching, concrete encasement, back-fill and compaction).
8. Supply, install, test and commission medium voltage reticulation cable (including fault finding, jointing, terminations, trenching, concrete encasement, back-fill and compaction).
9. The sustainable improvement and replacement of existing 3.3kV Armadac reticulation cable sections with 50mm^2 3 Core Aluminium Type A, 6.35/11kV XLPE insulated, copper tape screened, PVC

bedded, SWA, PVC sheathed MV cables to SANS 1339 (including jointing, terminations, trenching, concrete encasement, back-fill and compaction).

10. All electrical reticulation for the project along the project route shall be laid in trenches and services sleeves with concrete encasement, 1000mm (LV) and 1200mm (MV) minimum below final ground levels, and 1500mm minimum below road surfaces.
11. Supply and install service sleeves under roads and access crossings. Testing and cleaning of all service sleeves shall be done before services are to be drawn through the sleeves after the Engineer's acceptance. These works include the maintenance, cleaning, clearing, unblocking, repair, and reinstatement of existing sleeves.
12. Earthing and lightning protection and regular testing thereof for electrical supply points and lighting structures.
13. Discussions with the local supply authority regarding power supply applications, interruptions, disconnection, switching, reinstatement of existing and new electrical services and the relocation or protection thereof.
14. The possible relocation of existing electrical services affected by the project. The relocation of existing electrical services shall be coordinated with the Engineer and where applicable the local supply authority.
15. The replacement of unsafe and non-compliant electrical equipment and safety devices with compliant materials.
16. Implement new electrical technologies and electronic security measures as accepted and indicated by the Engineer.
17. Periodic inspection, testing of electrical systems along each National Route Section to measure and verify electrical compliance.
18. Energy metering of electrical supply points and verification against electrical accounts.
19. Commissioning, certification and testing of the electrical systems to the satisfaction of the Engineer shall form part of this Contract.

All lighting and electrical maintenance related works, proposals, design, material, equipment, operations, maintenance, installation, testing, commissioning, etc shall comply with all relevant SANS or International standards, where applicable, including SANS 10098-1 & -2, SANS 10389-1 & -2 & -3, and SANS 10142-1 & -2 and associated normative references.

These works described should be seen only as a brief summary of the scope of the work and not as a complete record. The standard of workmanship and quality of material, quantities and volumes of work shall also be read or obtained from the specification, drawings and Bill of Quantities.

The Contractor shall be appointed in terms of the Conditions of Contract, as applicable.

C3.1.4 Time for completion

The Time for Completion of the Works shall be five years from the Commencement Date of 01 April 2024 , with an option of an extension of up to two years at the scheduled rates, at the sole discretion of the Employer.

The Service Provider shall program its duties in such a manner so as to complete the various phases of the total project within the milestone dates in this table.

	Project Phase	**Phase Completion Date**
A	Appointment of Contractor	April 2025
B	Works Contract Handover	April 2025
C	Completion of Repairs Programme	October 2025
D	Completion of 5 year Maintenance Programme	March 2030
E	Submission of Completed Documentation	April 2030

C3.1.3 DRAWINGS

The drawings issued in electronic format on a flash drive as part of the tender documents, shall be used for tender purposes only.

The Contractor will be issued with the contract drawings in electronic format on a flash drive. Any prints which the Contractor may require shall be at own cost.

Any information in the possession of the Contractor, which the Engineer requires to record as-built information, shall be supplied to the Engineer before a Taking-Over Certificate will be issued.

Only figured dimensions shall be used and drawings shall not be scaled unless so instructed by the Engineer. The Engineer will supply all figured dimensions omitted from the drawings.

C3.1.4 POWER SUPPLY AND OTHER SERVICES

The Contractor shall make the Contractor’s 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 shall be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required

C3.1.5 CONSTRUCTION IN CONFINED AREAS

It may be necessary for the Contractor to work within confined areas. Except where provided for in the specifications, no additional payment will be made for work done in such confined areas. In certain instances the width of the work to be undertaken may decrease to zero and the working space may be confined. The work method in such confined areas will be determined by the Contractor's constructional equipment.

However, the Contractor must note that measurement and payment will only be made in accordance with the authorised dimensions, irrespective of the method used for achieving these dimensions and that the tendered rates and amounts shall include full compensation for all special equipment and construction methods and for all difficulties encountered when working in confined areas and narrow widths, and at or around obstructions, and that no extra payment will be made nor will any claim for additional payment be considered in such cases.

C3.1.6 CONTRACTOR'S CAMP SITE

The Contractor shall provide a suitable site for the Contractor's camp and for accommodating the Contractor's labourers. The Contractor will provide, at the camp site, an office for the Engineer as specified.

The contractor is encouraged to share a site meeting and stock yard facility at existing SANRAL facilities that is utilised by existing Routine Road Maintenance (RRM) contractors. The contractor shall be required to provide the necessary meeting rooms, toilets, security, fencing and other facilities as indicated in Section 1300 of the Bill of Quantities.

C3.1.7 ADDITIONAL REQUIREMENTS FOR CONSTRUCTION ACTIVITIES

In addition to the requirements specified in the Standard Specifications, the Contractor shall adhere to the following requirements.

C3.1.7.1 Accommodation of traffic

Reference shall be made to the requirements shown on the drawings as well as to Section M0500 of the Standard Specifications where temporary traffic control measures and limitations regarding lane closures, work areas and the unoccupied spacing of such closures are detailed.

Any cost associated with the accommodation of traffic must be included in the relevant payment items under Section M0500.

C3.1.7.2 Repairing damaged lighting infrastructure

On a regular basis, the Contractor shall inspect the site to check for damaged lighting infrastructure.

Damage to any lighting infrastructure shall be reported to the Engineer/Resident Engineer who will instruct the action to be taken by the Contractor. Within thirty (30) days of the Commencement Date the contractor shall inspect all lighting infrastructure. The contractor shall do asset verification to determine the number of assets that are operational and missing . A report on this shall be submitted to the Engineer/ resident engineer .

The Contractor shall control all vegetation growth around electrical infrastructure in such a way necessary to prevent any damage to the electrical infrastructure due to veld fires. The Contractor shall replace all electrical infrastructure damaged due to veld fires at the Contractor's own cost.

C3.1.7.3 Environmental requirements

Trees and shrubs established in landscaped areas of interchanges and in the road reserve may under no circumstances be disturbed without specific instruction from the Engineer for their removal. Trees and shrubs inadvertently destroyed by the Contractor shall be replaced with the equivalent at the Contractor's own cost.

Disposal of any bituminous-based material shall only be at an approved location and by means of an approved method, arranged beforehand with the Engineer. Bituminous binders shall not be disposed of on the Site, but shall be returned to the supplier for disposal.

All waste shall be disposed of in terms of the applicable legislation. Invasive and alien vegetation eradication control plans shall be drawn up and updated annually, in terms of applicable legislation.
Litter collected shall be recorded (by volume and mass) monthly and kept on file and shall be disposed of at an approved landfill site. Recycling of collected litter shall be undertaken where practicably possible. Not required.

C3.1.7.4 Daywork

Sub-clause 13.6 of the FIDIC Conditions of Contract for Construction, 1999, refers.

The Contractor shall tender the rates applicable to daywork, as provided for in the Bill of Quantities. These rates will be taken into account in the adjudication of tenders.

The tendered rates shall be considered to include full compensation for the work to be performed, including supervision of labour, all plant operators and other operating costs, overheads and profit. Hourly rates for transport and equipment shall apply to the actual number of hours for which the vehicles or equipment are required for a specific item of work, including travelling time if applicable.

The Contractor shall maintain a hard cover duplicate book on site for the purposes of recording daywork. The Contractor shall record the total time claimed under each relevant item of the Bill of Quantities and the applicable instruction of the Engineer, and shall ensure that the total times claimed are agreed and signed daily by the Engineer's representative on site.

The Contractor shall not claim daywork for any work for which an applicable rate has been tendered or agreed to in writing by the Engineer.

The cost of materials used and paid for by the Contractor, as authorised by the Engineer, shall be reimbursed at net cost, exclusive of Value Added Tax, plus the percentage as tendered for the Contractor's overhead charges and profit.

In the event where no allowance has been made for a specific item in the Bill of Quantities, the Engineer may order daywork according to sub-clause 13.6 of the FIDIC Conditions of Contract for Construction, 1999.

C3.1.7.5 CHANGES TO SCOPE OF WORK

It is a condition of this Contract that the Employer reserves the right to limit the total expenditure on the Works due to possible budget constraints. Should the tender sum exceed the budgeted amount, the scope of the works may be reduced at any time before or during the Contract period to ensure that the final Contract amount does not exceed the budgeted amount.

C3.1.8 ALLOWANCE FOR OTHER CONTRACTORS AND ACCOMMODATION OF OTHER CONTRACTS

In addition to the requirements of clause 4.6 of the FIDIC Conditions of Contract for Construction, 1999 the Contractor must take note of the presence of other Contractors on the site and make allowances for them on the site. This may involve adapting the Contractor's programme to accommodate the work of other Contractors and ensuring access to their sites.

Although details of such contracts are not known it may include, *inter alia*, periodic maintenance, special maintenance, rehabilitation and upgrade contracts. Depending on the scope of works for these contracts, the Contractor may be relieved of his responsibilities on the relevant section of the site during the construction period only, and this may include a reduced scope of work on performance based items where applicable.

C3.1.9 PROGRAMME, RESTRICTION AND COMPLETION OF ACTIVITIES

This clause covers matters relating to the programme of work, restriction on certain maintenance activities, completion and responding time of specified activities, compliance with the specifications, and related delay damages and penalties.

C3.1.9.1 Programme

The Time for Completion of the Works is specified in the Appendix to Tender.

The Engineer will determine the extent and frequency of the work to be executed in terms of the contract, as certain activities are dependent upon the climatic conditions encountered during the period of the contract. The Engineer will agree on an annual programme of work per route section with the Contractor. Reference is made to clause M0203 of the Standard Specifications which specifies the requirements for the submission of a programme.

C3.1.9.2 Restriction on maintenance activities

Certain maintenance activities will be restricted on days with increased traffic flows. These days will be, for example, the day of school closure, over long weekends and public holidays. The Contractor must allow for these restrictions in his programme and no extension of time or claims in this regard will be considered.

Normal routine maintenance involving lane closures (except in the event of emergency normalisation) shall be restricted on the days and for the periods stated in Table C3.1.9/2.

TABLE C3.1.9/2: RESTRICTION ON MAINTENANCE ACTIVITIES

Day(s)	Activity to be restricted	Period of restriction
School closures in	Lane closures, except in the event of emergency normalisation	From 12:00 on the day of closure until 07:00 on the following day
Easter weekend	Lane closures, except in the event of emergency normalisation	From 12:00 on Thursday until 07:00 on Tuesday
Long weekends and public holidays	Lane closures, except in the event of emergency normalisation	From 12:00 on the day preceding commencement of long weekend or public holiday until 07:00 on the day

		following the long weekend or public holiday
13 to 17 December and 2 to 8 January	Lane closures, except in the event of emergency normalisation	From 00:00 on the commencement date of the restriction until 24:00 on the last date of the restriction

C3.1.9.3 Completion time of specified activities and penalties

Generally, the maintenance activities covered by this contract will be on a continuous basis. However, certain specified activities are considered to be a priority or are critical, and it is a condition of contract that they shall be completed or responded to as specified, after receiving an instruction from the Engineer.

Should the Contractor fail to complete the specified activity or respond timeously, or comply with the specifications, he shall be liable for delay damages or a penalty as specified in Table C3.1.9/3. The delay damages or penalty that is applicable on work undertaken by subcontractors that qualify in terms of the definition, and which has been sublet according to the specifications for the tender process, shall be apportioned between the Contractor and subcontractor in the ratio of 50/50.

Definitions:

Completion time:

Completion time is defined as that period from the date on which an instruction is received by the Contractor from the Engineer, to the date of full completion.

Responding time:

Responding time is defined as that period from the time on which an instruction is received by the Contractor from the Engineer, to the time of reporting at the place of the required activity, by the designated standby supervisor and team.

These activities, specified times, delay damages, and including penalties for work not complying with the specifications, are indicated in Table C3.1.9/3.

Notes:

(a) Indicated day means a calendar day.

(b) There shall be no reduction of delay damages or penalty for partial completion of works.

(c) Delay damages and penalties as specified in Table C3.1.9/3, as well as elsewhere in the Scope of Work shall be deducted from the amount Ac as defined in sub-clause 13.8

of the Particular Conditions of Contract, prior to multiplying the amount Ac by the Contract Price Adjustment Factor.

(d) Payment of delay damages or a penalty shall not absolve the Contractor of any claims, or relieve the Contractor of any of his duties, obligations or responsibilities under the contract.

TABLE C3.1.9/3: SPECIFIED ACTIVITY PERIODS, DELAY DAMAGES AND PENALTIES					
Activity	Completion time or inspection frequency	Responding time	Penalty for late responding	Penalty for late completion	Penalty for not to specification
Lighting Patrol Services Not submitting daily reports Equipment missing as specified	daily daily daily			 R1000/day	 R5000/day R2000/article
M0500: Accommodation of traffic Lane closure not to specification 2. Sign not to specification	inspection daily				R10000/closure R100/sign
Repair of electrical infrastructure Non-performance based criteria: 1. Repair of lighting infrastructure Performance based criteria	 2 days inspection monthly			 R1000/day	 R5000/section R10000/section
M9000: Daywork	As instructed	1 week	R1000/day	R5000/day	
GENERAL OH&S Plan Quality Assurance System Other specified or programmed activity Any particular, routine or non-routine activity on instruction of the Engineer	 As specified As specified As instructed	 As instructed	 R500/day	 R500/day R1000/day	 R10000/incident R10000/incident

ANNEXURE 2: PERFORMANCE MEASUREMENT

OBJECTIVES

The key objective of this contract is:

To stabilize and improve the condition of luminaires and associated assets
To reduce overall maintenance costs

To promote and encourage the development of innovative asset preservation practices
To implement and continuously improve anti-theft and anti-vandal mechanisms

The performance of the contractor will be measured against Key Performance Indicators (KPI's) in the three (3) categories noted below:

Category 1: Operation of Luminaires during the night
Category 2: Planned repairs of assets
Category 3: Un-planned callouts for emergency repairs of assets

Key Performance Indicators (KPI's) identified for this project:

KEY PERFORMANCE INDICATORS (KPI'S)

- Performance measurement
- Responsiveness / timeliness
- Quality assurance and control
- Reporting requirements
- Stock Management

CATEGORY 1: OPERATION OF LIGHTING DURING THE NIGHT

Maintenance has the duty to stop problems starting and where there are problems, the contractor is responsible to rectify them so that reliability is increased, and risk is reduced.

The contractor will be measured on his performance to maintain each site at a 100% level of operation. The full operation of the luminaires at night at each site is based on 100% operation of each luminaire. The performance of the success of the maintenance will be monitored and evaluated on an ongoing basis to determine the performance level of the contractor.

The performance of the contractor will be evaluated on the percentage of operation of the luminaires as noted below.

The lighting installation at each site will be monitored on an ongoing basis by the client project engineer by visiting the installation site or monitor of the Lighting Management system reports where applicable. Luminaires must be operational during the night period between 18H00 and 06H00 (one period). Non-operational luminaires identified will be evaluated and compared as a percentage to the overall number of luminaires as recorded on the project. 5% or more luminaires that are not operational for more than one period during the month will attract a penalty and deducted from the monthly claim for that period.

Concession items, subject to approved concession notes by the client or his project engineer, that will be excluded from the calculated percentage, would be:

Assets damaged by vandalism, theft, and accidents

The luminaire operation would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped photo records showing operation of lights
Date and time stamped video records showing operation of lights
Client / client project engineer audit sheets with date and time logs
Electricity meter logs
Luminaire circuit Hour meters in kiosks
Lighting Management system records
Meeting Minutes

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Operational of Luminaires**		
Performance measurement	**100%**	**>50% <95%**	**<50%**
Operational of Luminaires	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

CATEGORY 2: PLANNED REPAIRS OF ASSETS

The contractor will be notified by the client or project engineer to respond to repairs of assets at the various sites, referred to as a "standard callout". The contractors performance will be measured by their response times and the time taken to identify the fault and repair the problem. The contractor is to ensure that staff and standby staff are available on a 24 hour, 7 day a week basis. The contractor must acknowledge the call-out notification within 8 hours of the contractor being contacted by the client or project engineer. If the contractor is not contactable after 8 hours, the project engineer will then issue a written notification to the contractor notifying them of the non-compliance.

Concession items, subject to approved concession notes by the client or project engineer, that will be excluded from the calculated response time, would be:

Standby personnel working / called out to other sites on this package.
Unavailable stock items and long lead time to order spares.

The response time / timeliness would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.
SMS, E-mail, and fax records to communication

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Response time from acknowledge call-out**		
Responsiveness / Timeliness	**Within 8 Hours**	**1 - 24 Hours**	**Greater than 24 Hours**

Acceptance of standard call-out notification	Required	Penalty of R1000.00 per month	Penalty of R50000.00 per month
Arrival on site of repairs		Required	Penalty of R1000.00 per month
Identification of fault and repair		Required	Penalty of R1000.00 per month

CATEGORY 3: UN-PLANNED CALLOUTS FOR EMERGENCY REPAIRS OF ASSETS

The contractor will be notified by the client or project engineer to respond to critical repairs at the various sites, referred to as an "emergency callout". The contractors performance will be measured by their response times and the time taken to identify the fault and repair the problem. The contractor is to ensure that staff and standby staff are available on a 24 hour, 7 day a week basis. The contractor must acknowledge the call-out notification within 2 hours of the contractor being contacted by the client or project engineer. If the contractor is not contactable after 2 hours, the project engineer will then issue a written notification to the contractor notifying them of the non-compliance.

Concession items, subject to approved concession notes by the client or his project engineer, that will be excluded from the calculated response time, would be:

Standby personnel working / called out to other sites on this package.
Unavailable stock items and long lead time to order spares.

The response time / timeliness would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.
SMS, E-mail and fax records to communication
Meeting Minutes

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Response time from acknowledge call-out**			
Responsiveness / Timeliness	**Within 2 Hours**	**Within 8 Hours**	**Up to 24 Hours**	**Greater than 24 Hours**
Acceptance of emergency call-out notification	Required	Penalty of R1000.00 per month	Penalty of R3000.00 per month	Penalty of R5000.00 per month

Arrival on site of repairs		Required	Penalty of R1000.00 per month	Penalty of R3000.00 per month
Identification of fault and repair			Required	Penalty of R1000.00 per month

KPI: QUALITY ASSURANCE AND CONTROL / REPORTING

The contractor's quality assurance and quality control will be measured on a monthly basis. The contractors project documentation will be audited by the client or the project engineer on an on-going basis. Contractors will be penalised for not submitting documentation and reporting when required.

Concession items, subject to approved concession notes by the client or the project engineer, that will be excluded from the calculated QA/QC and reporting requirements, would be:

No event

The issue and receipt of documents and reports would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.
SMS, E-mail and fax records to communication
Meeting Minutes

KPI's and performance with be measured and penalties applied as noted below:

KPI:	**Issue to client / client project engineer**		
Quality assurance and control / Reporting	**Monthly**	**1-4 Weeks late**	**> 4 weeks late**
Site audit and repair sign-off sheets	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Time sheets	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Log Sheets	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Inspection Reporting	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Accident reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Failure Reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Monthly progress reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Stock Inventory reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

KPI: STOCK MANAGEMENT

The contractors Stock Management will be monitored and measured on a monthly basis. Contractors will be penalised for not implementing a stock management system and correctly documenting and reporting

of stock levels on a monthly basis. Contractors must be seen to make an effort in improving their stores management processes and stored parts reliability. Stock and stock inventories would be audited by the client or the project engineer on a monthly basis and discrepancies / non compliance recorded in stock audit reports and the meeting minutes.

Concession items, subject to approved concession notes by the client or the project engineer, that will be excluded from the calculated stock management requirements, would be:

No event

The stock inventory documents and reports would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.
SMS, E-mail and fax records to communication
Meeting Minutes
Stock Inventory
Stock Audit reports

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Monthly Stock Management Audit**		
Stock Management	**95%-100% accuracy**	**50%-95% Accuracy**	**Less than 50% accuracy**
Stock Inventory	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

PENALTIES

Should the contractor be penalised for any non-compliance, a 30 day rectification period would be issued to the contractor. Failure to resolve the non-compliance after 30 days would cause further penalties to be imposed on the contractor until the rectification of the non-compliance is accepted by the client or the project engineer.

As per penalty measurements, penalties can be applied for non-compliance under each category thus equating to a maximum of R 500 000.00 per month at each site.

C3.1.10 LEGAL REQUIREMENTS

The following Acts and associated Regulations and Codes, as amended from time to time, are predominant amongst those which apply to the construction industry, and shall apply to the contract. They are listed here for reference purposes only:

Constitution of the Republic of South Africa, 1996 (Act No 108 of 1996);
Public Finance Management Act, 1999 (Act No 1 of 1999);

Preferential Procurement Policy Framework Act, 2000 (Act No 5 of 2000);
Broad-Based Black Economic Empowerment Act, 2003 (Act No 53 of 2003); and
Construction Industry Development Board Act, 2000 (Act No 38 of 2000) and Regulations;
Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and all its Regulations;
Compensation for Occupational Injuries and Diseases Act, 1993 (Act No 130 of 1993);
rates for wages and conditions of labour agreed by the Bargaining Council for the Civil Engineering Industry in terms of the Labour Relations Act, 1995 (Act No 66 of 1995).
National Water Act Act No 36 of 1998
National Veld And Forest Fire Act 101 OF 1998
National Environmental Management: Biodiversity Act, No. 10 of 2004
National Environmental Management: Waste Act 59 OF 2008
National Environmental Management: Integrated Coastal Management Act, No. 24 of 2008
National Environmental Management Act, Act No. 107, 1998
Conservation Of Agricultural Resources Act 43 Of 1983
National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004)

In addition to the above, in terms of National Treasury Instruction No 3 of 2014/2015 with reference to the Public Finance Management Act, 1999 (Act No 1 of 1999) and Regulations, the Contractor and subcontractors are required to provide the Employer with written confirmation to access the SARS Electronic Tax Compliance Status (TCS) System to verify and continuously track the tax compliance status of all persons conducting business with the State.

C3.1.11 MANAGEMENT OF THE ENVIRONMENT

The Contractor shall be responsible for construction according to an Environmental Management Plan in terms of Section C3.3 of the Scope of Work.

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 C3.3 of the Scope of Work. Where the contractor fails to adhere to these requirements, the specifications in Section C3.3 provide the methodology of the remedy.

C3.1.12 TARGETED PROCUREMENT

The South African National Roads Agency SOC Limited (SANRAL) is committed to the implementation of Government's policies and in turn expects the same from its contractors. In order to comply with the objectives of its preferential procurement policy, SANRAL will utilise its targeted procurement procedure which is the process used to create a demand for the services and supplies of, or to secure the participation of, targeted enterprises in contracts.

Accordingly, it is a requirement of this project that the Contractor is familiar with the specifications that relate to the transformation of the construction industry through the following:

adherence to the policies and initiatives of the Government;
employment of targeted enterprises;
provide mentoring, guidance and assistance to subcontractor targeted enterprises;

arrangement of engineering skills, entrepreneurial skills and generic skills training programmes for subcontractor targeted enterprises, for which provision has been made in the Bill of Quantities;
liaison with government institutions and community-based structures; and
facilitating a wellness program for site employees and their relatives.

In this regard, Part D of the Scope of Work covers the Contractor's requirements in detail, as well as defining the procurements targets.

C3.1.13 OCCUPATIONAL HEALTH AND SAFETY

In terms of the Construction Regulation 2014, 5(1)(b) of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), the South African National Roads Agency SOC Limited, as the Employer, is required to compile a specification on health and safety for the project. Section C3.5 of the Scope of Work contains the specification that regulates the Contractor's construction methods to ensure health and safety of his employees, subcontractors and the public.

C3.1.14 CHANGES TO SCOPE OF WORK

It is a condition of this contract that the employer reserves the right to limit the total expenditure on the Works due to possible budget constraints. Should the tender sum exceed the budgeted amount, the scope of the works may be reduced at any time before or during the contract period to ensure that the final contract amount does not exceed the budgeted amount.

C3.1.15 CONTRACTOR PERFORMANCE REPORTS

The Engineer is responsible for the completion of the contractor performance reports on behalf of the Employer. These reports will be completed monthly and on issuance of the Taking-Over Certificate.

The standard for contractor performance reports provides for a uniform and consistent method of assessment of the performance of the Contractor with respect to the following project parameters regarding the Contractor meeting its contractual obligations and achievement of targets:

time management;
cost management;
quality management;
health and safety management;
management of site conditions; and
management of subcontractors (including payment).

Each performance report will be discussed with the Contractor, who will be given an opportunity to comment on the assessment. The Engineer must respond to any issues raised by the Contractor in writing, and the Contractor's comments and the written response by the Engineer must form part of the contractor performance report. The contractor performance report will be signed off by the Employer.

The monthly contractor performance reports and other inputs from the Engineer will be used to monitor and evaluate the Contractor's performance throughout the contract.

C3.1.16 INTEGRATED TRANSPORTATION INFORMATION SYSTEM

The Employer has developed a comprehensive information management tool called ITIS (Integrated Transportation Information System) to address all facets of its strategic and tactical planning, design, construction and maintenance of the entire road network. This provides support for the management tasks of the Employer and to allow the personnel to make technical decisions more quickly and efficiently.

ITIS is an integrated approach to the sharing and inter-relating of technical performance information for the Employer and relies on people following procedures to populate system with data. ITIS currently consist of the following platforms:

- ITIS Web – Web enabled portal providing online access to various functions, workflows and reports.
- ITIS Desktop – Offline data capture tool enabling the capture of information offline, validation and then synchronisation of data with the ITIS database.
- ITIS Mobile – Application (Android 6 or later) that allows the in-field capture of information using a smart phone or tablet (must have camera and GPS), validation and then synchronisation of data with the ITIS database.

The Employer then has several ITIS modules running on any of the above ITIS platforms which affect the Contractor, who will need to use these modules to perform certain procedures and to provide required information. The current modules applicable to routine road maintenance and their description are as follows:

(i) Contract Module – management of contracts;
(ii) Routine Road Maintenance Module - issuing of job instructions (estimates, photographs and workflows) and preparing the payment certificate;
(iii) Incident Module – recording of incidents on site; and
(iv) Project Information Module – employment and training data.

User manuals for the various functions can be downloaded from https://itisnra.co.za/Pportal/Myaccount/UserManuals after the successful registration as a Public user.

C3.1.16.1 Routine Road Maintenance ITIS Module

The Employer's ITIS module is managed by the Engineer, which records the work done and prepares a payment certificate. The timelines for the various stages of the Interim Payment Certificate from the initial preparation by the Engineer, to the submission by the Engineer to the Employer for payment, will be identified by the Employer, and may vary in certain months due to financial deadlines, or shutdown periods.

The work flow sequence is as follows:

(i) Work is identified by the Engineer/Resident Engineer or Contractor.

(ii) Engineer/RE prepares an interim Job Instruction for the work to be executed.
(iii) Contractor determines whether he will do the work or allocate the work to an appointed subcontractor using the ITIS mobile application.
(iv) The Engineer then issues the finalised Job Instruction for the work to be executed, complete with measurement and rates of the work to be executed via the ITIS mobile application.
(v) On completion of the work, the Contractor provides measurement of the work executed via the ITIS mobile application, which the Engineer checks for quality and measurement acceptance.
(vi) The Engineer signs off the details of the Job Instruction, partially or fully completed, on ITIS module.
(vii) On a measurement date determined by the Engineer the completed Job Instructions shall be included in a payment certificate, the Engineer shall provide a draft payment certificate to the Contractor for checking purposes.
(viii) The Contractor shall notify the Engineer of any amendments or corrections to the draft payment certificate.
(ix) The Engineer shall then prepare the Interim Payment Certificate from ITIS module for submission by the Contractor as his Statement in terms of sub-clause 14.3 of the FIDIC Conditions of Contract, for approval by the Engineer and submission to the Employer for payment.

C3.1.17 PERSONNEL REQUIREMENTS

C3.1.17.1 Key personnel

The key persons required for this contract are detailed in the table in paragraph C3.1.17.2 according to the CIDB contractor grading designation determined for the contract.

The names of the Contractor's key persons are shown in Form C1.2.3 Contract Data – Information Provided by the Tenderer.

C3.1.17.2 Minimum requirements

The minimum requirements with regards to qualification, registration and experience in the electrical l engineering/road construction field, for the Contractor's key personnel shall be as indicated in the table below, according to the CIDB contractor grading designation determined for the contract.

Key person	**Contracts 7EP or higher**	
	Minimum technical qualification or registration	**Minimum relevant number of Project experience**
Electrician	Registered Installation Electrician (Wireman's Licence) and NQF5	3

Contract Manager	National Diploma in Electrical Engineering NQF 6 Pr Eng,Pr Tech Eng,SACPCPMP,	3
Contractor's Representative (Construction Manager - Site Agent)	National Diploma in Electrical Engineering NQF 6 Pr Eng,Pr Tech Eng,SACPCPMP,	3
Construction Health and Safety Officer (CHSO) within Company	CHSO with SACPCMP	3
Targeted Group Development Coordinator	NQF 5 in Electrical Engineering	3

Relevant experience is the actual number of years, measured from the date of acquiring the base qualification, working in the Electrical engineering/ Street lighting and maintenance field field.

Registered with the Engineering Council of South Africa (ECSA)/ Registered wiremans license electrician or any other international body recognised by the Employer. Foreigners with permanent South African residence longer than 5 (five) years shall be ECSA registered.

South African Council for Project and Construction Management Professions.

The Contractor's Representative and the Targeted Group Development Coordinator are dedicated positions and they cannot occupy the position of another key person.

For any proposed change in key personnel during the contract, the Contractor shall submit to the Engineer for consent the name and particulars of the key person the Contractor proposes to appoint. The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's key personnel or appoint a replacement.

C3.1.18 LOCAL PRODUCTION AND CONTENT

The Department of Trade and Industry in consultation with National Treasury has designated the construction sector and determined the stipulated minimum threshold for steel products and component for construction for the state procurement for local production and content. Section C3.6 of the Scope of Work contains the specifications for local production and content.

C3.2 PARTICULAR SPECIFICATIONS

The Standard Specifications for Routine Road Maintenance, April 2019, as amended by particular specifications, shall apply to this contract. The particular specifications comprise standard and particular amendments issued by South African National Roads Agency SOC Ltd and are set out in this section. Further to the above, the SANS specifications for electrical works, as listed in Volume 2, shall apply, subject to amendments set out in this section as particular and general specifications.

C3.2.1 ELECTRICAL PREVENTATIVE MAINTENANCE SPECIFICATION

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C3.2.1.1 CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

C3.2.1.1.1 SCOPE

This section covers the establishment of the Contractor's organization, plant, equipment, offices, storage space and any other facility required to execute the contract. It also covers payment for certain general obligations, risks and liabilities and general items of cost not covered elsewhere.

C3.2.1.1.2 GENERAL REQUIREMENTS

The Contractor shall arrange to provide office and storage facilities at one (or more if he so choose) locations. The facilities provided shall be adequate to cater for the needs of the Contractor regarding offices and storage facilities for plant and equipment.

It will be necessary for the Contractor to provide storage space for materials to be installed under the contract. Such materials would include smaller items of equipment such as lamps, ballasts etc and also larger items such as masts. Provision shall also be made for the storage of traffic control devices such as signs and delineators.

The Contractor will not be required to provide office facilities for the resident engineer.

The Contractor will require specialist equipment to execute the contract such as "cherry pickers" and hydraulic lifts. No specific payment will be made for the provision of such equipment, and the Contractor will be deemed to have included the costs of providing such equipment in his rates tendered for establishment on site and his general obligations.

C3.2.1.1.3 MEASUREMENT AND PAYMENT

Item	**Unit**
C3.2.1.1.3.1 Contractor's Establishment on Site and General Obligations	
Fixed obligations	Lump Sum
Time related obligations:	Month

The tendered lump sums shall not include any fixed or time-related obligation costs for the sub-contracts involving BE's and SMME.

Payment of the rates tendered under sub-items C3.2.1.1.3.1 (a) and (b) shall include full compensation for all the Contractor's charges in respect of the following:

Setting up and maintaining his organization, office accommodation, storage facilities, plant and equipment at a location or locations procured by him which are accessible to the site.
Complying with the General Conditions of Contract and Part B1 of the Project Specifications, including the effecting of insurances and providing the sureties required.
All general site and office overheads, profits, financing costs, risks, legal and contractual responsibilities and other costs and obligations of a preliminary or general nature which are not specifically measured for payment under any other items of payment.
All temporary traffic accommodation personnel and devices such as:
Flagmen
Road Signs TW series,1 500mm dia
Road Signs TGS series,1 200 x 1 600mm
Road Signs TGS series, 1 500 x 1 600mm
Road Signs TR series,1 200mm dia

Road Signs R series, 1 200mm dia
Distance plates for sign TW 40 and TGS 105, 400 x 1 500mm
Distance plates for sign TGS 103, 400 x 1 200mm
Traffic cones, 750mm high, to the approval of the Engineer

High visibility rear panel to maintenance vehicle with attenuator
Delineators (DTG50J)
Setting up and moving the traffic control devices
Vehicle mounted flashing lights
Channelization devices and barricades
Temporary mounting system for the temporary control devices
And any other traffic devices
The supply of flagmen, setting up and moving the traffic control devices, and the provision of high visibility clothing shall be deemed to be included in the rates tendered for the various items of preventative maintenance for each section of the contract.

The tender rate shall include for the use of the appropriate traffic control devices at all times when any work is carried out on the national road at locations requiring traffic control measures in accordance with the specifications. All costs in this regard will be held to have been included in sub-items C3.2.1.1.3.1 (a) and (b) and the items relating to any work that is undertaken on the national roads which are included in the scope of this contract.
Construction site camp, staffing accommodation, site office/s fully equipped & furnished, fully fence yard with adequate lighting, storage facilities to house all material and plant, at least 2 full time armed guards on a 24hr basis, water and electricity to site camp/offices all costs inclusive, a suitable voltage regulator in order to maintain a constant current and voltage level at all times to prevent damage to the office equipment, all administrative costs, electric refrigerator/s of specified capacity, air-conditioning for the office/s, printers, photostat facilities, scanner/s, fax machine, etc.

Housing and office/s for the Engineer's site personnel to be fully furnished which shall include full burglar proofing, electric refrigerator, air-conditioning, work station/s including desk and chair with drawers, laptop/s, photostat facilities, scanner, cellphones with airtime (similar or equal business talk 500) to make and receive calls, including proper shower facilities, 4x2 bakkie to be used on site including fuel, 3G/Wifi internet access, etc. In addition, the offices and any living accommodation are to be separated by at least 200m.

The lump sum tendered Under Sub-Item C3.2.1.1.3.1 (a) above shall represent full compensation for the fixed part of the Contractor's establishment on site and general obligations i.e. that part which is substantially fixed and is not a function of the time required for the completion of the contract.

This sub-item shall not be subject to any variation whatsoever.
Payment of the lump sum tendered under Sub-Item C3.2.1.1.3.1 (a) will be made in three instalments, as follows:
The first instalment, 50% of the lump sum, will be paid in the first payment certificate after the Contractor has met all his obligations under this section, and has made a substantial start with the work in accordance with the approved programme.
The second instalment, 35% of the lump sum, will be paid one year after the commencement of the contract.
The third instalment, 15% of the lump sum, will be paid when a Taking-Over Certificate has been issued in terms of Clause 10 of the General Conditions of Contract.

Before any payment is made under this sub-item, the Contractor shall satisfy the Engineer that he has provided adequate facilities and equipment. The Contractor shall also satisfy the Engineer that he either owns such facilities and equipment, or that he has entered into leasing or rental agreements to ensure that the facilities and equipment will be available for the duration of the contract. The Contractor may be required to produce documentary proof of ownership or lease or rental agreements, and that payments have been made in terms of such agreements.

In the event of the Contractor being unable to satisfy the Engineer as to the ownership of the facilities and equipment or the existence of lease or rental agreements acceptable to the Engineer, the Engineer shall have the right to withhold payments under this sub-item, or to

deduct from any monies owning to the Contractor payments already made under this sub-item.

The tendered rates for Sub-Item C3.2.1.1.3.1 (b) shall represent full compensation for that part of the Contractor's establishment on site and general obligations which are mainly a function of time.

Payment will be made in equal monthly instalments, from award until the end of the contract.

Payments under Items C3.2.1.1.3.1 (a) and C3.2.1.1.3.1 (b) will not be subject to any variation.

Should the progress of the Contractor be in arrear in regard to his approved programme at any stage, the Engineer shall have the right to withhold payments under this item until the progress of the work is again in accordance with the approved programme

Any payment made under Item C3.2.1.1.3.1 will not be taken into account when determining whether the value of a certificate complies with the "minimum amount of interim certificate" as laid down in the Appendix to Tender.

Item		**Unit**
C3.2.1.1.3.2	Taking over, transporting and storage of existing stock of spares	Lump Sum

Payment under the lump sum tendered under sub-item C3.2.1.1.3.2 shall represent full compensation for the compiling of stock lists, taking over of stock, transporting to the storage area, loading and offloading and any other requirements for the orderly handover of the existing stock of spares into the contractor's care. Contractor shall price for all risks including travelling to numerous sites, multiple trips, transport from the previous Contractor/s sites to the Contractor’s site camp. Tenderer shall price for any other risks.

Item		**Unit**
C3.2.1.1.3.3	Training for Black Enterprise’s (BE’s) and SMME’s	
	Provisional sum for Training	Provisional Sum

The Provisional Sum shall be expended in accordance with the General Conditions of Contract

Contractor's handling costs and profit in respect of sub-item C3.2.1.1.3.3 (a)	%

The tendered % is a percentage of the amount actually paid for training, in accordance to the Client’s instructions, which shall include full compensation for all the Contractor's costs arising from the organising of the training.

Training Venue	Lump Sum

Payment under the lump sum tendered under sub-item C3.2.1.1.3.3 (c) shall represent full

compensation for the amount actually paid for the training venue, in accordance to the Client's instructions, which shall also include full compensation for all the Contractor's costs arising from the organising of the training venue.

Item	Unit
C3.2.1.1.3.5 Health and Safety Compliance:	
Preparation of a health & Safety plan and adherence thereof	Lump Sum

The tendered rate shall include full compensation for the preparation of a comprehensive Occupational Health and Safety file, in compliance with section C3.5 and the Construction Regulations as issued by the Department of Labour and adherence thereof.

Item	**Unit**
Costs of Health and Safety (Agent)	per Month

The tendered rate shall include full compensation for the provision of a Health and Safety officer, as specified under Section 3.5 and in compliance with the Construction Regulations.

Item	**Unit**
Personal Protective Equipment for all staff (incl. safety jackets, hard-hats, etc.)	Lump Sum

The tendered rate shall include full compensation for the Personal Protective Equipment for all staff , in compliance with section C3.5 and the Construction Regulations as issued by the Department of Labour and adherence thereof.

Item	**Unit**
C3.2.1.1.3.6 (a) Compliance with the Environmental Management Plan (EMP)	Month

The tendered rate shall include full compensation for the Compliance with the Environmental Management Plan (EMP), under section C3.3 and adherence thereof.

ACCOMMODATION OF TRAFFIC

C3.2.1.2.1 SCOPE

This section covers the requirements for the accommodation of traffic while work is being carried out either on or in the vicinity of the roadway, and the measures necessary to ensure the safety of both the public and the Contractor's employees.

C3.2.1.2.2 GENERAL REQUIREMENTS

The area covered by the contract includes some of the most heavily trafficked freeway sections in the country. The need for the Contractor to regard the safe accommodation of traffic as a major component of the work involved in the contract can therefore not be over-emphasized. The accommodation of traffic will require diligence, attention to detail, and strict compliance with the provisions of the contract on the part of the Contractor.

In addition to the high traffic volumes, there are several geometric aspects, which further complicate the accommodation of traffic. The median between the carriageways is narrow, and in general there is a median barrier, consisting either of guardrails or a concrete barrier, which prevents vehicular access to the median. Furthermore, the median shoulder is narrow, ranging from 1,0m to 1,8m in width. As a result, any work to be done on lighting poles or masts in the median will require occupation of the median lane by the maintenance vehicles and personnel.

During all work on or in the vicinity of the roadway, the Contractor will be held responsible for the safe accommodation of traffic with a minimum of inconvenience to the public. The Contractor will be required to carry out this work strictly in accordance with the provision of this specification and the drawings, and any further requirements, which may be ordered by the Engineer. Should the Contractor not do so, the Engineer shall have the right to order that the work be stopped until he is satisfied that the Contractor is in a position to comply with all the requirements. The Contractor shall not have any redress under the contract for any consequential damages suffered by him as a result of delays caused by such stoppages ordered by the Engineer.

Working hours for the execution of all work other than emergency work are to be restricted to the period between 09h00 and 15h00 on normal weekdays. Should the Contractor choose to do so, he will be permitted to work over weekends and on public holidays. This approval shall be at the absolute discretion of the Engineer, and no additional payment will be made for working outside normal working hours.

C3.2.1.2.3 PROCEDURES FOR THE ACCOMMODATION OF TRAFFIC

C3.2.1.2.3.1 Work in the Median

Work on lighting poles and masts in the median will require the use of one or more vehicles occupying the median lane. The procedures to be adopted and the traffic control devices to be employed which are described below.

The vehicle (or vehicles) used in the work will always proceed in the same direction as the traffic. The vehicle (or the rear vehicle in the case of two vehicles) will be required to be equipped with high visibility rear treatment. This consists of various signs and flashing tights attached to the rear of the vehicle. If the vehicle is unsuited for the mounting of the high visibility treatment, a trailer fitted with the high visibility treatment may be employed.

- Signs are to be displayed on both sides of the carriageway warning that maintenance operations are in progress and that there is a lane closure ahead. The supports for these signs are to be so designed that they are sturdy, easily moved to the next position, and can be accommodated within the various median configurations which will be encountered.

Once the maintenance is under way, two flagmen are to be continuously stationed upstream of the work area. These flagmen are also to be utilized in establishing the initial taper at the start of the operation. All personnel involved in the maintenance operation are to wear high visibility clothing.

The maximum length of the lane which may be closed off at any time is 1 km, except for the interim period when moving from one work section to the next. When moving from one section to the next, the signs and cones for the first section are to be left in place until the signs and cones for the next section are in place. In order to achieve this, two full sets of signs and cones will be required. The traffic accommodation layout shall be as specified in the South African Road Traffic Signs Manual (SARTSM), volume 2, chapter 13 of the June 1999 edition published by the Southern African Development Community.

C3.2.1.2.3.2 Work in Other Areas

The traffic accommodation measures provided during work in areas other than the median, such as the edge of the freeway and of ramps, and inside the interchange areas shall be in accordance with Road Traffic Signs Manual published by the Southern African Development Community. The Contractor's attention is particularly drawn to the necessity for entering and leaving the roadway in a safe manner, and for keeping both personnel and equipment as far as possible away from the edge of the roadway.

C3.2.1.2.3.3 Minimum work teams

The minimum number of maintenance work teams to be allocated on site are indicatively proposed in the table below. The Contractor shall be responsible for allocating, managing and maintaining the necessary teams, resources, and trained personnel to maintain and improve the sustainable operation and performance of the lighting and electrical infrastructure.

The teams allocated, the size of each team, the number of personnel and resources allocated per team by the Contractor shall be sufficient to fulfil contractual maintenance work obligations timeously and maintain responsive KPI's while also responding to, attending to and completing emergency works, repair to damaged work, and improvement works simultaneously and timeously.

Table C3.2.1.2.3.3 – Minimum Work Team Allocation

Route	Section	Section length [km]	Min number of maintenance teams	Min number of traffic accommodation teams
N12	18	4.30	1	1*
N12	19	28.60	2	1
R21	1	26.00	2	1
R21	2	7.10	1	1*
N3	12	17.90	1	1

Emergency maintenance	1	1*
Improvement work	1*	1*
Repair damaged work	1*	1*

*An existing team could be used from existing resources, if available, else allocate independent team/s.

The above table provides guidance to the Contractor only. By no means does this restrict the Contractor from allocating additional teams, personnel or other resources nor alleviate the Contractor from any responsibility of fulfilling contractual maintenance work obligations timeously, maintaining responsive KPI's any all other works timeously. The tendered rates shall be all inclusive, thus no additional payment shall be afforded to the Contractor for allocating additional teams, personnel or other resources to fulfil works timeously and to comply to Contract Conditions. Such expenditure shall be at the Contractor's own expense.

C3.2.1.2.3 Provision of Accommodation of Traffic

The unit of measurement shall be the month or part thereof that the accommodation of traffic is required on site during the approved Contract Period. No distinction will be made with respect to the type and/or number of detours, deviations, partial / half width road sections, permanent or temporary closures used to accommodate the traffic.

The contract rate shall include full compensation for complying with SARTSM and Section C3.2.1.2 ACCOMMODATION OF TRAFFIC in addition to all the general obligations of the Contractor, including keeping motorists informed of the traffic accommodation arrangements and facilities, including personnel, including for the costs of placing, maintaining, removing, relocating and protecting from damage all temporary and permanent signage and all other traffic control facilities as often as required for constructing / maintaining the Works and for carrying out testing and inspections and for any other related costs that are not covered by other items contained within Part C3.

C3.2.1.2.4 Traffic Accommodation Layouts and Traffic Control Devices

All traffic accommodation layouts and traffic control devices shall be in accordance with Road Traffic Signs Manual published by the Southern African Development Community.

C3.2.1.2.5 Temporary Control Facilities

The engineer may instruct the contractor to provide any other road sign, reflective tape, etc. not measured in standard pay-items. Such road signs shall conform to the requirements of the

SARTSM, or specification provided by the engineer. Similarly, in order to ensure that the travelling public is kept fully informed and warned on matters relating to the accommodation of traffic, construction sign posting and the effect of the construction on the free flow of traffic through the site, the Contractor shall arrange for advertising in the press and/or for other forms of publicity as per Engineer's request.

C3.2.1.2.6 Traffic Safety Officer

The contractor shall submit a CV of the candidate to the engineer for approval before the candidate is appointed as the traffic safety officer. Make himself available to discuss road safety and traffic accommodation matters whenever required by the engineer and shall be responsible for the following:
Record on neat and dimensioned sketches and submit to the engineer the position and sign reference number, where applicable, of each sign, barricade, delineator, cone, amber flicker light, guardrail and permanent or temporary painted road marking feature. The position of each shall be adequately referenced from the marker boards or other surveyed points on the site of the works.

These records shall also show the date and time at which the recorded traffic accommodation features are certified correct by the traffic safety officer and shall be signed by the traffic safety officer before being submitted to the engineer.

The records shall similarly account for whatever changes are made in the field. Such changes shall record the position of flagmen and stop/go control men and their associated traffic accommodation equipment wherever they are used.

Personally inspect the position and condition of each traffic accommodation feature on the whole site of works twice each day by 09h30 and by 14h30, to record all irregularities discovered and the remedial action taken, and to signoff as correct and submit to the engineer such record sheets by midday of the next working day. The traffic safety officer shall keep a duplicate book for this specific purpose.

The traffic safety officer shall also submit with this report the daily labour returns of flagmen, stop/go and traffic signal control men employed.

The traffic safety officer shall be equipped with a cellular phone and shall have a traffic safety vehicle and sufficient labour at his disposal 24 hours a day, including all prescribed non-working days, and shall not be utilised for other duties. He shall be directly answerable to the contractor's site agent. The traffic safety officer shall have his own vehicle to carry out inspections and at least one assistant to accompany him full time. Furthermore the traffic safety vehicle shall be a truck with a capacity of at least 3 tons and shall be equipped with a high visibility rear panel in accordance with the requirements of the SARTSM as well as a truck mounted impact attenuator complying with TL-2 criteria when tested in accordance with NCHRP 350 or N1 criteria when tested in accordance with EN 1317. (Certification of compliance must be onsite at all times). The attenuator shall be used when the vehicle is utilized to close traffic lanes or when attending to stationary or broken down vehicles or accident scenes. The words TRAFFIC CONTROL shall be written on a warning sign in highly legible letters, not less than 150mm high, and the sign shall be mounted on both the traffic safety officer's vehicle and the traffic safety vehicle at least 1,5m above ground level. The proposed sign and letter dimensions shall be submitted to the engineer for his approval

The vehicles shall also be equipped with an amber-coloured flashing light of the rotating parabolic reflector type with a minimum intensity of 100W. The warning light shall be switched on at all times and the sign shall be displayed when the vehicle is used onsite.

The traffic safety officer shall have a direct line of communication at all times with the police and traffic officers responsible for the area within limits of the contract.

Ensure that all obstructions related to the contractor's activities be removed at the end of each work shift where applicable as instructed by the engineer and that the roads are safe for the travelling public.

In the event of an accident the traffic officer shall record in a written report the details of the accident, record the position of all temporary road signs, barricades, delineators, flagmen and any other devices used for traffic accommodation. In addition the report shall include a neat dimensional sketch, photographs, identifiable permanent features, and any other relevant information.

At least two separate traffic safety officers and teams shall be employed when construction is carried out during the day and night.

C3.2.1.2.7 Traffic signaling work

The contractor shall look at all the maintenance of traffic signals on interchanges on an ad-hoc basis.

C3.2.1.2.8 MEASUREMENT AND PAYMENT

The contractor's tendered rates for the relevant items in the schedule of quantities shall include full compensation for all possible additional costs which may arise from the above and no claims for extra payment due to inconvenience as a result of the modus operandi will be considered.

Item	**Unit**
C3.2.1.2.8.1 Temporary Control Facilities	
Traffic control measures ordered by the engineer	
(i) Provision of other traffic control measures	Provisional Sum
(ii) Handling costs and profit in respect of sub-item C3.2.1.2.5.1 (a)(i)	Percentage (%)

Expenditure under this payment item, (e.g. media releases or other signs to deliver information to the public) shall be made in accordance with the general conditions of contract, sub-clause 13.5, for the supply and installation of any additional signs or other traffic control measure requested by the engineer in accordance with clause B1503(g) and C3.2.1.2.5.

The tendered percentage is a percentage of the actual amount spent under subitem C3.2.1.2.8.1(a)(i), which shall include full compensation for the handling costs of the contractor, and the profit in connection with providing other signs and traffic control measures ordered by the engineer."

Item	**Unit**
C3.2.1.2.8.2Traffic safety officer	Month

The unit of measurement shall be the month that the specified duties of the traffic safety officer are performed, irrespective of the number of traffic safety officers employed in any 24 hour day.

The tendered rate shall include full compensation for the cost of the traffic safety officer(s) to conduct the duties as specified in clause C3.2.1.2.6 and also includes the provision of the traffic safety vehicle, his own vehicle, fuel, vehicle maintenance costs, drivers, labourers and the cost of the cellular telephone and all other incidentals related to the performance of the traffic safety officer's duties.

Item		**Unit**
C3.2.1.2.8.3	Traffic signaling work	Provisional Sum

The provisional sum provided is to cover the cost of the supply and installation for the maintenance of traffic signals on interchanges on an ad-hoc basis as requested by the Engineer in Terms of clause C3.2.2.7 and shall be expended in accordance with the provisions of Sub-Clause 13.5 of the General Conditions of Contract.

Item	**Unit**
C3.2.1.2.8.4a) Provision of suitable monitoring cameras (similar to Eagle Eye) Full HD Dash Camera for route patrol purposes with night vision and GPS mapping functionality including relevant SD cards	No.
b) Storage of Route Patrol data	Month

The unit of measurement shall be the number of cameras supplied and installed. The rate shall include full compensation for the supply and installation of the cameras in the routine patrol vehicles by the camera supplier, including the tenderer's own costs to manage the process.

The unit of measurement shall be per month for the monitoring and recording of the footage captured on the cameras installed in the routine patrol vehicles.

Storage of route patrol data shall be stored on suitable hard drives/ servers provided by the Contractor, data shall be made available at request by the Engineer.

C3.2.1.3 PREVENTATIVE MAINTENANCE

C3.2.1.3.1 SCOPE

This section covers work to be carried out by the Contractor on a routine basis, and includes the general maintenance of all equipment, including the replacement of certain items of equipment if they are found to be defective, and fault detection by means of patrols and regular intervals. The various components of the installation to be maintained are set out in Schedule A at the end of part C3.2.1.3.

C3.2.1.3.2 MAINTENANCE TO BE CARRIED OUT ONCE PER YEAR

High Masts

(i) Cleaning

- Distribution boards and associated electrical equipment.

The distribution boards inside the mast are to be cleaned thoroughly to remove all traces of contaminants such as grease and dust.

Luminaires

The inside of all lanterns, including bowls reflectors and lamps are to be carefully cleaned with soft clean cloths. The outside of the bowl is to be washed with water and a detergent. All cleaning is to be carried out with due care so as not to scratch or otherwise damage the equipment.

(ii) Electrical Checks

Distribution boards and associated electrical equipment.

The distribution boards inside the masts and the associated electrical equipment are to be tested for defective performance using an approved testing system. All electrical connections are to be inspected and tightened if necessary.

Luminaires

All lamps are to be removed from their holders and the contacts checked for arcing. All electrical connections are to be inspected and tightened where necessary.

The power-factor correction capacitor is to be checked by measuring the "ignition" current and the "during operation" current of the lamp. These currents for various lamps should be in accordance with the values specified below, If the measured current in any instance differs from that specified by more than 10%, the capacitor is to be replaced. The "during operation" current is to be measured after the lamp has been burning for at least five minutes.

	LU60	LU400	LU25
LAMP	**HPS**	**HPS**	**HPS**
	600W	400W	250
"Ignition" Current (A)	7.9	5.6	3.6
"During Operation" Current	6	4.5	2.9
Capacitor (microfarads)	60	50	33

Electrical Trailing Cable

The electrical trailing cable shall be checked for faults or damage and replaced if found to be defective. The following procedures for replacement shall be adopted:

1. Disconnect the trailing cable plug from its socket in the distribution board.
2. Remove the plug from the trailing cable.
3. Remove the cable sock from the rope locating plate.
4. Slide the Kellems grip off the old trailing cable.
5. Pierce a hole through the new and the old trailing cable approximately 30 mm from their respective ends.
6. With the use of a piece of steel wire, approximately 1,5 mm diameter connect the two ends together.
7. Tape up the connection to ensure a smooth profile.
8. Draw a length of the new trailing cable, approximately 1m, through the Kellems grip and reconnect the Kellems grip to the rope locating plate.
9. Fit the winch to the mast and lower the luminaire frame as per the operating instructions.
10. Whilst lowering the luminaire frame allow the new cable to feed up the mast.

Important: When the luminaire carriage reaches door level, the old trailing cable will fall to the ground with the new cable attached to its end - stand well clear

11. Disconnect the trailing cable plug from the connection box.
12. Remove the plug from the old trailing cable.
13. Remove the old trailing cable from the Kellems grip on the luminaire carriage.
14. Pull the end of the new trailing cable through the Kellems grip until the cable easily reaches

the connection box.

15. Make off the ends of the trailing cable and reconnect the plug.
16. Insert the plug into the socket on the connection box.

17. Raise the luminaire carriage to the top of the mast as per the operating procedures.

18. Remove winch from the mast.

19. Take up all the unnecessary slack in the trailing cable at the Kailems grip attached to the rope locating plate.

20. Make off the trailing cable ends and reconnect the plug.

21. Insert the plug into its socket on the distribution boards.

22. Switch on the circuit breakers marked LIGHTS and check the functioning of the luminaires.

23. Close and lock the access door.

*Lighting protection

If the mast is fitted with alighting protection earthing installation at the base, this is to be inspected and tested in accordance with the recommendations of BS CP236 (Protection of structures against lightning and BS CP1013 (Earthing).

(iii) Mechanical checks

*Canopies

Canopies are to be checked to ensure that water is not able to penetrate to the light fitting. If found to be defective, the gasket and/or mounting bolt are to be replaced.

*Lifting equipment

The lifting equipment must be inspected by a qualified person holding a Government Certificate of Competency. This person shall certify that the lifting equipment complies with all relevant laws and regulations, such as the Mines and Works Act and the Occupational Safety Act.

Operation of the maintenance cage in conjunction with a drum winch shall at all times comply with the recommendations of the supplier of the cage and the manufacturer of the mast. Persons operating the cage shall be fully conversant with the required safety measures and operating procedures. The Engineer will supply the Contractor with the relevant operating manuals.

*Wire ropes and mast top

The following procedures are to be carried out:

1. Inspect rope lay on winch and section of rope visible at mast door opening for frays, kinks, or corrosion.
2. Inspect anchorage point of winch rope at compensating pulley (if fitted).
3. Inspect winch rope throughout length for frays, kinks or corrosion.
4. Inspect rope anchorage points on winch drum and lantern carriage.

5. From the base of the mast observe ropes from lantern carriage in lowered position to mast head for any obvious defects.

6. Test load the wire ropes with the maintenance cradle before using maintenance cradle to carry personnel.

7. Lower lantern carriage, uncouple and attach maintenance cradle.

8. Load maintenance cradle with a test load equal to safe working load shown on the SWL Plate on the side of the cradle.

9. Using power drive hoist the head of mast and return to ground level.

10. Remove test load.

11. Inspect head pulleys, split pins etc. for wear and corrosion, and tighten all nuts and bolts. Pulleys have oilite bushes, which are not expected to require attention.

12. With lanterns returned to mast head check that all lamps light.

13 Check that details of rope and cable rigging (now visible in mast base) and lantern carriage docking, are all correct.

14. Check foundation bolts, tighten nuts where necessary.

• Lantern carriage

The following procedure is to be carried out:

1. Inspect guide rollers (where fitted), lubricate and adjust if necessary.
2. Inspect interconnecting cables and junction boxes for damage.

3. Check electric supply cable anchorage, and check for physical damage to cable.

4. Check all nuts and bolts, tighten if necessary.

In order to take tension off the suspension rapes when the lamp ring is in the lowered position, a support ring shall be fitted around the mast-shaft above the door opening. Pipe support legs resting on the mast base-plate will support the mass of the lamp ring thus permitting disconnection of the suspension ropes.

Mast corrosion protection

During the ascent in the maintenance cage, the galvanised surface of the mast is to be checked for damage to the coating and any signs of corrosion. Any affected areas are to be de-rusted and hand cleaned with a detergent. A zinc-rich paint is then to be applied to the affected areas.

Lighting Poles

(i) Cleaning

• Cleaning inside the pole

The inside of the pole behind the access door is to be thoroughly cleaned.

Luminaires

The procedures specified in clause C3.6.6 (i) for high masts are to be carried out.

(ii) Electrical checks

Inside the pole

The circuit breaker inside the pole immediately behind the access door is to be checked to ensure that it is functioning efficiently. All electrical connections are to be inspected and tightened where necessary.

Luminaires

The procedures specified in clause C3.6.6 (ii) for high masts are to be carried out.

(iii) Mechanical checks

Canopies

The procedures specified in clause F1.2.1(iii) for high masts are to be carried out.

Foundation bolts

All foundation bolts are to be checked, and tightened if necessary.

LT Switchgear, Mini-substations, Distribution Boards Pillars and Kiosks

(i) Housings

The interior of all boards, pillars, kiosks and mini-substations are to be cleaned. A chemical herbicide is to be applied to prevent grass growing inside the electrical housing.

All legends and wiring diagrams are to be checked and replaced if necessary.

Paintwork both on the inside and the outside the housing is to be checked. Any rust spots are to be cleaned down to bare metal by grinding, primed and a zinc chromate primer, and painted with one coat of an enamel paint of the appropriate colour.

(ii) Switchgear

All bolts and nuts on switchgear, busbars etc., are to be checked and tightened if necessary. The operation of all isolators, switches, circuit breakers, relays, contactors etc., shall be checked. Defective are to be repaired or replaced.

(iii) Photocells

The bowls of the photocells which are installed on 2,5 m poles or other suitable locations are to be cleaned, and the operation of the cell checked. If found to be defective, the cell is to be replaced.

HT Switchgear

Preventative maintenance on HT Switchgear is generally limited to cleaning only, after the necessary safety precautions have been taken. Only suitably qualified persons may work on HT Switchgear.

However, on oil filled switchgear the Contractor will be expected to engage the services of a specialist oil purification company, to undertake the purification of the oil in such switchgear to SANS 555.

In instances where the oil can no longer be purified due to the deterioration, the Contractor shall supply, deliver and replace the oil in the concerned switchgear or transformer.

Replacement of Minor Items of Equipment

During the preventative maintenance inspections carried out on high masts, lighting poles and switchgear, any minor items of equipment which are found to be defective or damaged are to be replaced. These items would include lamp holders, lamps, power factor correction capacitors, ballasts, igniters, circuit breakers, earth leakage relays, photocells, HRC fuses and cartridges and other similar items.

The Contractor will be required to have these items available during preventative maintenance operations. The labour involved in the replacement of these items will be deemed to be included in the rates tendered in section C3.2.3.6of the Schedule of Quantities. The supply of the replacement items will be paid for under particular items scheduled in C3.2.3.6.6 of the Schedule of Quantities. The items supplied are to comply with the following requirements:

Lamp holders:	E40 Goliath Edison Screw (GES) porcelain with anti-vibration spring, 3kV pulse tested Lamps: GE or equivalent (Description: The High-Pressure Sodium Lamps must be of very robust and reliable construction,and designed to meet the most demanding requirements. The sodium resistant ceramic must allow for slow voltage rise to give a rated average life of up to 35000 hours. The lamp must have a rugged monolithic arc tube for higher reliability, high xenon fill gas to deliver a high luminous efficiency up to146 lm/W. The lamp must also be compatible with both magnetic and electronic ballasts.)
PF correction capacitors:	Bag Turgi or similar
Ballasts:	Parmar or similar
Ignitors:	Parmar or similar
Circuit breakers:	10 -20A, single pole Merlin Gerin 5 kA,

Photocells	National plug-in type or similar
HRC fuses:	English Electric "Red Spot" or similar

C3.2.1.3.3 PREVENTATIVE MAINTENANCE TO BE CARRIED OUT ONCE A YEAR FOR THE FIVE -YEAR PERIOD

Inspection and Replacement of the Steel Wire Ropes on High Masts

1. Fit the luminaire support ring brackets to the mast.
2. Open the mast access door.
3. Fit the double drum winch to the mast and attach the winch ropes to the rope locating plates
4. Lower the luminaire carriage until it rests on the support bracket.
5. Disconnect the wire ropes from the luminaire carriage at the two lifting points.
6. Tie a length of 3 mm diameter nylon rope to the thimble end of each of the wire ropes and secure the loose end to an immovable object i.e. the luminaire carriage.
7. Carefully pull the winch ropes out through the mast access opening, laying them out neatly and ensuring that they are in a safe place there they will not get damaged during later operations.
8. Remove the rope locating plates from the mast stainless steel wire ropes.
9. With the use of a piece of insulation tape, mark each wire rope where the loose end meets the live (tension) portion.
10. Remove the three stainless steel Crosby clamps from each of the wire ropes and store them with the stainless-steel thimbles in a safe place.
11. Tie the loose end of the 62 m nylon ropes to the bracket ends of the wire ropes.
12. Now pull down the nylon ropes outside the mast and draw the stainless-steel ropes out of the mast.

Important: Always ensure that both ends of the two ropes are held and guided as the difference in weight could let the wire rope fall down the outside of the mast unexpectedly and break the nylon rope/bracket connection.

13. Lay out the wire rope neatly for inspection.
14. Should it be found that a wire rope is damaged and required replacement, the following steps should be taken:

    Lay out the new stainless steel wire rope next to the existing rope

    Mark the new rope at the identical position where the old rope was marked with the insulation tape

    Attach another piece of insulation tape to the new rope where the end of the existing rope meets the new rope

    Remove the nylon rope from the bracket end of the existing rope and connect to the new rope.

15. When inspected, again pull down the nylon ropes within the access door opening and let the wire ropes move up to the outside of the mast, over the pulleys and down the inside.
16. When the ropes are back inside the mast shaft, replace the stainless-steel thimble and Crosby clamps, ensuring that the thimble is in the exact position as before. This is achieved by ensuring

that the end of the rope is again corresponding to the tape mark on the wire rope.

17. Re-connect the rope locating plates to the made off thimbles of the wire ropes.

18. Pull the nylon ropes on the outside of the mast and allow the winch ropes to move freely through the access door opening.

19. Re-connect the thimble ends to the luminaire carriage.

20. Raise the luminaire carriage to the top of the mast.

21. When the trailing cable has stopped moving, ensure that the holes in the rope locating plates coincide with those in the rope lock assembly and make adjustments.

22. Insert the rope locking screws firmly.

23. Take the tension off the winch ropes and ensure that the ropes locating screws are properly seated

24. Re-check that all components are securely fixed and properly seated.

25. Remove the double drum winch from the mast

26. Close and lock the access door

Important: Where Nylock nuts are used, ensure that they are replaced after removal. Under no circumstances may the old nut be re-used.

The complete earthing installation of all high masts and lighting poles is to be tested.

All lamps on high masts lighting poles and underpass luminaires are to be replaced, whether operational or not.

C3.2.1.3.4 INTERIM LAMP REPLACEMENT

The Contractor will be requested to carry out interim lamp replacements on any section of the Contract when instructed to do so by the Engineer. Any such interim lamp replacement shall involve the replacement of lamps and/or poles or underpass luminaires on a particular section of the contract.

C3.2.1.3.5 GROUP LAMP REPLACEMENT

The Contractor will be requested to carry out group lamp replacements on any section of the Contract when instructed to do so by the Engineer. Any such group lamp replacement shall involve the replacement of lamps on a consecutive start point to end point and/or poles or underpass luminaires on a particular section of the contract.

C3.2.1.3.6 MEASUREMENT AND PAYMENT

Item **Unit**

C3.2.1.3.6.1 Preventative maintenance to be carried out once per year Lump Sum/year

The tendered lump sum per year for Items C3.2.1.3.6.1 shall include full compensation for carrying out during one year the annual preventative maintenance cycle specified in C3.2.1.3 of the Project Specification on all the relevant items of equipment in the particular section. The tendered lump sum per year shall include full compensation for all labour, tools, equipment, materials, transport and any other items necessary to complete the work as specified including the replacement of defective equipment. The tendered lump sum for the Contract is to be based on the number and type of each item of equipment listed in the Schedule of Equipment to be maintained. The tendered rate shall allow for lane closure and traffic accommodation in accordance with the South African Road Traffic Signs Manual (SARTSM), volume 2, chapter 13 of the June 1999 edition.

Item **Unit**

C3.2.1.3.6.2 Inspection of the steel wire ropes on the high masts as Specified

Lump Sum/year

The tendered lump sum of Item C3.2.1.3.6.2 shall include full compensation for inspecting the steel wire ropes on all the high masts during the contract period according to the procedure specified in clause C.3.2.1.3 of the Project Specification. The tendered lump sum shall include full compensation for all labour, tools, equipment, materials, transport and any other item to complete the work as specified. The tendered lumpsum is to be based on the number and type of high masts listed in the Schedule of Equipment to be maintained.

Should an inspection reveal that the steel wire ropes on any mast require to be replaced, this will be done at the same time as the inspection. No additional payment will be made for the labour involved in replacing the ropes. Payment for the provision of the new ropes will be paid under the provisional sum in item C3.2.1.4.4.1 of the Schedule of Quantities,

Item **Unit**

C3.2.1.3.6.3 Testing of earthing installation for high masts and Lighting poles

Lump Sum/year

The tendered lump sum for C3.2.1.3.6.3 shall include full compensation for testing the earthing installation of all the high masts and lighting poles. The tendered lump sum shall include full compensation for all labour, tools, equipment, material, transport and any other item necessary to complete the work as specified. The tendered lump sum is to be based on the equipment listed in the Schedule of Equipment to be maintained.

Item **Unit**

C3.2.1.3.6.4 Group lamp replacement of all lamps on high masts, Lighting poles and in underpass luminaires as specified in C3.2.1.3.5 of the Project Specification (excluding the supply of the lamps)

Lump Sum/year

The tendered lump sum for C3.2.1.3.6.4 shall include full compensation for replacement of all the lamps on all the high masts and lighting poles and in all underpass luminaires on a

particular section of the Contract once during the Contract Period according to the procedure specified in clause C3.2.1.3.5 of the Project Specification,

The tendered lump sum shall include full compensation for all labour, tools, equipment transport and any other item necessary to complete the work as specified.

Payment for the supply of the lamps will be made under the relevant item in C3.2.1.3.6.6 of the Schedule of Quantities. The tendered lump sum is to be based on the lamps listed in the Schedule of Equipment to be maintained in Clause C3.2.1.3.2.

Item		**Unit**
C3.2.1.3.6.5	Interim replacement of lamps on high masts, lighting poles and in underpass luminaires as specified in clause C3.2.1.3.4 of the Project Specifications (include anti-vandal pole) (excluding the supply of the lamps)	
(a)	40 m mast	No.
(b)	30 m mast	No.
(c)	20 m mast	No.
(d)	20m scissor in median	No.
(e)	20m mid-hinge in median	No.
(f)	12m mono-pole in median	No.
(g)	Underpass luminaire	No.
(h)	5m mono- poles	No.

The unit of measurement for item C3.2.1.3.6.5 shall be the number of masts, lighting poles and underpass luminaires included in an interim lamp replacement.

The tendered rate shall include full compensation for replacing defective lamps, on the type of high masts and lighting poles described and in underpass luminaires according to the procedure specified in clause C3.2.1.3.4 of the Project Specifications. The tendered rate shall include full compensation for all labour, tools, equipment, transport and any other items necessary to complete the work as specified. Payment for the supply of the lamps will be made under the relevant item in C3.2.1.3.6.6 of the Schedule of Quantities.

Item		**Unit**
C3.2.1.3.6.6	Supply and installation of materials and equipment for preventative maintenance work	
1.	Lamp holders: E40 Goliath Edison Screw (GES) porcelain with anti-vibration spring, 3kV pulse tested	No.
2.	Lamps for interim lamp replacement (type of lamp specified)	No.
3.	Lamps for group lamp replacement (type of lamp specified)	No.
4.	Power factor correction capacitors complete with mounting saddles and fixings (capacitance specified)	No.
5.	Ballasts complete with fixings for(type of lamp specified)	No.
6.	Ignitors for (type of lamp specified)	No.
7.	Circuit breakers (type specified)	No.
8.	Contactors (type specified)	No.
9.	Low voltage fuses (type specified)	N0

10.	High voltage fuses (type specified)	No.
11.	High voltage fuse holders(type specified)	No.
12.	Photocells (type specified)	No.
13.	Connector strips for luminaire wiring strip of 3 with mounting bolts (area of conductor specified)	No.

The unit of measurement shall be the number of the particular item supplied and installed.

The tendered rates shall include full compensation for the supply and installation of the item as specified for installation under items of preventive maintenance work, including all costs involved in holding an adequate supply of the items readily available during preventative maintenance inspections.

Item	**Unit**
C3.2.1.3.6.7 Regenerate existing oil to meet SANS 555 requirements for regenerated oil	Litre

The unit of measurement shall be the number of litres purified for a minimum of three passes through the mobile purification plant.

The rate shall include all necessary costs of the deployment of the plant, and the purification of the oil and all other costs to purify the oil.

Item	**Unit**
C3.2.1.3.6.8 Supply, deliver and fill new virgin oil in existing transformers or switchgear	Litre

The unit of measurement shall be the number of litres supplied, delivered to site, and refilling of the affected equipment.

The rate shall include all costs to deliver, fill the new oil, and to transport and dispose of the used oil at an authorised facility.

Item	**Unit**
C3.2.1.3.6.9 Testing of mineral insulating oil	Sample

The unit of measurement shall be the number of samples tested, including the production of a detailed report produced on the oil sample, which report shall also include an analysis of the equipment condition that can be derived from the oil analysis. The following tests shall be conducted on the oil sample:

Moisture Content
Dielectric strength to IEC 60156
Dissolved gas analysis to IEC 60628
Acidity to IEC 62021-1
Furanic analysis to IEC 61198
PCB content, to IEC 60619

The rate shall include all costs to extract a sample from the equipment, deliver to a laboratory, undertake the tests and produce and present a comprehensive report to the Engineer and any other related costs.

Item	Unit
C3.2.1.3.6.8 Supply, deliver and fill new virgin oil in existing transformers or switchgear	Litre

The unit of measurement shall be the number of litres supplied, delivered to site, and refilling of the affected equipment.

The rate shall include all costs to deliver, fill the new oil, and to transport and dispose of the used oil at an authorised facility.

Item	Unit
C3.2.1.3.6.9 Testing of mineral insulating oil	Sample

The unit of measurement shall be the number of samples tested, including the production of a detailed report produced on the oil sample, which report shall also include an analysis of the equipment condition that can be derived from the oil analysis. The following tests shall be conducted on the oil sample:

Moisture Content
Dielectric strength to IEC 60156
Dissolved gas analysis to IEC 60628
Acidity to IEC 62021-1
Furanic analysis to IEC 61198
PCB content, to IEC 60619

The rate shall include all costs to extract a sample from the equipment, deliver to a laboratory, undertake the tests and produce and present a comprehensive report to the Engineer and any other related costs.

C.3.2.1.4 REPLACEMENT OF EQUIPMENT AND UPGRADING

C3.2.1.4.1 SCOPE

This section covers the work involved in replacing damaged or defective equipment, and certain items of work to upgrade the system.

C3. 2. 1.4.2 REPLACEMENT OF EQUIPMENT

Any items of equipment, for example masts, poles, minisubs etc., which are damaged by vehicle collisions or any other means, or which are found to be defective, are to be replaced or repaired by the Contractor. This work excludes the minor items of equipment, which are to be replaced as part of preventative maintenance, which are scheduled in Section C3.2.1.3.6 of the Schedule of Quantities. The replacement of equipment will be paid for in C3.2.1.4.4of the Schedule of Quantities.

C3.2.1.4.3 UPGRADING

It is not anticipated that any items of equipment items of equipment will require upgrading.

C3.2.1.4.4 MEASUREMENT AND PAYMENT

Item		Unit
C3.2.1.4.4.1	Replacement of equipment as instructed by the Engineer to replace or repair damaged or defective Equipment.	Provisional sum

The provisional sum provided to cover the cost of the replacement of equipment requested by the Engineer in Terms of clause C3.2.1.4.2 of the Project Specification shall be expended in accordance with the provisions of Sub-Clause 13.5 of the General Conditions of Contract. This item shall allow for lane closure and traffic accommodation in accordance with the South African Road Traffic Signs Manual (SARTSM),volume 2, chapter 13 of the June 1999 edition.

Item		Unit
C3.2.1.4.4.2	Replace mast/pole complete without luminaires (state type of mast/pole)	Number (No.)

Replace mast/pole complete without luminaires (state type of mast/pole and luminaires).

The unit of measurement shall be the number of each type of mast or pole delivered and erected. The tendered rates shall include full compensation for procuring, furnishing and installing the mast or pole by erecting it on the original or reconstructed foundation. The tendered rate shall include all costs of cranes or other equipment required to erect the mast or pole.

Item		Unit
C3.2.1.4.4.3	Replace complete luminaires (state type of luminaire and lamps)	Number (No.)

Replace complete luminaires (state type of luminaire and lamps).

The unit of measurement shall be the number of each type of luminaire delivered and installed on a mast or pole.

The tendered rate shall include full compensation for procuring, furnishing and installing the luminaire on the mast or pole, and the removal and disposal of the original luminaire if required.

Item			Unit
C3.2.1.4.4.4	Replacement of special lighting equipment at various interchanges		
	a)	LED Aviation Luminaire, Min 10 Candela, Night Operation	No.
	b)	150W LED Luminaire, 1300 Lumens at 700mA Max	No.
	c)	Various installations on the extent of the route	Provisional Sum

The unit of measurement shall be the number of each type of special light fitting delivered and installed on a mast, pole or anywhere else.

The tendered rate shall include full compensation for procuring, furnishing and installing the special light fitting including lamp on the mast, pole or anywhere else, and the removal and disposal of the original light fitting if required.

The provisional sum provided is to cover the cost of the supply and installation of equipment instructed by the Engineer at various installations on the extent of the route shall be expended in accordance with the provisions of Sub-Clause 13.5 of the General Conditions of Contract.

Item			Unit
C3.2.1.4.4.5	Repaint of Poles and Masts		
	a)	40m High Mast	No.
	b)	30m High Mast	No.
	c)	20m High Mast	No.
	d)	20m Mid-hinge in median	No.
	e)	20m Scissor Mast	No.
	f)	15m Mono-pole outside median	No.
	g)	12m Mono-pole outside median	No.
	h)	6.2m Pole buried. 5m MH	No.

The unit of measurement shall be the number of each type of mast/ pole.

The tendered rate shall include full compensation for procuring the Bitumen Aluminium based paint, hiring cost of the crane / cherry picker and any other costs to comply with clause C3.6.1.12.

Item	Unit
C3.2.1.4.4.6 Standardisation of locks	No.

The unit of measurement shall be the number of locks supplied and installed at various locations.

The tendered rate shall include full compensation for the supply and installation of locks at any location on the entire route of the site instructed by the Engineer. The locks shall be similar or equivalent to the “UNION” high security padlock.

Item		Unit
C3.2.1.4.4.7	Galvanizing on link poles	No.

The unit of measurement shall be the number of galvanising on link poles at various locations.

The tendered rate shall include full compensation for galvanizing on link poles at any location on the entire route of the site as instructed by the Engineer and shall be expended in accordance with the provisions of Sub-Clause 13.5 of the General Conditions of Contract.

C3.2.1.5 EMERGENCY WORK

C3.2.1.5.1 SCOPE

This section covers the work involved in rendering damaged or malfunctioning equipment safe in the case of emergency including high priority areas, where the normal operation of lighting is always required, as instructed by the Engineer.

C3.2.1.5.2 GENERAL REQUIREMENTS

In the event of an emergency, arising either from physical damage to the equipment, caused for example by a vehicle collision, or from a malfunction by any item of equipment, the equipment is to be restored to a safe condition by the Contractor as soon as possible. The damaged or malfunctioning equipment is to be made safe electrically, and any physical hazard to traffic, such as a fallen pole, is to be removed. **Emergency work entails work necessary to make the situation safe including high priority areas, where the normal operation of lighting is always required, as instructed by the Engineer.** Any work, which can be done at a late stage, will not be regarded as emergency work.

The Contractor shall respond immediately to emergency calls from the Traffic and Fire Departments of any of the municipalities within which the lighting installations are situated, the South African Police, the SOS control centre, officials of the Gauteng Provincial Government, South African National Roads Agency Limited and the Resident Engineer.

C3.2.1.5.3 REQUIREMENTS FOR THE ROUTINE PATROL AND EMERGENCY TEAM

The Contractor shall hold available a routine patrol and emergency team of personnel and plant which can respond to an emergency call at all times i.e. 24 hours per day, 7 days per week, including public holidays. The maximum response time of this team i.e. the time from when an emergency call is received until the time when the team arrives on the scene, shall be four hours.

The plant and personnel available to the team shall be capable of the following:

(a) Making safe all damaged or malfunctioning electrical equipment. Suitably qualified and trained personnel will be required for this work, which includes the operation of the MV switchgear when MV transformers and mini-subs have to be disconnected from the system.

(b) All work necessary to clear the roadway and obtain access to damaged electrical equipment. This will necessitate the provision of lifting equipment, and means of access to masts and poles such as hydraulic and cherry pickers. The emergency team shall also have access to raising and lowering gear for all types of masts.

(c) Inspecting each section of the highway at least twice during the day, and twice at night, every night of the year including all public holidays and weekends.

(d) Checking the status of the lighting during the night patrol. In instances where the lighting system is de-energised due to tripped switchgear (LV and MV) the team shall immediately re-set the affected switchgear if possible.

The type of situations the team would expected to deal with under emergency conditions, would be vehicle collisions with masts, poles, distribution boards and pillars, mini-substations etc., as well as the malfunctioning of any item of equipment for any other reason, which creates a dangerous situation. Exact details of items of plant or personnel members required for the emergency team are not specified in detail., However, tenderers are require to provide with their tender information on the plant and personnel which would be available, and where this plant and equipment would be based. After the tender award, the Engineer shall have the right to do the following:

(a) Instruct the Contractor at any time to provide a list of the personnel and plant which are available for the emergency team, including full details of the names, qualifications and experience of the personnel available, and a full description of the plant available.

(b) Interview such personnel and inspect such equipment at any time.

(c) Instruct the Contractor to hold any additional personnel or plant available for the emergency team, which the Engineer deems to be necessary.

(d) Withhold payment to the Contractor for holding the emergency team available until the Engineer's requirements have been met.

C3.2.1.5.4 ACCOMMODATION OF TRAFFIC

The Contractor will be responsible for the accommodation of traffic while carrying out emergency work. The necessary traffic control devices such as signs, cones, etc shall be supplied by the Contractor. The Contractor will be required to have all these available at all times for use during emergency work. All vehicles used in carrying out emergency work are to be equipped with flashing amber lights. All personnel engaged in emergency work are to wear high visibility clothing, with both fluorescent material for day-time visibility and reflective material for night-time visibility. During the execution of emergency work, the Contractor will be required to comply with the instructions of the traffic authorities at the scene.

C3.2.1.5.5 MEASUREMENT AND PAYMENT

Item		Unit
C3.2.1.5.5.1	Holding routine patrol and emergency team available	Lump sum

The tendered lump sum shall provide full compensation for holding the emergency team as specified available for routine patrol and emergency work, including all costs involved in making the necessary personnel and plant available at all times. Contractor shall price for all risks.

The tendered rate shall allow for lane closure and traffic accommodation in accordance with the South African Road Traffic Signs Manual (SARTSM), volume 2, chapter 13 of the June 1999 edition.

Item		Unit
C3.2.1.5.5.2	Plant and Materials used during call-outs for emergency work	Provisional Sum

All work done on an emergency call-out will be paid for under rates quoted in C3.2.1.6.4 of the Schedule of Quantities. In the event of work being required for which no rates have been quoted all labour, plant and materials actually used will be paid for on a daywork basis. A provisional sum is provided in C3.2.1.5.5 of the Schedule of Quantities for this purpose, and provision is made for the submission of a percentage mark-up by the Contractor on the basic cost of labour, materials and plant.

Item		Unit
3.2.1.5.5.3 call-outs	Contractor's mark-up on day works undertaken on emergency for emergency work	Percentage (%)

C3.2.1.6 EXTRA WORK AND DAYWORKS

C3.2.1.6.1 SCOPE

This section covers the extra work that is expected to be required during the period but, because of its diverse and unpredictable nature, cannot be itemised at this time as well as the provision of a schedule of dayworks items which will also be used to undertake work which has been itemised at a high level in the Schedule of Quantities, particularly extra work.

C3.2.1.6.2 RATES FOR ITEMS OF EXTRA WORK

The items include in the schedule of extra works items in C3.2.1.6.4 are generally for the supply and installation of cables and accessories. Most of the items listed are rate only items, the rates inserted will however be taken into consideration when the tenders are adjudicated.

C3.2.1.6.3 DAYWORKS

The dayworks schedule includes labour and plant that could be required at various times to undertake work on the contract that is not individually itemised and in particular items of extra works. The Contractor is to price each of the items in the Schedule of Quantities.

C3.2.1.6.4 MEASUREMENT AND PAYMENT

Item		Unit
Extra Work		
C3.2.1.6.4.1 Supply, deliver, install, test and commission:		
(a)	LV Power cables: PVC insulated PVC bedded *SWA PVC sheathed 600/1000 V	Metre (m)
(b)	cables to SANS 1507 (cable type and number of cores specified)	
	Aerial Bundled Conductor (ABC): XLPE, UV Protection, 600/1000 V	Metre (m)
	cables to SANS 1418 (cable type and number of cores specified)	
(c)	MV cables, 6.65/11kV XLPE insulated, copper tape screened, PVC bedded, SWA, PVC sheathed MV cables to SANS 1339 (cable type and number of cores specified)	Metre (m)
(d)	LV cable & ABC terminations, glands, shrouds, lugs etc. (cable type and number of cores specified)	Set (set)
(e)	MV cable terminations, glands, shrouds, lugs etc. (cable type and number of cores specified)	Set (set)
(f)	LV cable joints (shall be scotch cast joints), sleeves, ferrules etc. (cable type and number of cores specified)	Number (No.)
(g)	MV cable joints, sleeves, ferrules etc. for 11kV XLPE MV cable (SWA)(cable type and number of cores specified)	Number (No.)
(h)	Galvanised, screwed conduit (size specified)	Metre (m)
(i)	Galvanised bosal conduit (size specified)	Metre (m)
(j)	Conduit end (bush and lockouts) (size specified)	Number (No.)
(k)	Conduit and (round conduit box 1, 2, 3 & 4 way) (size specified)	Number (No.)
(l)	PVC insulated copper conductors (cable size specified)	Metre (m)
(m)	Bare copper earthwire (cable size specified)	Metre (m)
(n)	Trailing cable neoprene (cable size specified)	Metre (m)

(o)	Supply, deliver, install, test and commission 3.3kV Cables	Metre (m)
(p)	Supply, deliver, install, test and commission terminations	Number (No.)
(q)	Supply, deliver, install, test and commission Joints	Number (No.)
®	Supply, deliver, install, test and commission 100kVA, 3.3kV/400V floor mounted transformer	Number (No.)
(s)	Fault location of faults on 3.3kV cable with approved fault locator	Number (No.)
(t)	Luminaires	Number (No.)

The unit of measure shall be the net length of cable installed in the works as instructed by the Engineer.

The tendered rate shall Include full compensation for procuring, furnishing, delivering and laying the cable in a trench or where directed by the Engineer.

The tendered rates for accessories shall include full compensation for all consumables and sundries necessary for the proper installation of the accessory.

"CSA" refers to cross sectional area which is the cable size in mm^2

Item		**Unit**
Dayworks		
C3.2.1.6.4.2		
(a) Labour for:		
(i)	Foreman	Hour (hr)
(ii)	Artisan	Hour (hr)
(iii)	Apprentice	Hour (hr)
(iv)	Semi-skilled labourer	Hour (hr)
(v)	Labourer	Hour (hr)
(vi)	Student	Hour (hr)

Item		**Unit**
(b) Transport for:		
(i)	Vehicles up to and including 1500 kg	km
(ii)	Vehicles over 1500 kg up to 3000 kg	km
(iii)	Vehicles over 3000 kg	km
(iv)	Vehicles over 3000 kg with high up crane	km

Item		**Unit**
(c) Special vehicles and equipment *:		
(i)	10 ton mobile crane truck	Hour (hr)

(ii)	30 ton mobile crane truck	Hour (hr)
(iii)	Mobile hydraulic personnel lift	Hour (hr)
(iv)	Attenuator safety truck	Hour (hr)

Item	**Unit**

(d) Ancillary equipment *:

(i)	Pump (100 litres per minute)	Hour (hr)
(ii)	Mobile air compressor including hoses and tools (260cfm)	Hour (hr)
(iii)	Generator 250kVA	Hour (hr)
(iv)	Generator 8kVA	Hour (hr)

Item	**Unit**
(e) Locating Cable Fault*:	**Hour (hr)**

The tendered rate shall Include full compensation for procuring, furnishing, consumables, sundries, delivering and any other risks to ensure a functional working solution or where directed by the Engineer.

***ITEMS MARKED HERE ARE SUBJECT TO A MINIMUM CHARGE OF 4 HOURS**

C3.2.1.7 REQUIREMENTS FOR PROVISION OF SECURITY

C3.2.1.7.1 SECURITY TO BE PROVIDED BY THE CONTRACTOR

The Tenderer shall provide Grade “C” security guards, to be used at the discretion of the Employer. The Grade “C” shall be strictly as defined by the Private Security Industry Regulatory Authority (PSIRA), and all guards shall be registered by PSIRA in full accordance to their regulations. Unregistered guards shall not be accepted under any circumstance.

The Contractor is to further note that these guards will **NOT** form part of the Contractor’s general security of his site, or plant. The Contractor’s own security must be priced for separately under the Preliminary and General items.

C3.2.1.7.2 MEASUREMENT AND PAYMENT

Item		Unit
C3.2.1.7.2.1	Provide Grade “C” security guards	Month

The unit of measurement shall be the number of security guards provided per month. Tenderer to note that 1 unit = 30 guards.

The rate shall include full compensation for the hiring of the guards, all necessary logistics and transport to deploy them on any location along the entire route, supervision and all other costs related to the provision of the guards.

Item		Unit
C3.2.1.7.2.2	Routine patrol vehicle	
	a) Monthly running costs	Lump sum per month

The tendered rate shall allow for the monthly running costs to operate the routine patrol vehicle, including fuels, insurance, and all other costs.

Item		Unit
C3.2.1.7.2.3	Security Cages	
	Security cage for mini-substation with existing palisade (incl. support structure)	No.
	Security cage for mini-substation without existing palisade (incl. support structure and foundations)	No.
	Security cage for 100kVA Transformer with existing palisade	No.
	Security cage for 100kVA Transformer without existing palisade	No.
	Security cage for Distribution Kiosk with existing palisade	No.

The tendered rate shall allow for the supply, delivery, installation including bolts, foundations, support structures and any other costs to ensure a functional working solution.

Item		Unit

C3.2.1.7.2.4 Manning of base-station for alarms	Lump sum per month

The tendered rate shall allow for the monthly costs for the Manning of base-station for alarms for the entire project including fuels, insurance, labour, vehicles, and all other costs to ensure a functional working solution. Tenderer shall price for all risks.

Item	**Unit**
C3.2.7.1.2.5 Low voltage alarm fence system	No.

The tendered rate shall allow for the supply and installation of Low voltage alarm fence system for mini-substation throughout the project route including all other costs to ensure a functional working solution. Tenderer shall price for all risks.

C3.2.1.8 GENERAL ELECTRICAL SPECIFICATIONS

1.1 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.

1.3 **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.

1.4 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.

1.5 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.

1.6 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.

1.7 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.

1.8 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.

1.9 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 tenmeters 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.

1.10. 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.

1.11. 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.

1.12. BALANCING OF LOAD

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

1.13. SERVICE CONDITIONS

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

1.14. 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.

1.15. 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.

1.16. 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.

1.17. SUPPLY AND CONNECTION

The supply will be at 400/230 Volt 50Hz.
The Contractor must arrange in good time with the local Municipality 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.

1.18 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 sites 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-resign 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 Particular 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 Particular 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.

1.19. 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.

1.20. 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.

1.21. EXCAVATION

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

1.22. 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:
   - 5.1 that 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,
   - 5.2 that the joint pit is dry and that all loose stones and material are removed,
   - 5.3 that the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,
   - 5.4 that the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,
   - 5.5 that the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,

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

5.7 that 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,

5.8 that 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 ± 5°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:
11.1 All 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.

1.23. DISTRIBUTION KIOSKS

1. General

All distribution kiosks and equipment shall comply with the requirements of the Particular 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 tiling 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: ±100kg per hinge

(e) **Sturdy door stays**

Material: Stainless Steel

Door open stay position: 90º 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 -10ºC and 60ºC.

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) 4 x electronic locks on the cage,
(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 6mm (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

Construction material

Enclosure Material (shell, roof and doors)	6mm 3CR12
Gland Plates	2mm 3CR12
Inner electrical equipment mounting plates	2mm 3CR12

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 roadside 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 6mm.
The door shall be flush with the box frame.
Doors shall be manufactured with minimum 6.0mm 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:	±100kg per hinge

I Sturdy door stays

Material:	Stainless Steel
Door open stay position:	90º 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 -10ºC and 60ºC.
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.

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 90 galvanized. The full frame to be hot dip 90 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) 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.

1.24 LABELLING AND ASSET TAGGING

All Luminaires, poles, Mini subs and Distribution kiosks shall be labelled as specified in the Particular 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-subs, transformers and equipment must be labelled and have the statutory labels as per SANS prominently visible.
All SANRAL poles, Distribution kiosks, min-subs 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.
(a) Parent Asset: Major items eg:
Lighting Structure
Kiosk

Transformer
Mini-substation
Substation
Cables

(b) 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.

(b) 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.

(d) 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.

(e) 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.

(f) 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.

(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 93 galvanized. The full frame to be hot dip 93 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) 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.

1.24 **LABELLING AND ASSET TAGGING**

All Luminaires, poles, Mini subs and Distribution kiosks shall be labelled as specified in the Particular 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-subs, transformers and equipment must be labelled and have the statutory labels as per SANS prominently visible.

All SANRAL poles, Distribution kiosks, min-subs 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.

(a) Parent Asset: Major items eg:

Lighting Structure

Kiosk

Transformer

Mini-substation

Substation

Cables

(b) 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.

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.

(d) **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.

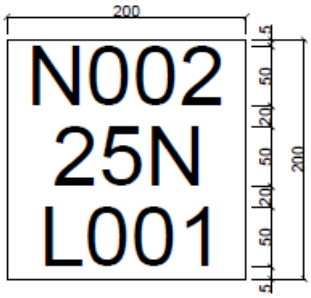
(e) Tag Colours:

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.

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###  DETAIL: ASSET NUMBERING SYSTEM	N002-25N-L001
3 TIER LABEL	1 TIER LABEL

g) 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

(i) Part 3 Asset Prefix description:
L – Lighting structure
K – Kiosk
T – Transformers
M – Mini-substation
C – Cable

(h) 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.

(i) 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

(j) 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.

(k) 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.

1.25. 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.

1.26. 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.

1.27. 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.

1.28. 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.

1.29. 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.

1.30. 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.

1.31. 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
T**he 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.

1.32. 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.

1.33 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.

1.34 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 Particular specs.

(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. (See drawing LC-1 in SANS 1200 LC).

(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).

1.35 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 contractor's 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 layed 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.

1.35.1 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.

1.35.2 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.

1**.35.3 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 70mm^2 : 75mm

b) In the case of cables with a conductor size of at least 70mm^2 : 150mm

1.36. LUMINAIRES

1. 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.

2. 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 A14.

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 0-10V or other approved driver, 7-wire connector block, minimum 10kV/10kA surge protection and earth stud. All luminaires to be supplied complete with a Lighting Management system where specified.

NO	Requirements	Minimum requirements
1	Luminaire Type	LED Street light
2	Performance Requirements	CIE 121, The photometry and goniophotometry of luminaires. SANS 9227/ISO 9227:2007, Corrosion tests in artificial atmospheres – Salt spray tests. Amdt 2 SANS 10098-1, Public lighting – Part 1: The lighting of public thoroughfares. SANS 60529/IEC 60529, Degrees of protection provided by enclosures (IP Code). SANS 60598-1/IEC 60598-1, Luminaires – Part 1: General requirements and tests. SANS 60598-2-1/IEC 60598-2-1, Luminaires – Part 2: 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%.
13	Surge Arrestor	Nominal discharge current: 10kA Voltage protection level: 2kV Response time: ≤25nS Luminaire cut-out
14	Lifetime at 25°C	>50 000 hrs (lumen depreciation not more than 30% - L70)
15	Operating Temperature	-5°C to +45°C No external part of luminaire shall exceed temperature of 70°C during or after operation
16	Thermal Management	Optimal external heat exchange surface Temperature sensor and cut out to prevent overheating
17	IP Rating: Control gear compartment Optical compartment	IP66 certified (SANS 60598)
18	Housing	Weather and corrosion proof. Marine grade die cast aluminium alloy grade AC-44300 or better in accordance with DIN EN 1706
19	Front Protector	Heat and Impact resistant. High impact clear glass, with sealed joint in housing
20	Impact resistance	Per SANS 62262 >IK 08
21	Screw, bolts and metal parts	Stainless steel S316
22	Nema Socket	NEMA/ANSI C136.41 compliant 7-pin socket
23	Finish	Unpainted Aluminium

1.37. 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.

1.38. 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 CO_2 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 1461specifications 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 70mm^2 bare copper conductors in opposite directions of the mast 1000mm below final ground level and terminate each on a 1,8m x 16mm^2 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.

1.39. 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. (note to the compiler to insert appropriate drawings as appendix)

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 luminaries 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 fuse box 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 fuse box opening.
Alternative shapes of fuse - box 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 fuse box 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 fuse box 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 90o to the fuse-box 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 fuse box 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 fuse box 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
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 jaggered 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.

1.40 MINI SUBSTATIONS

B.1. 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 6mm (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 -10ºC and 60ºC.

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 6mm.
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:	±100kg per hinge

(e) Sturdy door stays

Material:	Stainless Steel
Door open stay position:	90º 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 -10ºC and 60ºC.
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	100kVA

(k)

Item	Description	Detail
3	Indoor or Outdoor?	Outdoor
4	Number of phases	3
5	Dry type or oil immersed?	Oil immersed / Dry Type
6	Rated frequency Hz	50Hz
7	Normal “ON LOAD” phase-to-phase voltages for transformer:	MV: 3300 Volts LV: 400 Volts
8	System highest operating voltage for transformer:	MV: 4000 Volts
9	Vector group of transformers	Dyn 11
10	Type of cooling	ONAN
11	Tappings	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: 2 x 25mm² 3-core XLPE Cu LV: 4 x 16mm² 3-core PVC Cu
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 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

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.

B.2 ANTI-VANDAL MINI-SUBSTATION WITH ELECTRONIC SECURITY

The anti-vandal Min-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.

1.41 ELECTRONIC SECURITY SYSTEM FOR KIOSK MIMI SUBSTATION

The enclosure and cage shall be fitted with the following electronic securityL(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) Ingres 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:

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).

(v) 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) Ingres 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:

2MPx PTZ IR Camera

Ethernet/Fibre Switch

Power Supply for Camera and Switch

LAN Cabling

Fibre Cabling

12m Concrete Pole

(g) CCTV Camera

Minimum Requirements:

Rugged outdoor infrared camera that captures details in poorly lit situations

2 MPx, PTZ Camera complete with pole bracket

850nm IR Illumination to 150m

Resolution: 1920x1080

30 x Optical zoom

32 x Digital Zoom

H.265, H.264 and MJPEG Video encoding

Tilt range +15o to -90o

Digital Image Stabilization

Range – 2 km radius

Day/Night capabilities

Auto Iris with manual override

Built-in anti-vandal analytics alarm

(h) Fibre / Ethernet switch

Minimum Requirements:

5-port full gigabit unmanaged Ethernet switch with 4 IEEE 802.AF/AT POE + ports

Industrial EDS-G205-1GTXSFP series

Full Gigabit Ethernet ports

IEEE 802.3af/at, PoE+ standards

Up to 36 watts output per PoE port

12/24/48 VDC flexible redundant power inputs

Supports 9.6 KB jumbo frames

Intelligent power consumption detection and classification

Smart PoE over current and short circuit protection

-10 to 60°C operating temperature range

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 us 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-subs, 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.

(B) 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:

(ii) Administrator / Master User: (Will be able to edit and access the software with no restrictions).

(iii) 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

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.

(ii) 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)

(iii) 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 username + 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.

(iv) 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

(b) Software (GIS map based alarm events & icon indicators)

(i) 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, than 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 onsite
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

(C) 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

(a) <u>Software (subscription / maintenance / operations / upgrading / updates)</u>

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.

(b) <u>Asset/ works order management</u>

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:

(i) 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.
(ii) Date and frequency of the alert/event occurred

(iii) The option to update the status of the alert into the system and logging of the user who has updated the status
(iv) Date of resolution / completion

(c) <u>Software (support)</u>

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 mis-configurations, 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

1.42 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 generator 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 an open source software to be able to be supported with other similar software and the integration software used in the clients 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.

1.43 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.

1.44. 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).

C3.2.1.9 SYSTEMS, SERVICE CONDITIONS AND SCHEDULE OF DRAWINGS

1. SYSTEM AND SERVICE CONDITIONS

The street lighting equipment and installation shall be for outdoor use in Gauteng, Northwest,Mpumalanga and Limpopo area of supply and shall be suitable for:

(a)	Climate:	Coastal
(b)	Altitude:	from sea-level to 50m
(c)	Ambient temperature:	from -5°C to 40°C
(d)	Pollution level and type:	Coastal & Industrial
(e)	Maximum relative humidity:	60 %
(f)	Mean annual value of solar radiation:	1,0 kW/m2
(g)	Average total annual rainfall:	1 000 mm

2 SCHEDULE OF DRAWINGS

The following drawings are part of the tender and should be priced accordingly.

Drawing No.	Title
TD-E-P-1001-1-V1	Typical drawing: Anti-vandal mini-substation
TD-E-P-1001-2-V1	Typical drawing: Anti-vandal mini-substation with electronic security
TD-E-P-1002-1-V1	Typical drawing: Anti-vandal kiosk
TD-E-P-1003-1-V1	Typical drawing: Anti-vandal kiosk with electronic security
TD-E-P-2001-1-V1	Typical drawing: Anti-vandal pole (6-12m) with electronic security
TD-E-P-3000-1-V2	Typical drawing: LV Cable Trench
TD-E-P-3002-1-V1	Typical drawing: Sleeves

C3.2.1.10 MEASUREMENT AND PAYMENT

.1 PRINCIPLES

The basic principles of measurement and payment for cable trench excavations is that the rate tendered for excavations covers the cost of excavations, the re-use of excavated material f **actioned upon request/notification by SANRAL, SANRAL Stakeholder, SANRAL Representative, the Engineer** or back filling and the removal of all surplus material along the trench routes within 0,5 km from the source.

The rate for the laying of the cable covers the cost of the handling and placing of the cable in the approved trench, as well as any other costs concerning the laying of the cables.

Trench excavations for cables, etc. is measured volume wise, but can be measured according to length.

Except when differently stated in the project specification or differently demanded, the depth will be measured from the ground level, along the centre line of the trench, down to the bottom of the specified bottom layer. The ground level is that which was formed after mass ground works was completed, measuring the excavated level or the backfilled level, except where another execution sequence is demanded.

The source of the approved back fill material and the bottom layer is the contractors own responsibility. He is free to use approved material excavated from the side of the trench or other excavations on site, providing such material meats the applicable requirements. He is also free to buy one or both the materials from commercial sources or to excavate along the cable route at his own cost.

Additional and separate payment for the backfill of over-excavations and the removal of surplus materials or any other unforeseen works will only be made if such works was specified by the Engineer.

The requirements of sub clause 8.3.3 of SANS 1200 DA apply to additional transport distances. All additional distances will be measured only via the shortest route possible and only in one direction to the nearest 0,1 km measured and the volumes will be calculated as specified in 8.2.3.

CALCULATION OF QUANTITIES

The length used for calculations is the total length of the cable, cable trench, etc from one end to the other or from one structure face to the next structure face. No deductions will be made for any manholes, etc.

Excavations will be measured as if excavated with vertical sides, regardless of whether it was excavated with sloping sides.

If volumetric measurements are required, the volume will be measured from the depths shown on the drawings or to the bottom of the specified base, whichever is the largest, and a minimum base width of 450mm in the case of high voltage cables and 300mm in the case of low voltage cables. The volume of the backfill will be calculated from the minimum base with of the trench and the depth of the backfill needed. No allowance shall be made for loss of volume of the compacted material.
Imported material as per 3.2 must be disposed of along the cable servitude within a distance of 50m from the source unless specified otherwise by the project specifications. Additional transport of material if ordered must be handled as specified in sub clause 8.3.3.4 of SANS 1200 DB. Free haul as specified in sub clause 5.2.6.1 of SANS 1200 DA shall be applied.

3. RETICULATION SYSTEM

PI.3.1 Low voltage Cable. (Refer to C3.2.1.6.4.1) unit m

The unit of measure shall be the cable length in meters supplied, installed, terminated and commissioned.
All cable ends shall be labelled. The labels shall be included in the rate.
Laying cables in trenches:
Measurement of cables laid in trenches shall be of the actual length of that part of a cable laid in the trench when the cable is finally installed.
Drawing cables into ducts, pipes and conduits:
(excluding supply and installation of ducts, pipes and conduits).
Measurement of cables drawn into ducts, pipes and conduits shall be of the actual length of that part of a cable laid in ducts, pipes or conduits when the cable is finally installed.

PI.3. Low voltage Cable Joint and Termination. (Refer to C3.2.1.6.4.1**)** **Unit: No**

The unit of measure shall be the number of joints and terminations supplied and installed.
The joints and termination shall be rated for 1000V for LV cables and be made from termination glands or heat shrinkable material.

PI.3.3 Earth Works - Excavation and Backfill (Refer COLTO PART 2000 SECTION 2100)

Excavation of all material for trenches, backfill, compaction and removal of excess material.

The volumes of the cable sleeve, cable ways and cable trench excavations must be calculated according to the length and depth as shown on the drawings or to the bottom of the specified bedding, whichever is the largest and to the minimum base width specified in 5.8. The tariff covers the cost to comply with safety and protection regulations, except in the case of particular items listed to cover the cost of excavations, backfill and compaction as well as the removal of any excess material as specified.
The tariff also covers the cost of the same works in tunnels if the contractor wishes to use this method of excavation. No additional payment will be made for such tunnels and no deductions will be allowed for the decrease in the amount of excavation quantities.

LV trenching to be 1000mm deep and MV trenching to be 1000mm deep.
The maximum width of a single cable trench shall be fixed at 300mm.

1. **Hand pickable soil (soft soil).** **Unit: m³.**
   The unit of measure shall be the number of cubic metres of hand pickable soil removed from the trenches (see general specifications for definition of soil type).
2. **Machine excavation (soft rock).** **Unit: m³.**
   The unit of measure shall be the number of cubic metres of soft rock removed to form the trenches
   (see general specifications for definition of soil type).
3. **Hard rock (blasting).** **Unit: m³.**
   The unit of measure shall be the number of cubic metres of hard rock removed to form the trenches (see general specifications for definition of soil type).
4. **Back filling and compacting.** **Unit: m³.**
   The unit of measure shall be the number of cubic metres of backfilling and compaction done to close the trenches (the measurement shall be based on the size of the trench).
   When backfilling, every 150mm shall be compacted to 90% AASHTO.
   The size of the trench shall be from the top of the bedding to ground level with a trench width maximum of 450mm.
5. **Sifting of local soil for bedding of the cables.** **Unit: m³.**
   The unit of measure shall be the number of cubic metres of bedding sifted and installed in the trenches.
   The bedding shall have a thermal resistivity of at least 1.2 K.m/W and be approved by the Engineer prior to installation. A 6mm grid shall be used during the sifting process.
   The bedding shall be 150mm above and below the cable as well as cover the width of the trench (maximum of 300mm).

6. **Import soil for bedding of cables.** **Unit: m.**
   The unit of measure shall be the number of cubic metres of imported soil and installed in the trenches.
   The bedding shall be 150mm below and 150mm above the MV cable.

PI.3.4 Cable Warning Tape. **Unit: m.**

The unit of measure shall be the number of metres supplied and installed
(trenching measured elsewhere).
The warning tape shall be installed 300mm above MV as well as LV cables.

PI.3.5 Supply and install Cable Markers. **Unit: No.**

The unit of measure shall be the cable markers supplied and installed.

PI.3.6 Concrete Encasement of Services **Unit: m³.**

In-situ 20MPa Concrete Encasement of low voltage cables, sleeves for Low Voltage,

I.T.S services and other future services. Supply, Delivery and Installation to be included.

The unit of measure shall be the length of concrete encasement constructed and finished.
The concrete encasement shall be 450mm wide x 400mm deep for service sleeves and 300mm wide x 200mm deep for cables alone.

All LV and intermediate voltage cables shall be totally encased in concrete and enforced using bonding agent and chicken wire mesh.

Encasements shall be done in one meter sections. Service sleeves are laid into position; as per construction drawings as well as shuttering installed to obtain a class F1 surface finish. The concrete encasement will be constructed of standard 20MPa concrete with 19mm grade crush stone size.

Furthermore, cube tests shall be performed on the concrete and results submitted to the Engineer. One set of cubes shall be submitted to the engineer for independent testing if required.

Encasement quantities are provisional and subject to final measure on site. Quantities are to be based onsite verification.

PI.3.7 Liaising and coordinating with Local Supply Authorities Unit: Sum

The unit of measure shall be a Lump sum for the application for the increased power supply with the power Supply Authority of the area.

PI.3.8 Electrical Connection Fee for 3phase Supply Point. Unit: PC Sum

The unit of measure shall be a provisional sum for the Electrical Connection Fee to the Local Municipality.

PI.3.9 LV Distribution Kiosk. Unit: No.

The unit of measure shall be the number of distribution kiosks supplied, installed, tested and commissioned complete with all distribution board equipment.
The rate shall include all associated costs involved in bringing the LV kiosk to full operational status.
A concrete plinth suitable for the Kiosk shall be included in the rate.

PI.3.10 Anti-Vandal LV Kiosk Unit: No.

The unit of measure shall be the number of distribution kiosks supplied, installed, tested and commissioned complete with all distribution board equipment as per specification item 1,23.
The kiosk to be an ANTI-VANDAL type complete with the plinth, cage and locks as indicated on the drawings.
The rate shall include all associated costs involved in bringing the LV kiosk to full operational status.
A concrete plinth suitable for the Kiosk shall be included in the rate. The kiosk shall be constructed of 3mm 3CR12.
The rate shall also include all associated costs involved in removing and replacing the existing kiosk and cage, including all fixings as specified in the particular specifications and drawings.

PI.3.11 Anti-Vandal LV Kiosk with Electronic Security Unit: No.

The unit of measure shall be the number of distribution kiosks supplied, installed, tested and commissioned complete with all distribution board equipment as specified in the specifications item 1.23.
The kiosk to be an ANTI-VANDAL type complete with the plinth, cage, electronic locks, vibration sensors and remote monitoring as indicated on the drawings.
The rate shall include all associated costs involved in bringing the LV kiosk to full operational status.

A concrete plinth suitable for the Kiosk shall be included in the rate. The kiosk shall be constructed of 3mm 3CR12.
The rate shall also include all associated costs involved in removing and replacing the existing kiosk and cage, including all fixings as specified in the particular specifications and drawings.

PI.3.12 Anti-Vandal Mini-substation **Unit: No.**

The unit of measure shall be the number of min-substation enclosures supplied, installed, tested and commissioned complete with the transformer and all MV and LV distribution board equipment as per specification 1.40.
The min-substation to be an ANTI-VANDAL type complete with the plinth, cage, electronic locks, vibration sensors and remote monitoring as indicated on the drawings.
The rate shall include all associated costs involved in bringing the min-substation to full operational status.
A concrete plinth suitable for the mini-substation shall be included in the rate. The mini-substation shall be constructed of 4mm 3CR12

PI.3.13 Anti-Vandal Min-substation with Electronic Security **Unit: No.**

The unit of measure shall be the number of mini-substations supplied, installed, tested and commissioned complete with all distribution board equipment and transformer as specified in the specifications item 1.40.
The min-substation to be an ANTI-VANDAL with ELECTRONIC SECURITY (refer to specification item 1.41) complete with the plinth, cage, electronic locks, vibration sensors and remote monitoring as indicated on the drawings.
The rate shall include all associated costs involved in bringing the min-substation to full operational status.

A concrete plinth suitable for the mini-substation shall be included in the rate. The mini-substation shall be constructed of 4mm 3CR12 and include electronic anti-vandal controllers and detectors as specified.
The rate shall also include all associated costs involved in removing and replacing the existing kiosk and cage, including all fixings as specified in the particular specifications and drawings.

PI.3.14 Anti-Vandal Security System **Unit: No.**

The unit of measure shall be the complete hardware, software and communication required for the security systems installed in the anti-vandal kiosks, enclosures, mini-substations, doors and gates supplied, installed, tested and commissioned complete as per particular specification.

The rate shall include all associated costs involved in supplying, installing, testing and commissioning the security system to full operational status.

PI.3.15 Security Cage **Unit: No.**

The unit of measure shall be the complete Security cage and fencing required around the Kiosk or Mini-substation. Cages to be as specified on the specification. Sizes are as indicated on the drawings.
The rate shall include all associated costs involved in supplying and installation of the security cage.

PI.3.16 Distribution Transformers **Unit: No.**

The unit of measure shall be the complete supply, delivery, installation, commissioning and hand over of distribution transformers as as per particular specification.

3.4 LUMINAIRES

PI.4.1 Street Light Luminaire **Unit: No.**

The unit of measure shall be the number of luminaires supplied, installed on poles and commissioned. Each light fitting to be supplied with individual 7-Pin wired NEMA Sockets.

The luminaires will be supplied, installed, commissioned and aimed by the contractor.

PI.4.2 Street Light Luminaire Controller **Unit: No.**

The unit of measure shall be the number of luminaire controllers supplied, installed on luminaires and commissioned. Each light fitting will be supplied with individual photocells. Controller to be able to be fitted on a 7-pin nema socket on the luminaire. Refer to specifications for luminaire monitoring and control requirements.

3.5 POLES

PI.5.1 Galvanised Poles (standard) **Unit: No.**

The unit of measure shall be the number of poles supplied, installed and commissioned.
The pole price shall include the complete installation and mounting plate suitable for the site, earthing and lightning protection, electrical wiring and labelling of the mast.
All wiring in the poles and to the luminaires, including circuit breakers, glands and anti-vandal brackets, as indicated on the drawings, to complete the operation of the poles is included in the price.

PI.5.2 Galvanised Poles (Anti-Vandal) **Unit: No.**

The unit of measure shall be the number of poles supplied, installed and commissioned.
The pole price shall include the complete installation and mounting plate suitable for the site, earthing and lightning protection, electrical wiring and labelling of the mast.
All wiring in the poles and to the luminaires, including circuit breakers, glands and anti-vandal brackets, as indicated on the drawings, to complete the operation of the poles is included in the price.

PI.5.3 Pole Electronic Security Module **Unit: No.**

The unit of measure shall be the number of vibration sensors supplied separately or integral to the pole construction.

3.6 MAST LIGHTING AND ACCESSORIES

PI.6.1 Mast Lighting **Unit: No.**

Supply, install and commission a mast lighting complete with LED light fittings as detailed in the pricing schedule. The mast to be supplied and installed to include the following:

- Concrete base design and installation on site
- Mast per height specified in the pricing schedule
- High intensity LED flood lights
- Electrical Control gear
- Mechanical equipment for lowering and erecting of mast
- Earthing and lighting protection

Design of the masts must comply with the design data of general and particular specification.

PI.6.2 Supply and install distribution board Unit: No.

The unit of measurement shall be the number of distribution boards supplied and installed.
The rate shall include full compensation for the supply and installation of the distribution board complete as specified. The tendered rate shall allow for supplying, handling, transporting, installing, painting, testing and commissioning of each Mast distribution board including all costs to ensure a functional working solution.

PI.6.3 Welding and Strapping of Access Points **Unit: No**.

Supply and install: Welding of access points on poles (5m to 20m)

Supply and install: Welding of access points on masts (20m to 40m)

Supply and install: Strapping of access points on poles (5m to 20m)

The unit of measurement shall be the welding of access points on the number of poles/masts.

The tendered rate shall include full compensation for supplying of material for the welding of access points, cutting/grinding off access points, strapping of access points including any other costs to ensure a functional working solution.

PI.6.4 Pole Covers **Unit: No.**

Supply and Install: 6mm pole covers (for 20m to 40m masts)

Supply and Install: 4mm pole covers (for 5m to 20m poles)

The unit of measurement shall be the installation of pole covers points on the number of poles/masts.

The tendered rate shall include full compensation for supplying and installation of pole covers on to the poles including any other costs to ensure a functional working solution.

3.7 SLEEVES

The unit of measure shall be the number of metres of 110mm/160mm PVC sleeves installed at a depth of 1000mm. Trenching measured elsewhere.

PI.7.1 160mm Diameter PVC Sleeves Unit: m.

The unit of measure shall be the length of 160mm diameter PVC sleeves. Supply and install.

PI.7.2 160mm Diameter PVC slow bends. Unit: No.

The unit of measure shall be the slow bends for the 160mm diameter PVC sleeves. Supply and install.

PI.7.3 110mm Diameter PVC Sleeves for LV and Intermediate Voltage services. Unit: m.

The unit of measure shall be the length of 110mm diameter PVC sleeves. Supply and install.

PI.7.4 110mm Diameter PVC slow bends. Unit: No.

The unit of measure shall be 110mm diameter PVC bends for the 110 mm PVC sleeves. Supply and install.

SYSTEM TESTING

PI.8.1 System testing **Unit: No.**

The unit of measure shall be the complete testing , proving and handing over of a completed working system.

3.9 LIGHTNING PROTECTION OF POLES

PI.9.1 Lightning protection of poles **Unit: No.**

Supply install and commission a 0.5m x 10mm finial with pole strap complete with 14m x 16mm covered copper conductor to 1m earth rod in ground.

3.10 INSPECTIONS AND ROUTINE MAINTENANCE

PI.10.1 Routine Monthly Inspections **Unit: Month.**

The contractor is required to carry out routine inspections on a monthly basis on each lighting installation to record any repairs or maintenance activities to be addressed during the planned quarterly maintenance cycle. Any critical unsafe conditions identified during this inspection would need to be immediately brought to the Engineers attention to determine course of action. All inspections are to be recorded and submitted to the Engineer within seven (7) days of the inspection. Each installation is to be inspected during the day to identify any changes to the installation, defects or accident damage. The night inspection is to identify operation of lights.

3.11 QUARTERLY / ANNUAL MAINTENANCE

PI.11.1 Quarterly / Annual Maintenance **Unit: No.**

The maintenance cycles are separated into two cycles, Quarterly and Annual. The contractor to allow for all tools, equipment, material, labour and any further recommendations by the manufacturer to be undertaken to fulfil the maintenance requirements. Any critical unsafe conditions identified during this activity would need to be immediately brought to the Engineers attention to determine course of action. All inspections are to be recorded and submitted to the Engineer.

PI.11.1.1 Maintenance of Luminaires **Unit: No.**

Maintenance Items	Items to be checked	Action Required if inspection shows unsatisfactory conditions	Frequency
Lighting LUX levels	Full Lux levels of the installation	Replace luminaires.	Quarterly
Inspect the boom & clamps	General check for rust, damage, foreign objects, bird nests, painting etc	Remove and repair.	Quarterly
Inspect the Luminaire	General check for rust, damage, foreign objects, bird nests, painting etc	Remove and repair	Quarterly
Clean the exterior surfaces of street lights and other components	Any dust build-up, foreign objects	Clean with soft cloth and water.	Quarterly
Local and main streetlight controllers	Examine & test controllers are indicating and working correctly. (local and on-line review of control system where applicable)	Clean the components. Re-calibrate and Replace components if necessary	Quarterly
Clean the interior of luminaires	Any dust build-up, foreign objects	Clean with blower and dry cloth. No water to be used.	Quarterly
Check terminations*	Examine for loose connects and hot spots. Infra Red Checks	Tighten and replace as required	Quarterly
Equipment functions*	Examine & test all circuit functions and controller switching.	Take suitable action if not operating	Quarterly
Circuit Diagrams and Labels	Check and verify that all circuit diagrams and labels and up to date and correct	All equipment to be operated and verified	Quarterly
Luminaire alignment	Check that the luminaire has not moved from alignment.	Align and re-adjust the aiming.	Quarterly
Brush Clearing	Clear all shrubs, weeds and brush within 1m of unit	Bush clear with appropriate safe equipment	Quarterly

Earth Resistance	Examine & test earthing and bonding	Take suitable action if earth resistance is high	Quarterly

* Shutdown of equipment necessary. All work to be done under permit and lock out procedures.

Note: Lighting Maintenance requires the use of a Cherry Picker and other specialised equipment. The use of the Cherry Picker and all specialised equipment on site is subject to approval by SANRAL or its representatives Safety Officer.

The following items to be included in pricing of the maintenance activities:

All labour to undertake the maintenance activities.
All transport to undertake the maintenance activities.
All tools, equipment and specialised operating and test equipment to undertake the maintenance activities.
Ladders, scaffolding, cherry picker, crane truck, brush cutters, angle grinders, blowers, hand tools, safety equipment,
Sundry material such as cleaning rags, solvents, cleaning liquids, lubrication sprays, wire brushes, sand paper, paint brushes, zinc rich primer, anti rust paint, 5L touch up paint, cold galvanising spray, water, labelling stickers, insect repellent, camera, writing and recording equipment and material.
Test equipment: 2 x Lux meters, multi-meter, earth resistance tester, labelling machine, Infrared temperature tester,

The following items to be excluded in pricing of the maintenance activities:

All labour to material for replacement components, eg, luminaires, poles, kiosks or internal components.

PI.11.1.2 Maintenance Masts and poles **Unit: No**

Maintenance Items	**Items to be checked**	**Action Required if inspection shows unsatisfactory conditions**	**Frequency**
Inspect the mast or pole	General check for rust, damage, foreign objects, bird nests, etc	Replace or repair	Quarterly
Photo cell	Test operation	Clean, Replace if faulty	Quarterly
Pole / Mast label or tag	Review against as-built drawing	Replace if damaged or not clearly visible.	Quarterly
Brush Clearing	Clear all shrubs, weeds and brush within 1m of unit	Bush clear with appropriate safe equipment	Quarterly
Hoisting Rope *S	Check anchorage points at both ends of rope (thimbles & ferrules)	Replace or repair	Annual
Hoisting Rope *S	Inspect rope for fraying or other damage	Replace or repair	Annual
Maintenance Anchor *S	Check terminations at both ends of rope (thimbles & ferrules)	Replace or repair	Annual
Maintenance Anchor *S	Inspect rope for fraying, kinking or other damage	Replace or repair	Annual
Mast Base *S	Check correct functioning of latching device.	Clean latching area. Replace or repair.	Annual
Mast / Pole	Inspect for corrosion	Remove all traces of rust with steel brush and emery paper. Touch up all clear surfaces with zinc rich primer.	Annual

Mast Base *S	Check that counterweights are securely mounted.	Tighten bolts and nuts on weight retainer bracket.	Annual
Mast Base *S	Inspect all electrical connections	Tighten where necessary.	Annual
Mast Base *S	Check foundation bolts	Tighten where necessary. Holding down nuts and support nuts.	Annual
Mast Base *S	Inspect safety chain for corrosion.	Clean. Seek manufacturer advice. Replace if necessary.	Annual
Mast Base *S	Lowering and raising of mast	Manufacturer's operation method to be followed.	Annual
Luminaire mounting ring	Check all nuts and bolts	Tighten	Annual
Electrical system	Inspect cables, termination boxes, splitter boxes.	Replace all damaged units. Secure cables.	Annual
Earth Resistance	Examine & test earthing and bonding	Take suitable action if earth resistance is high	Quarterly
Counterweights	Remove and inspect all counterweights and inside mast	Clean and re-paint if required. Seek manufacturer advice. Replace if necessary.	Every 2 years

*S Applicable to Scissor masts

Where Mast lowering and raising is required, Safety procedures to be followed.

The following items to be included in pricing of the maintenance activities:

All labour to undertake the maintenance activities.
All transport to undertake the maintenance activities.
All tools, equipment and specialised operating and test equipment to undertake the maintenance activities.
Ladders, scaffolding, cherry picker, crane truck, brush cutters, angle grinders, blowers, hand tools, safety equipment.
Sundry material such as cleaning rags, solvents, cleaning liquids, lubrication sprays, wire brushes, sand paper, paint brushes, zinc rich primer, anti rust paint, 5L touch up paint, cold galvanising spray, water, labelling stickers, insect repellent, camera, writing and recording equipment and material.
Test equipment: 2 x Lux meters, multi-meter, earth resistance tester, labelling machine, Infrared temperature tester,

The following items to be excluded in pricing of the maintenance activities:

All labour to material for replacement components, eg, luminaires, poles, kiosks or internal components.

PI.11.1.3 Maintenance of distribution, LV and lighting kiosks ..... Unit: no.

Maintenance Items	**Items to be checked**	**Action Required if inspection shows unsatisfactory conditions**	**Frequency**
Inspect the equipment	General check for rust, damage, foreign objects, bird nests, painting etc	Remove and repair	Quarterly
Clean the exterior surfaces	Any dust build-up, foreign objects	Clean with dry cloth. No water to be used.	Quarterly

Indicator lights	Examine & test indicator lights are indicating and reading correctly.	Clean the components. Replace components and fuse if necessary	Quarterly
Meters	Examine & test meters are indicating and reading correctly.	Clean the components. Re-calibrate and Replace components if necessary	Quarterly
Clean the interior *	Any dust build-up, foreign objects	Clean with blower and dry cloth. No water to be used.	Quarterly
Check terminations*	Examine for loose connects and hot spots	Tighten and replace as required	Quarterly
Protection Systems*	Examine & test relay and alarm contacts, their operation fuses etc. check relay accuracy.	Clean the components. Replace contacts and fuse if necessary	Quarterly
Equipment functions*	Examine & test all circuit breakers and UPS functions and interlocks	Take suitable action if not operating	Quarterly
Circuit Diagrams and Labels	Check and verify that all circuit diagrams and labels and up to date and correct	All equipment to be operated and verified	Quarterly
Safety Compliance Labels	Check and verify that all safety compliance labels and notification signage are up to date and correct	All safety compliance labels and notification signage to be installed and damaged labels and signs to be replaced.	Quarterly
Ingress Protection	Check and verify that all seals and gaskets are in place and not damaged. Ensure IP rating is maintained.	Repair / Replace gaskets and seals to maintain IP rating.	Quarterly
Brush Clearing	Clear all shrubs, weeds and brush within 1m of unit	Bush clear with appropriate safe equipment	Quarterly
Earth Resistance	Examine & test earthing and bonding	Take suitable action if earth resistance is high	Quarterly

* Shutdown of equipment necessary. All work to be done under permit and lock out procedures.

Note: Lighting Maintenance requires the use of a Cherry Picker and other specialised equipment. The use of the Cherry Picker and all specialised equipment on site is subject to approval by SANRAL or its representatives Safety Officer.

The following items to be included in pricing of the maintenance activities:

All labour to undertake the maintenance activities.
All transport to undertake the maintenance activities.
All tools, equipment and specialised operating and test equipment to undertake the maintenance activities.
Ladders, scaffolding, cherry picker, crane truck, brush cutters, angle grinders, blowers, hand tools, safety equipment.
Sundry material such as cleaning rags, solvents, cleaning liquids, lubrication sprays, wire brushes, sand paper, paint brushes, zinc rich primer, anti rust paint, 5L touch up paint, cold galvanising spray, water, labelling stickers, insect repellent, camera, writing and recording equipment and material.
Test equipment: 2 x Lux meters, multi-meter, earth resistance tester, labelling machine, Infrared temperature tester,

The following items to be excluded in pricing of the maintenance activities:

All labour to material for replacement components, eg, luminaires, poles, kiosks or internal components.

PI.11.1.4 Maintenance of transformers **Unit: Time based**

Maintenance Items	Items to be checked	Action Required if inspection shows unsatisfactory conditions	Frequency
Inspect the transformer	General check for rust, damage, leaks, foreign objects, bird nests, painting etc	Remove and repair	Quarterly
Oil leaks	Check all areas of transformer	Identify leak and repair.	Quarterly
Oil level in conservator	Check oil level above minimum level mark on site glass.	If low, top up. Check for oil leaks	Quarterly
Meters	Examine & test meters are indicating and reading correctly.	Clean the components. Re-calibrate and Replace components if necessary	Quarterly
Circuit Diagrams and Labels	Check and verify that all circuit diagrams and labels and up to date and correct	All equipment to be operated and verified	Quarterly
Clean the exterior surfaces	Any dust build-up, foreign objects	Clean with soapy water and spray	Quarterly
Brush Clearing*	Clear all shrubs, weeds and brush within 1m of unit	Bush clear with appropriate safe equipment	Quarterly
Silica Gel	Check if Silica gel has changed from original colour, typically from blue to pink or white.	Replace silica gel.	Quarterly
Check terminations*	Examine for loose connects and hot spots	Tighten and replace as required	Annually
Check Bushings*	Examine for cracks and dirt deposit	Clean the dirt. If cracked or broken replace the bushing.	Annually
Protection Systems*	Examine & test relay and alarm contacts, their operation fuses etc. check relay accuracy.	Clean the components. Replace contacts and fuse if necessary	Annually
Earth Resistance	Examine & test earthing and bonding	Take suitable action if earth resistance is high	Quarterly
Oil Sampling	Take oil sample and submit for lab analysis. (KV, Water, Acid, PCB)	Take suitable action on abnormal conditions	Every 2 years

* Shutdown of equipment necessary. All work to be done under permit and lock out procedures.

The following items to be included in pricing of the maintenance activities:

All labour to undertake the maintenance activities.
All transport to undertake the maintenance activities.
All tools, equipment and specialised operating and test equipment to undertake the maintenance activities.
Ladders, scaffolding, cherry picker, crane truck, brush cutters, angle grinders, blowers, hand tools, safety equipment.
Sundry material such as cleaning rags, solvents, cleaning liquids, lubrication sprays, wire brushes, sand paper, paint brushes, zinc rich primer, anti rust paint, 5L touch up paint, cold galvanising spray, water, labelling stickers, insect repellent, camera, writing and recording equipment and material, top up oil, Silica gel,
Test equipment: 2 x Lux meters, multi-meter, earth resistance tester, labelling machine, Infrared temperature tester.
Torqueing and tightening of nuts and bolts.
Repairing oil leaks.

The following items to be excluded in pricing of the maintenance activities:

All labour to material for replacement components, eg, transformer, meters, fencing, or internal components.

Item	**Unit**
C3.2.1.11. ~~.8.5.1~~ **Transformers**	No.

a) Supply and install fully equipped 100kVA 3.3kV/400V Transformer

The unit of measurement shall be the number of Transformers supplied and installed.

The tendered rate shall include full compensation for supplying and installing the transformer including foundations, excavations, removal of old transformer and foundations, siting, handling, transporting, testing, painting, commissioning, compacting, mounting brackets and disposal of the surplus material once the transformer has been installed including all costs to ensure a functional working solution.

Item	**Unit**
C3.2~~.~~1.12 Supply service connection cable	m

The unit of measurement shall be the length in metres of service connection cables supplied.

The tendered rate shall include full compensation for the supply and delivery of the cable to site.

Item	**Unit**
C3.2.1.13 Install service connection cable	m

The unit of measurement shall be the length in metres of service connection cable laid.

The tendered rate shall include full compensation for the handling, inspection, laying, cutting and testing the cable. Cables will be measured linearly over all lengths laid.

Item	**Unit**
C3.2.1.14 Terminate service connection cable	No.

The unit of measurement shall be the number of service connection cable terminated.

The tendered rate shall include full compensation for providing the cable glands and shrouds and for the cost of handling, fitting and cutting the cable and for connecting the conductors to the terminal block, neutral bar and earth bar.

Item	**Unit**
C3.2.1.15 Capping service connection cable	No.

The unit of measurement shall be the number of service connection cable capped.

The tendered rate shall include full compensation for supplying the heat-shrink

capping material and for capping.

Item	Unit
C3.2.1.16 Miniature substations	No.

Supply and install fully equipped 200kVA Mini-Substation 3.3kV/400V

Supply and install fully equipped 315kVA Mini-Substation - 11/6.6kV-3.3kV (Dual Ratio)

Supply and install fully equipped 315kVA Mini-Substation - 11/6.6kV-3.3kV (Dual Ratio)

Supply and install fully equipped 315 kVA Mini-Substation 11kV/3.3kV

Fully equipped 315 kVA Mini-Substation 11/6.6kV/400V (Dual Ratio)

The unit of measurement shall be the number of Miniature substations supplied and installed.

The tendered rate shall include full compensation for supplying and installing the Miniature substation including foundations, excavations, removal of old miniature substation and foundations, siting, handling, transporting, testing, painting, commissioning, compacting and disposal of the surplus material once the miniature substation has been installed, including all costs to ensure a functional working solution.

Mini-sub Maintenance (incl. LV Compartment Conformance to SANS safety requirements)

Item	Unit
C3.2.1.17 Supply and install distribution board	No.

The unit of measurement shall be the number of distribution boards supplied and installed.

The rate shall include full compensation for the supply and installation of the distribution board complete as specified. The tendered rate shall allow for supplying, handling, transporting, installing, painting, testing and commissioning of each Mast distribution board including all costs to ensure a functional working solution.

Item	Unit
C3.2.1.18 Supply and install distribution kiosk	No.

The unit of measurement shall be the number of LV distribution kiosk supplied and installed.

The rate shall include full compensation for the supply and installation of the distribution kiosk complete as specified. The tendered rate shall allow for supply, handling, transporting, installing, painting, testing and commissioning of each kiosk including all costs to ensure a functional working solution. The rate shall also allow for supply and installation of precast concrete plinths for the kiosk including excavation for the installing of the kiosk and the backfilling, compacting and disposal of the surplus material once the kiosk has been installed.

Item	Unit

C3.2.1.19 Welding and Strapping of Access Points No.

Supply and install: Welding of access points on poles (5m to 20m)

Supply and install: Welding of access points on masts (20m to 40m)

Supply and install: Strapping of access points on poles (5m to 20m)

The unit of measurement shall be the welding of access points on the number of poles/masts.

The tendered rate shall include full compensation for supplying of material for the welding of access points, cutting/grinding off access points, strapping of access points including any other costs to ensure a functional working solution.

Item **Unit**

C3.2.1.20 Labelling No.

Supply and install: Labelling of Poles and Masts

The unit of measurement shall be the labelling of the number of poles and masts.

The tendered rate shall include full compensation for supplying and installation of labelling on the poles and masts including any other costs to ensure a functional working solution.

Item **Unit**

C3.2.1.21 Pole Covers No.

Supply and Install: 6mm pole covers (for 20m to 40m masts)

Supply and Install: 4mm pole covers (for 5m to 20m poles)

The unit of measurement shall be the installation of pole covers points on the number of poles/masts.

The tendered rate shall include full compensation for supplying and installation of pole covers on to the poles including any other costs to ensure.

3.12 SURPLUS STOCK

PI.12.1 Surplus Stock **Unit: Month**

Surplus stock is to be purchased, stored in the contractors stores and installed when required during the maintenance period. The contractor is to ensure that full site protection and security is available for the full period of the contract. All spare stock to be housed in a secure, lockable facility.

A stock Management system is to be implemented and maintained for the full stock for the period of the contract. The stock will be audited by the client or its representatives from time to time to ensure full compliance and correct stock management.

3.13 REPORTING

PI.13.1 Reporting **Unit: Month.**

The contractor is required to report on a monthly basis to the client and /or the clients representative. The monthly reporting must be submitted on an approved format for the following activities:

Monthly Inspection reports
Quarterly Maintenance reports
Monthly power consumption reports
Stock reports
Call-out and repair reports
Fault reports
Programme and Progress
OHS act reports
Cash Flow and forecasts
Socio Economic requirements: Labour, CPG, targeted enterprises, etc

3.14 MEETINGS

PI.14.1 Monthly Progress Meetings **Unit:Month.**

The onus rests with the contractor to ensure that the person attending the progress meetings on its behalf is appropriately qualified to understand the works progress and directives and clarifications given at that meeting.

The programme will be reviewed at the monthly site meetings at which the contractor shall provide sufficient detail that will allow the comparison of completed work per activity against the current programme. The contractor shall indicate what resources and programme changes he intends to implement in order to remedy any activity that has fallen behind. The engineer may demand from the contractor a major revision of the programme. Such a revision shall be submitted for comment within 14days of the demand.

The Contractor shall submit and update on a monthly basis a progress report as per reporting responsibilities in both hard copy and electronic format at each site meeting. The progress minutes to be appended to each meeting minutes.

The Contractor shall submit and update on a monthly basis all the appendices to the site meeting minutes and a cash flow forecast for the works

The contractor is responsible to provide a monthly meeting venue for the progress meeting that is within close proximity (10km's) to any one of the site of works. This can be changed on a monthly basis on approval by the Project Engineer. The meeting venue to be suitable for attendance for at least ten (10) members. The venue to have suitable meeting facilities such as a meeting table, chairs, power, lighting, projector facilities and ventilation.
Meeting snacks and drinks to be provided at the contractors discretion.

3.15 LIGHTING MANAGEMENT SYSTEM (LMS)

PI.15.1 Lighting Management System Unit: No.

Supply, install and commission a Lighting Management System as a complete system to comply with the specifications. Refer to Particular Specification for details. Each Luminaire must be supplied complete with components that are compatible and suitable for use with a Lighting Management System. Specific luminaire components to be supplied is a LMS transmitter and receiver, suitable dimmable 0-10V or other approved driver, 7-wire connector block, minimum 10kV surge arrestor and earth stud mounted on a NEMA/ANSI C136.41 compliant 7-pin socket. 7-pin LMS transmitter to be plugged inton 7-pin NEMA socket. LMS Controller to be included in rate.

3.16 REMOVAL AND DISPOSAL OF EQUIPMENT

Any damaged equipment found at the lighting installations is required to be replaced or repaired. All removed items are to be returned to the stock yard facility for review by the clients site agent. Re-usable items will be stored safely for re-use. All damaged / scrap equipment will be stored at the stock yard until sufficient collection requires removal and disposal at a registered dump facility. A certificate of disposal would need to be provided by the registered disposal site. Removal of equipment from the sites or the stock yard can only be done on approval from the client's site agent. Contractor is required to report of stock and disposal movements on a monthly basis.

PI.16.1 Removal of Installed / damaged Equipment Unit: No.

The contractor cannot remove any installed or damaged equipment that's part of the clients Asset list without prior written permission to do so from the client or its representative. The contractor will be responsible to update the clients asset list document with full details of the removed items and new item. Any equipment removed for repairs to be recorded in a separated "temporary removal of Asset" form. Any equipment removed and put into stock is to be recorded as such on the client's asset list documentation.

The stock will be audited by the client or its representatives from time to time to ensure full compliance and correct stock management.

PI.16.2 Disposal of Installed / damaged Equipment Unit: No.

The contractor cannot dispose of any installed or damaged equipment that's part of the clients Asset list without prior written permission to do so from the client or its representative. The contractor will be responsible to provide a disposal certificate for all equipment disposed. Such equipment must only be disposed off at a registered dump site that is authorised by the local Municipality to accept such equipment.

The disposal certificates to be issued to the clients representative and accompanied by the asset list document.

ELECTRONIC AND MANNED SECURITY

PI.17.1 Security Guarding & Armed Response Unit: Months

The contractor to provide minimum two (2) armed security guards per shift to provide on-site security for assets on a 24 hour, 7 day basis. Security guards are to be appropriately trained and certified to patrol the project area. All security guards to be SASSETA trained and certified and registered with PSIRA.

The security guards are to conduct intermittent patrols through and around the site and report any incidents or potential incidents to a security control room.

The security guards are to have suitable and reliable communication means to the security company.

The security company must have a 24 hour, 7 day manned control room. Response to any vandalism or irregular activities within the project area must be responded to with the appropriate armed response. The security company shall also notify the local SAPS office, SANRAL and any other authorised 3rd party of any confirmed intrusions, break-ins, and any incidents of vandalism or theft.

Weekly and monthly reports are to be provided to the Client/ Engineer with event logs.

Should there be electronic security systems installed within the project, the security company will be required to monitor and respond to triggered alarms. Automated SMS / e-mail alarm notifications would be sent to the security company control room from either SANRAL or 3rd party monitoring company.

All on-site security staff, armed response, on-site toilet and guard hut are to be included in the rates.

PI.17.2 Electronic Software and User Interface **Unit: Sum**

The unit of measure shall be the complete electronic software and user interface required to monitor and manage the electronic security items at the project site.
The system will be deemed acceptable on its performance by the client in compliance with the particular specification.

3.18 TEST, COMMISSION & HANDOVER

PI.18.1 Test, Commission & Handover **Unit: No**.

The unit of measure shall be the complete testing, proving and handing over of a completed working system.

3.19 LABELLING AND ASSET TAGGING OF EQUIPMENT

PI.19.1 Labelling **Unit: No.**

The unit of measure shall be the supply and installation of labels for all equipment as specified. Refer to relevant sections in the specification detailing labelling for Poles, Masts, Kiosks, Mini-substations, etc.

PI.19.2 Asset Tagging **Unit: No.**

The unit of measure shall be the supply and installation of asset tags for all equipment as specified. Refer to relevant sections in the specification detailing asset tagging for Poles, Masts, Kiosks, Mini-substations, etc.

3.20 AS-BUILT AND HANDOVER DOCUMENTATION

PI.20.1 As-built documents **Unit: Lump Sum**.

Provide full "As-built" documentation as specified and to the Engineer's satisfaction.

Documents to include:

- Post installation Lux levels tests
- Surveyor certificate confirming "As-built" information.

One set of “As-built/ Record” drawings for the entire system, inserted in a plastic sleeve to be submitted.

Drawings shall be “red lined” on a hard copy of the latest construction drawings issued. A copy of the construction drawing set shall be for the contractors cost.

PI.20.2 Operating and Maintenance manuals **Unit: Lump Sum**.

A draft copy of the operating and maintenance manual shall be submitted to the Engineer one month prior to practical handover. Once approved, the following to be submitted:

One Flash drive copy of the entire operating and maintenance manual. Documents may be scanned.

Three copies of the approved maintenance and operating manual must be submitted to the Engineer as a requirement for practical handover. These manuals must as a minimum requirement include the following information:

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The manual shall be bound in a plastic hardcover ring file,
Name of the project shall be clearly and boldly shown on the spine and on the cover of each document,
Contact details of contractor and person for callouts,
Brief description of installation and summary of equipment installed,
Technical data sheets and operating instructions on all equipment installed,
Maintenance schedules for each item of equipment giving each maintenance activity and also frequency,
Recommended spares to be kept on site,
Nearest agents details for each item of equipment. Name, address, telephone and fax numbers,
Commissioning data, including, test sheets and sign-off commissioning sheets

C3.2.1.12 PERFORMANCE MEASUREMENT

OBJECTIVES

The key objectives of this contract is:

To stabilize and improve the condition of luminaires and associated assets
To reduce overall maintenance costs
To promote and encourage the development of innovative asset preservation practices
To implement and continuously improve anti-theft and anti-vandal mechanisms

The performance of the contractor will be measured against Key Performance Indicators (KPI's) in the three (3) categories noted below:

Category 1: Operation of Luminaires during the night

Category 2: Planned repairs of assets

Category 3: Un-planned callouts for emergency repairs of assets

Key Performance Indicators (KPI's) identified for this project:

KEY PERFORMANCE INDICATORS (KPI'S)

- Performance
- Responsiveness / timeliness
- Quality assurance and control
- Reporting requirements
- Stock Management

CATEGORY 1: OPERATION OF LIGHTING DURING THE NIGHT

Maintenance has the duty to stop problems starting and where there are problems, the contractor is responsible to rectify them so that reliability is increased and risk is reduced.

The contractor will be measured on his performance to maintain each site at a 100% level of operation. The full operation of the luminaires at night at the each site is based on 100% operation of each luminaire. The performance of the success of the maintenance will be monitored and evaluated on an ongoing basis to determine the performance level of the contractor. The contractor is required to monitor the lighting installation on a daily basis to ensure all faults and operational issues are recorded and rectified during the monthly maintenance cycle. All unsafe conditions to be rectified within 24hrs of being reported or identified.

The performance of the contractor will be evaluated on the percentage of operation of the luminaires as noted below.

The lighting installation at each site will be monitored on an ongoing basis by the client project engineer by visiting the installation site or monitor of the Lighting Management system reports where applicable. Luminaires must be operational during the night period between 18H00 and 06H00 (one period). Non-operational luminaires identified will be evaluated and compared as a percentage to the overall number of luminaires as recorded on the project. 5% or more luminaires that are not operational for more than one period during the month will attract a penalty and deducted from the monthly claim for that period.

Concession items, subject to approved concession notes by the client or his project engineer that will be excluded from the calculated percentage would be:

Assets damaged by vandalism, theft and accidents

The luminaire operation would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped photo records showing operation of lights

Date and time stamped video records showing operation of lights

Client / client project engineer audit sheets with date and time logs

Electricity meter logs

Luminaire circuit Hour meters in kiosks

Lighting Management system records

Meeting Minutes

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Operational of Luminaires**		
Performance measurement	**100%**	**>50% <95%**	**<50%**
Operational of Luminaires	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

CATEGORY 2: PLANNED REPAIRS OF ASSETS

The contractor will be notified by the client or project engineer to respond to repairs of assets at the various sites, referred to as a "standard callout". The contractors performance will be measured by their response times and the time taken to identify the fault and repair the problem. The contractor is to ensure that staff and standby staff are available on a 24 hour, 7 day a week basis. The contractor must acknowledge the call-out notification within 8 hours of the contractor being contacted by the client or project engineer. If the contractor is not contactable after 8 hours, the project engineer will then issue a written notification to the contractor notifying them of the non-compliance.

Concession items, subject to approved concession notes by the client or project engineer, that will be excluded from the calculated response time, would be:

Standby personnel working / called out to other sites on this package.
Unavailable stock items and long lead time to order spares.

The response time / timeliness would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.

SMS, E-mail and fax records to communication

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Response time from acknowledge call-out**		
Responsiveness / Timeliness	**Within 8 Hours**	**1 - 24 Hours**	**Greater than 24 Hours**
Acceptance of standard call-out notification	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Arrival on site of repairs		Required	Penalty of R10000.00 per month
Identification of fault and repair		Required	Penalty of R10000.00 per month

CATEGORY 3: UN-PLANNED CALLOUTS FOR EMERGENCY REPAIRS OF ASSETS

The contractor will be notified by the client or project engineer to respond to critical repairs at the various sites, referred to as an "emergency callout". The contractors performance will be measured by their response times and the time taken to identify the fault and repair the problem. The contractor is to ensure that staff and standby staff are available on a 24 hour, 7 day a week basis. The contractor must acknowledge the call-out notification within 2 hours of the contractor being contacted by the client or project engineer. If the contractor is not contactable after 2 hours, the project engineer will then issue a written notification to the contractor notifying them of the non-compliance.

Concession items, subject to approved concession notes by the client or his project engineer, that will be excluded from the calculated response time, would be:

Standby personnel working / called out to other sites on this package.
Unavailable stock items and long lead time to order spares.

The response time / timeliness would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.

SMS, E-mail and fax records to communication

Meeting Minutes

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Response time from acknowledge call-out**			
Responsiveness / Timeliness	**Within 2 Hours**	**Within 8 Hours**	**Up to 24 Hours**	**Greater than 24 Hours**

Acceptance of emergency call-out notification	Required	Penalty of R1000.00 per month	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Arrival on site of repairs		Required	Penalty of R1000.00 per month	Penalty of R3000.00 per month
Identification of fault and repair			Required	Penalty of R5000.00 per month

KPI: QUALITY ASSURANCE AND CONTROL / REPORTING

The contractors quality assurance and quality control will be measured on a monthly basis. The contractors project documentation will be audited by the client or the project engineer on an on-going basis. Contractors will be penalised for not submitting documentation and reporting when required.

Concession items, subject to approved concession notes by the client or the project engineer, that will be excluded from the calculated QA/QC and reporting requirements, would be:

No event

The issue and receipt of documents and reports would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.

SMS, E-mail and fax records to communication

Meeting Minutes

KPI's and performance with be measured and penalties applied as noted below:

KPI:	**Issue to client / client project engineer**		
Quality assurance and control / Reporting	**Monthly**	**1-4 Weeks late**	**> 4 weeks late**
Site audit and repair sign-off sheets	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Time sheets	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Log Sheets	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Inspection Reporting	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Accident reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Failure Reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

Monthly progress reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month
Stock Inventory reports	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

KPI: STOCK MANAGEMENT

The contractors Stock Management will be monitored and measured on a monthly basis. Contractors will be penalised for not implementing a stock management system and correctly documenting and reporting of stock levels on a monthly basis. Contractors must be seen to make an effort in improving their stores management processes and stored parts reliability. Stock and stock inventories would be audited by the client or the project engineer on a monthly basis and discrepancies / non compliance recorded in stock audit reports and the meeting minutes.

Concession items, subject to approved concession notes by the client or the project engineer, that will be excluded from the calculated stock management requirements, would be:

No event

The stock inventory documents and reports would be determined from information gathered from the client, project engineer or contractor records as noted below:

Date and time stamped telephone & cell phone records indicating contact.

SMS, E-mail and fax records to communication

Meeting Minutes

Stock Inventory

Stock Audit reports

KPI's and performance would be measured and penalties applied as noted below:

KPI:	**Monthly Stock Management Audit**		
Stock Management	**95%-100% accuracy**	**50%-95% Accuracy**	**Less than 50% accuracy**
Stock Inventory	Required	Penalty of R5000.00 per month	Penalty of R10000.00 per month

PENALTIES

Should the contractor be penalised for any non-compliance, a 30 day rectification period would be issued to the contractor. Failure to resolve the non-compliance after 30 days would cause further penalties to be imposed on the contractor until the rectification of the non-compliance is accepted by the client or the project engineer.

As per penalty measurements, penalties can be applied for non-compliance under each category thus equating to a maximum of R 500 000.00 per month at each site.

C3.3 ENVIRONMENTAL MANAGEMENT PLAN

C3.3.1 Scope

The Employer recognises environmental management as a key component of road infrastructure development and as part of its environmental policy 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. 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 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 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 specifications. Any changes to the EMP and/or environmental authorisation cannot occur without being submitted to the Employer who will manage the process of seeking approval of the change from the relevant authority .

The EMP identifies the following:

(a) relevant parties and their responsibilities;

(b) construction activities that will impact on the environment.;

(b) specifications with which the contractor shall comply in order to protect the environment from the identified impacts; and

(c) actions that shall be taken in the event of non-compliance.

C3.3.2 Definitions

C3.3.2.1 Alien Vegetation:

undesirable plant growth which shall include, but is not limited to, all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA), 1983 Regulations. Other vegetation deemed to be alien shall be 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.

C3.3.2.2 Construction Activity:

any action taken by the contractor, his subcontractors, suppliers or personnel during the construction process as defined in the contract documents.

C3.3.2.3 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.

C3.3.2.4 Environmental Aspect:

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

C3.3.2.5 Environmental authorisation:

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

C3.3.2.6 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.

C3.3.2.7 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.

C3.3.2.8 Site:

defined in the Conditions of Contract and in the scope of work. 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 borrow pits defined in the applications approved by the relevant Department of Mineral Resources (DMR);
all haul roads constructed by the contractor for purposes of access;
any non-adjacent sites specified in the contract documentation;
the contractor's and his subcontractors' camp sites; and
for the purposes of this EMP includes areas outside of, but adjacent to, the road reserve that may be affected by construction activities.

C3.3.2.9 Spoil material:

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

C3.3.3 LEGAL REQUIREMENTS

C3.3.3.1 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.

C3.3.3.2 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, 1983 (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) Constitution of the Republic of South Africa, 1996 (Act No 108 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, 2002 (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), 1998 (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, 2004 (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, 2004 (Act No 10 of 2004)

This act makes provisions to accomplish the objectives of the United Nations' Convention on Biological Diversity. The Employer 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 the Employer may be directed to remedy harm caused by listed invasive species.

(vii) National Environmental Management: Protected Areas Act, 2003 (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, 2008 (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, 1998 (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, 1999 (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, 1998 (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.

C3.3.4 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.

C3.3.4.1 The Employer

The Employer is the holder of authorisations issued by the relevant environmental regulating authorities responsible for authorising and enforcing environmental compliance. The Employer and anyone acting on the Employer's behalf is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts.

C3.3.4.2 The Engineer

The engineer has been appointed by, and acts for, the Employer as its on-site implementing agent and carries the responsibility to ensure that the contractor undertakes its construction activities in such a way that the Employer'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 duties in terms of this EMP, the engineer may, in writing and clearly setting out reasons, exercise his powers under FIDIC Condition of Contract sub-clause 6.9 and instruct replacement of the DEO in writing and with stated reasons.

C3.3.4.3 The Contractor

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

The contractor shall receive and implement any instruction issued by the engineer relating to compliance with the EMPl 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). This request for approval shall be given, in writing.

C3.3.4.4 The Designated Environmental Officer (DEO)

Once a nominated representative of the contractor has been approved he 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 the project specifications prescribe this position as ‘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 is not fulfilling his 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 diploma qualification in environmental or natural sciences or equivalent. Alternatively, the DEO shall have a minimum of 2 years’ experience in a similar role in construction or other environmental regulatory field. In which case the contractor shall give to the engineer, 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.

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

C3.3.4.5 Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is an independent environmental specialist appointed by the engineer to objectively and regularly monitor the contractor's implementation of this EMP and the EMP as may be determined by the sensitivity of the project or by conditions of authorisations. These are 'internal' audits and the regularity determined by the environmental approvals, usually once a month. Other ad hoc or 'external' audits ordered by the Employer will be conducted by other environmental specialists.

C3.3.5 Training

C3.3.5.1 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 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.

C3.3.5.2 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:

(a) importance of conformance with all environmental policies and the consequences of departure from standard operating procedures.
(b) environmental impacts, actual or potential, caused by work activities, prevention measures to avoid them and mitigation measures where they occur.
€ work force roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Employer's environmental management systems, including emergency preparedness and response requirements; and
€ the environmental benefits of improved personal performance.

C3.3.5.3 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 its environmental training obligations.

C3.3.6 Activities/Aspects Causing Impacts

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

TABLE 1: ASPECTS AND IMPACTS ASSOCIATED WITH ROAD CONSTRUCTION

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

C3.3.6.1 General approach

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

(i) 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) methodology of impact prevention for each activity or aspect.
(v) 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, and
(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 the 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.

C3.3.6.2 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.

C3.3.6.3 Water use and control

The contractor's use of water shall take into consideration that it is a scarce commodity and shall be optimised. Where applicable, 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 can commence without written approval from DWA.

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 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 a 1:5 year severity.

C3.3.6.4 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. CARA-listed category 1 and 2 alien species will be removed and replaced with the planting of specified indigenous species.

C3.3.6.5 Dust control

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

C3.3.6.6 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.

C3.3.6.7 Energy consumption

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

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

C3.3.7 Environmental Management of Construction Activities

In managing the construction activities, there are mitigating measures which can be implemented to minimise the cost and impacts. These measures are detailed in Table C3.3.7/1 at the end of this section of the specifications.

The contractor shall undertake “good housekeeping” practices during construction as stated in the Standard Specifications and 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.

C3.3.7.1 Site establishment

Site Plan

The contractor shall establish his construction camps, offices, workshops, staff accommodation and testing facilities on the site in a manner that does notadversely affect the environment. However, before construction 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 treatment 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 as possible. No camp establishment, including satellite camps, can be placed within 32 metres of an identified wetland unless the contractor has applied to DWA and DEA 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 be submitted not later than the first site meeting. 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.

(b) 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, same specie indigenous trees as were occurring shall be re-established. Protected trees may not be removed without a permit from the Department of Agriculture, Forestry and Fisheries.

Contravention of a notice of listed protected tree species under the National Forests Act, 1998 is regarded as a first category offence that may result in a fine or imprisonment for a period up to three years, or to both a fine and imprisonment.

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 application process, removal to an on-site nursery for continuous nurturing and protection and later replanting. The contractor should be alert to this procedure and apply to the engineer to approve it even though no allowance has been made in the contract documents. 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. The contractor’s staff shall at no time make fires for purposes of keeping out the cold unless they are contained in purpose-built containers capable of preventing runaway fires if knocked over and the ashes collected and safely and environmentally disposed of on a daily basis.

(c) 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 (inter alia, streams, rivers, pans and dams). Only domestic type wastewater shall be allowed to enter this drain.

(e) 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.

C3.3.7.2 Sewage treatment

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 project management, 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 subcontractor. The type of sewage treatment will depend on the geology of the area selected, the duration of the contract and proximity (availability) of providers of chemical toilets. Should a soak-away system be used, it shall not be closer than 800 metres from any natural water course or water retention system. The waste material generated from these facilities shall be serviced on a regular basis. The positioning of the chemical toilets shall be done in consultation with the engineer.

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

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

C3.3.7.3 Waste management

The contractor’s intended methods for waste management and waste minimisation shall be implemented at the outset of the contract. All personnel shall be instructed to dispose of all waste in the proper manner.

(a) Solid waste

Solid waste shall be stored in an appointed area in covered, tip proof metal drums for collection and disposal. A refuse control system shall be established for the collection and removal of refuse to the satisfaction of the engineer. Disposal of solid waste shall be at an approved 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 site offices and staff accommodation. No waste shall be burned or buried at or near the site offices, nor anywhere else on the site, including the approved solid waste disposal site.

(b) Litter

No littering by construction workers shall be allowed. During the construction period, the facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. Measures shall be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work the contractor shall provide litter collection facilities for later safe disposal at approved sites. Litter collected shall be recorded (by mass and volume) monthly and kept on file and shall be disposed of at an approved landfill site. Recycling of collected litter shall be undertaken where practicably possible.

(c) Hazardous waste

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

Under no circumstances shall the spoiling of tar or bituminous products on the site, over embankments, in borrow pits or any burying, be allowed. Unused or rejected tar or bituminous products shall be returned to the supplier's production plant. No spillage of tar or bituminous products shall be allowed on site. Affected areas shall be promptly reinstated to the satisfaction of the engineer.

(d) Construction and demolition waste

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

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

C3.3.7.4 Control at the workshop

The contractor's management and maintenance of his plant and machinery will be strictly monitored according to the criteria given below, regardless whether it is serviced on the site (i.e. at the place of construction activity or at a formalised workshop).

(a) Hazardous material storage

Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials e.g. tar or bitumen binders shall be stored in a secured, appointed area that is fenced and has restricted entry. Storage of tar or 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 against 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.

(b) 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. All fuel shall be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers. Leakage of fuel shall be avoided. An adequate bund wall, 110% of volume, shall be provided for fuel and diesel areas to accommodate any spillage or overflow from these substances. The area inside the bund wall shall be lined with an impervious lining to prevent infiltration of the fuel into the soil.

Gas welding cylinders and LPG cylinders shall be stored in a secure, well-ventilated area.

(d) Oil and lubricant waste

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

materials. Oil collected by a mobile servicing unit shall be stored in the service unit's sludge tank and discharged into the safe holding tank for collection by the specialist oil recycling company.

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.

C3.3.7.5 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 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 subsequent inspections.

C3.3.7.6 Soil management

(a) Topsoil

Topsoil shall be removed from all areas where physical disturbance of the surface will occur and shall be stored and adequately protected. The contract will provide for the stripping and stockpiling of topsoil from the site for later re-use. Topsoil is considered to be the natural soil covering, including all the vegetation and organic matter. Depth may vary at each site. The areas to be cleared of topsoil shall include the 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. Stockpiles of topsoil shall not exceed a height of 2 m, and if they are to be left for longer than 6 months, shall be analysed, and if necessary, upgraded before replacement. Stockpiles shall be protected against infestation by weeds.

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.

(b) Subsoil

The subsoil is the layer of soil immediately beneath the topsoil. It shall be removed, to a depth instructed by the engineer, and stored separately from the topsoil if not used for road building. This soil shall be replaced in the excavation in the original order it was removed for rehabilitation purposes.

C3.3.7.7 Drainage

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, direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous or tar 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.

C3.3.7.8 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 Sub-clauses C3.3.7.5 and C3.3.7.7. In addition, the contractor shall take cognisance of the requirements set out below.

(a) 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 EMPr for the establishment, operation and closure of the

quarry or borrow pit shall have been approved by the Department. It is the responsibility of the contractor to ensure that he obtains from the engineer, a copy of the approved EMPr prior to entry into the quarry or borrow pit. The conditions imposed by the relevant EMPr 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 EMP and this specifications the former shall apply. The cost of complying with the requirements shall be deemed to be included in existing rates in the Schedule of Quantities.

(b) Excavation, hauling and placement

The contractor shall provide the ECO and engineer with detailed plans of his intended construction processes prior to starting any cut or fill or layer. The plans shall detail the number of personnel and plant to be used and the measures by which the impacts of pollution (noise, dust, litter, fuel, oil, 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 from rainfall overnight or over periods when there is no construction activity.

(c) 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 liability 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 comments and the engineer for his approval. The location of these spoil sites shall have signed approval from the affected landowner before submission to the ECO and the engineer. No spoil site shall be located within 500m of a wetland and/or within 100m 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 hazardous or toxic wastes shall be prohibited unless special measures are taken to prevent leaching of the toxins into the surrounding environment. Such special measures shall require the approval of the relevant provincial or national authority. The same shall apply for the disposal of solid waste generated from the various camp establishments. The engineer will assist the contractor in obtaining the necessary approval if requested by the contractor.

Spoil sites will be shaped to fit the natural topography. These sites shall receive a minimum of 75mm topsoil and be grassed with the recommended seed mixture. Slopes shall not exceed a vertical: horizontal ratio of 1:3. Only under exceptional circumstances will approval be given to exceed this ratio. Appropriate grassing measures to minimise soil erosion shall be undertaken by the contractor. This will 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 liability period

upon receipt from the contractor of a landowner's clearance notice and an engineer's certificate certifying slope stability. The contractor's costs incurred in obtaining the necessary certification for opening and closing of spoil sites shall be deemed to be included in the tendered rates for spoiling.

(d) 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, together with the contractor's proposed measures for prevention, containment and rehabilitation against environmental damage.

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 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 detritus material from road construction activities may not be swept off the road and left unless specifically instructed to do so in the contract drawing or under instruction from the engineer.

In all cases, the engineer shall approve the areas for stockpiling and disposal of construction rubble before any operation commences and shall approve their clause only when they have been satisfactorily rehabilitated.

(e) 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. In

addition, the contractor shall, prior to any drilling of holes in preparation for blasting, supply the engineer with a locality plan of the blast site on which shall be shown the zones of influence of the ground and air shock-waves and expected limits of fly-rock. The plan shall show each dwelling, structure and service within the zones of influence and record all details of the dwellings/structures/services including existing positions, lengths and widths of cracks, as well as the condition of doors, windows, roofing, wells, boreholes etc. The contractor, alone, shall be responsible for any costs that can be attributed to blasting activities, including the collection of fly-rock from adjacent lands and fields. The submission of such a plan shall not in any way absolve the contractor from his responsibilities in this regard. The contractor shall also indicate to the engineer the manner in which he intends to advertise to the adjacent communities and/or road users the time and delays to be expected for each individual blast.

C3.3.7.9 Batching sites

Asphalt plants are considered scheduled processes listed in the second schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965). Should the use of an asphalt plant be considered on site, the contractor shall be responsible to obtain the necessary permit from the Department of Environmental Affairs, regardless of where they are sited.

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 Department of Mineral Resources legislation as well as the applicable industrial legislation that governs gas and dust emissions into the atmosphere. Such sites will be the subject of regular inspections by the relative authorities during the life of the project. In addition, the selection, entry onto, operation, maintenance, closure and rehabilitation of such sites shall be the same as for those under Sub-clause C3.3.7.8 (c), 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 national authority, as shall approval of closure. The engineer will assist the contractor in his submissions to the relevant authority.

Effluent from concrete batch plants and crusher plants shall be 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.

The contractor shall invite the relevant department to inspect the site within 2 months after any plant is commissioned and at regular intervals thereafter, not exceeding 12 months apart

C3.3.8 AREAS OF SPECIFIC IMPORTANCE

Any area, as determined and identified within the project document as sensitive or of special interest within the site shall be treated according to the express instructions contained in these specifications or 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 shall 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 require 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 National Monuments Council is to be contacted who will appoint an archaeological consultant. Work may only resume once clearance is given in writing by the archaeologist.

(b) Graves and middens

If a grave or midden is uncovered on site, or discovered before the commencement of work, then all work in the immediate vicinity of the graves/middens shall be stopped and the engineer informed of the discovery. The National Monuments Council 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 the National Monuments Council, be responsible for attempts to contact family of the deceased and for the site where the exhumed remains can be re-interred.

C3.3.9 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, the employer 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 Mineral 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.

C3.3.10 Record Keeping

The engineer and the DEO to the contractor 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 engineer shall issue to the contractor a notice of non-compliance whenever transgressions are observed. The DEO should document the nature and magnitude of the non-conformance in a designated register, the action taken to discontinue the non-conformance, the action taken to mitigate its effects and the results of the actions. The non-conformance shall be documented and reported to the engineer in the monthly report.

Copies of any record of decision or EMPr (including those for specific borrow pits or quarries used on the project) shall be kept on site and made available for inspection by visiting officials from the employer or relevant environmental departments.

C3.3.11 COMPLIANCE AND PENALTIES

The contractor shall act immediately when such 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 a verbal report given at the monthly site meetings.

Any non-compliance with the agreed procedures of the EMPr and this EMP, is a transgression of the various statutes and laws define the manner by which the environment is managed and, therefore, any avoidable non-compliance, dependant on severity, may be considered sufficient grounds for contact to be made with relevant provincial or national authorities to invite their sanction.

The engineer's decision with regard to what is considered a violation, its seriousness and the action to be taken against the contractor shall be final. Failure to redress the cause shall be reported to the relevant authority. The responsible provincial or national authority may ensure compliance and impose penalties relevant to the transgression as allowed within statutory powers.

C3.3.12 Measurement and payment

The contractor shall not be separately reimbursed or compensated in respect of his compliance with the provisions of this Section C3.3 of the Scope of Work. All costs incurred in this regard shall, save and except to the extent as provided for in the Bill of Quantities under Section M0300: Contractor's Establishment on site and general obligations, be considered to be included in the rates tendered for the various items of work listed in the Bill of Quantities.

TABLE C3.3.7/1: SUMMARY OF MITIGATION MEASURES		
ENVIRONMENTAL COMPONENT	ACTIVITY	MITIGATION
Establishment of site offices	Siting of offices	Preferred areas to be flat areas along the route. Avoid steep areas as soil erosion could increase. Avoid water courses
	Site Plan	Contractor to provide Engineer detail of layout of site facilities i.e. chemical toilets, the demarcation of areas for stockpiling of materials, storage of hazardous materials and the provision of containers. The offices shall be fenced. The site plan to be submitted within two weeks of the Commencement Date.
Site rehabilitation	Cleanup	All construction material is to be removed from the site on completion of the contract.
Vegetation	On site	Vegetation planted on the site is to be indigenous. Only trees directly affected by works as confirmed in writing by Engineer, shall be sawn off/removed.
	Weeds	Clearance of weeds must be done by hand before seeding.
	Grass cover	The grass cover surrounding the site is to be left as intact as possible or restored to its original condition.
Water	Available for human consumption	Water for human consumption must be tested and treated in

TABLE C3.3.7/1: SUMMARY OF MITIGATION MEASURES		
ENVIRONMENTAL COMPONENT	ACTIVITY	MITIGATION
		accordance with recommendations.
Soil management	Topsoil	The topsoil (+ 300 mm) of any excavation shall be removed and stockpiled separately from underlying material in designated areas.
	Borrow material	EMP's for borrow pits to be submitted to the relevant authority for approval
Archaeological & Cultural sites	Discover of archaeological sites of artefacts	If an artefact on site is uncovered, work in the immediate vicinity must be stopped immediately and an archaeological consultant must be contacted. Work may only resume once clearance is given in writing by the archaeologist.
Graves	Discovery of graves	If a grave on site is uncovered, work in the immediate vicinity must be stopped and an undertaker should be contacted
Waste management	Solid & Construction waste	Solid waste is to be stored in a designated area for collection and disposal. Disposal of waste will be in a licensed landfill, and no waste may be burnt on site.
	Litter	The site is to be kept free of litter
Sewage treatment	Toilet facilities	Adequate toilet facilities are to be provided, and the siting of chemical toilets is to be done in consultation with the Engineer. Use of the veld for this purpose shall not be allowed.
Fuel, diesel & hazardous materials	Hazardous Materials	All hazardous materials, i.e. bitumen binders, to be stored in a designated area that is fenced and has restricted entry. No

TABLE C3.3.7/1: SUMMARY OF MITIGATION MEASURES		
ENVIRONMENTAL COMPONENT	ACTIVITY	MITIGATION
		spoiling of bituminous products on site, over embankments, in borrow pits or any burying. No spillage of bituminous products shall be allowed on site.
	Fuels	All fuel tanks will be erected in a designated area. Leakage is to be avoided.
	Cooking fuel	The Contractor shall ensure that sufficient fuel is available for heating and cooking purposes should this be necessary.
	Oil, grease	Oil, grease and cleaning materials from maintenance of vehicles shall be collected in a sump and returned to the supplier.
	Spillages	Streams, rivers or dams must be protected against spillages of pollutants. In the event of a spillage, prompt action must be taken to clear the affected area.
General considerations	Lines of authority	A nominated representative of the Contractor will be the Designated Environmental Officer for the site.
	Reports	The Designated Environmental Officer will submit monthly reports to the Engineer who will verify the information
	Complaints	Complaints received regarding activities on the site pertaining to the environment should be recorded in a designated register, and the response noted with the date and action taken. This record must be submitted with the monthly report

C3.4 WELLNESS PROGRAM

C3.4.1 Site arrangements

The Contractor is required to facilitate a Wellness Program for site employees and their immediate family (spouse/partner and children). The Employer will appoint a service provider who will conduct the Awareness, Counselling and Testing (ACT) process at a suitable venue. For any immediate family situated away from the site, the wellness service provider will make arrangements for the ACT process to be conducted at nearby facilities, if available. The Contractor shall provide a structured plan of how the ACT process will be implemented.

The Contractor is to provide an independent lockable office for use by the Wellness Champion which includes within, office furniture including lockable storage facilities and the supply of paper and stationery, an available telephone line, fax facilities, a computer and printer with internet and email facilities.

The Wellness Process may not be used by the Contractor to fulfil his Occupational, Health and Safety obligations for his employees.

C3.4.2 Wellness Champion

The Contractor is to provide a Wellness Champion who will be responsible for managing the wellness program on site. The appointment will be subject to approval by the Engineer.

The Wellness Champion has to meet certain minimum criteria as follows:

Grade 12;
driver's license Code 8;
intermediate level of computer literacy;
excellent communication skills; and
excellent report writing using qualitative and quantitative performance indicators.

C3.4.3 Wellness Champion duties

The duties of the Wellness Champion will be as follows:

implement and manage a Wellness Programme on site;
co-ordinate the logistics for the Awareness, Counselling and Testing (ACT) sessions on site.
create an enabling environment in the workplace for workers with health issues;
refer workers to local Clinics (Department of Health) to access effective treatment;
regular toolbox talks with workers;
attend quarterly facilitation meetings on site and annual combined meeting;
create and maintain a database of all workers and immediate families, local NGO's and clinics; and

reporting on site meetings, toolbox talks, weekly planning sheets and monthly reports to service provider.

C3.4.4 Wellness Program costs

There is separate provision for the costs of providing transport and communication for the Wellness Champion, ACT venue, transport for the site employees and their immediate family (situated with the site employees) to attend the ACT process, and wages of the workers whilst away from work attending the ACT process.

C3.5 OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

Note:
The following is a Health and Safety Specification prepared by the Employer in terms of Construction Regulations 5(1)(f), in addition to the Site Specific Health and Safety Specification, prepared by the Construction Health and Safety Agent.

Wherever reference is made in this section of the Scope of Work 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.

C3.5.1 SCOPE

This part of the specification has the objective to assist the contractor entering into contract with the Employer, to comply with the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) (OH&S), as well as all applicable Regulations. Compliance with this document does not absolve the contractor from complying with minimum legal requirements and the contractor remains responsible for the health and safety of his employees and those of his Mandataries. The contractor shall, therefore, include this part of the specification to any contract that he may have with subcontractors and/or suppliers.

This section also covers the development of a health and safety specification that addresses all aspects of occupational health and safety as affected by this contract. It provides the requirements that the contractor shall comply with in order to reduce the risks associated with this contract, which may lead to incidents causing injury and/or ill health. In this matter the spirit and intention of Regulation 5(1)(l) of the Construction Regulations, 2014 regarding negotiations between the parties, related to the contents and approval of the Health and Safety Plan, must be complied with.

C3.5.2 GENERAL OCCUPATIONAL HEALTH AND SAFETY PROVISIONS

C3.5.2.1 Hazard Identification and Risk Assessment (Construction Regulation 9)

Risk Assessments

Paragraph C3.5.4 contains a generic list of risk assessment headings that have been identified by the Employer as possibly applicable to this contract. It is, by no means, exhaustive and is offered as assistance to the contractor.

Development of Risk Assessments

The 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 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. Where proof of competence is required by the Regulation, a concise CV must be attached to the appointment letter.

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

the identification of the risks and hazards to which persons may be exposed;
the analysis and evaluation of the risks and hazards identified, inclusive of a residual risk rating methodology. The method to be used is not prescribed;
a documented plan and applicable 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 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. Despite the more advanced (or site specific) risk assessments listed in paragraph C3.5.4, the Employer would have conducted a baseline risk assessment before work commences and made the same available to the contractor. This does not mean that all risk assessments must be attended before work commences, but that all risk assessments receive the necessary attention as the contract progresses, and this is the responsibility of the contractor.

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

Review of Risk Assessment

The contractor shall review the hazard identification, risk assessments and standard working procedures at each production planning and progress report meeting as the contract work develops and progresses and each time changes are made to the designs, plans and construction methods and processes. The contractor shall provide the Employer, subcontractors and all other concerned parties with copies of any changes, alterations or amendments as contemplated above.

C3.5.2.2 Legal Requirements

A contractor shall, as a minimum, comply with:

The latest version of 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, 1993 (Act No 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 “mine”, the contractor shall comply with the Mines Health and Safety Act and Regulations (Act No 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.

C3.5.2.3 Structure and Responsibilities

C3.5.2.3.1 Overall Supervision and Responsibility for OH&S

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

OH&S Act (85 of 1993), Section 37(2) agreement: “Agreement with Mandatary”
OH&S Act (85 of 1993), Section 16(2) appointee/s as detailed in his/their respective appointment forms.

C3.5.2.3.2 Further (Specific) Supervision Responsibilities for OH&S

The contractor shall appoint designated competent employees and/or other competent persons as required by the Act and Regulations. Below is a generic list of identified appointments and may be used to select the appropriate appointments for this contract. The contractor shall note that it is a generic list only and is intended for use as a guideline.

Appointment	Regulation
Construction Manager, Assistant Construction Manager, Construction Supervisor and Assistant Construction Supervisor	Construction Regulation 8(1), 8(2), 8(7) and 8(8)
Construction Vehicles and Mobile Plant/Machinery Supervisor	Construction Regulation 23
Demolition Supervisor	Construction Regulation 14
Drivers and Operators of Construction Vehicles or Plant	Construction Regulation 23
Electrical Installation and machinery on construction sites	Construction Regulation 24
Emergency/Security/Fire Coordinator	Construction Regulation 29
Excavation Supervisor	Construction Regulation 13
Explosive actuated fastening device	Construction Regulation 21
Fall Protection Plan Developer	Construction Regulation 10

Appointment	Regulation
First Aider	General Safety Regulation 3
Fire Equipment Inspector	Construction Regulation 29
Temporary Works Designer and Temporary Works Supervisor	Construction Regulation 12
Hazardous Chemical Substances Supervisor	HCS Regulations
Incident Investigator	General Admin Regulation 9(2)
Ladder Inspector	Driven Machinery Regulation 18
Lifting Machine Operator	Construction Regulation 22
Materials Hoist Inspector	Construction Regulation 19
OH&S Committee	OH&S Act Section 19
Construction OH&S Officer	Construction Regulation 8(5) & 8(6)
OH&S Representatives	OH&S Act Section 17
Person Responsible for Machinery	General Machinery Regulation 2
Scaffolding Supervisor	Construction Regulation 16
Stacking and Storage Supervisor	Construction Regulation 28
Structures Supervisor	Construction Regulation 11
Suspended Platform Supervisor	Construction Regulation 17
Bulk Mixing Plant Supervisor	Construction Regulation 20
Welding Supervisor	General Safety Regulation 9

It is a requirement that a full or part-time Construction health and safety officer is appointed as per Construction Regulation 8(5) and that the Construction health and safety officer complies with the requirements of Construction Regulation 8(6).

In addition, the Employer requires that a Traffic Safety Officer be appointed. The above 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 and agreed with the appointees. Notice of appointments shall be submitted to the Employer. All changes shall also be communicated to the Employer.

The contractor shall, furthermore, provide the Employer with an organogram of all subcontractors that he has appointed or intends to appoint and keep this list updated and prominently displayed on site.

C3.5.2.3.3 Designation of OH&S Representatives (Section 17 of the OH&S Act)

Where the contractor employs more than 20 persons (including the employees of subcontractors he has to appoint one OH&S representatives for every 50 employees or part thereof. This is a minimum (legal) requirement. The contractor may at his own discretion appoint more OH&S Representatives according to site specific requirements. Notwithstanding legal requirements, at least 1 (one) OH&S Representative

shall be appointed, irrespective of the number of employees employed. General Administrative Regulation 6 requires that the appointment or election and subsequent designation of the OH&S representatives be conducted in consultation with employee representatives or employees (Section 17 of the Act and General Administrative Regulations 6 and 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 contractor or his subcontractors, trained and able to move freely within their designated area of responsibility.

C3.5.2.3.4 Duties and Functions of the OH&S Representatives (Section 18 of the OH&S Act)

The contractor shall ensure that the designated OH&S representatives conduct continuous monitoring and regular inspections of their respective areas of responsibility, focusing on unsafe acts and unsafe conditions and report thereon to the contractor. OH&S representatives shall participate in accident or incident investigations. OH&S representatives shall attend all OH&S committee meetings.

C3.5.2.3.5 Appointment of OH&S Committee (Sections 19 and 20 of the OH&S Act)

The contractor shall establish an OH&S committee, which shall meet at least once a month.

C3.5.2.4 Administrative Controls and the Occupational Health & Safety File

C3.5.2.4.1 The OH&S File (Construction Regulation 7(1)(b))

As required by Construction Regulation 7(1), the contractor and subcontractors shall each keep an OH&S file on site. The following list of documentation is neither exhaustive nor prescriptive but recommended as a guide for the contents of the OH&S file:

Notification of construction work (Construction Regulation 4)
Latest copy of OH&S Act (General Administrative Regulation 4)
Proof of registration and good standing with COID Insurer (Construction Regulation 5(1)(j))
OH&S plan agreed with the Employer including the underpinning risk assessment/s and method statements (Construction Regulation 7(1))
Copies of OH&S committee and other relevant minutes
Designs/drawings (Construction Regulation 7(1)(e))
A list of subcontractors including copies of the agreements between the parties and the type of work being done by each subcontractor (Construction Regulation 7(1)(f))
Appointment/designation forms as per paragraphs C3.5.2.1.1 and C3.5.2.1.2.
Registers as follows:
Accident/Incident register (Annexure 1 of the General Administrative Regulations)
OH&S representatives' inspection register
Asbestos demolition and stripping register
Bulk mixing plant inspections

Construction vehicles and mobile plant inspections by controller
Daily inspection of vehicles, plant and other equipment by the operator/driver/user
Demolition inspection register
Designer's inspection of structures record
Electrical installations, -equipment and -appliances (including portable electrical tools)
Excavations inspection
Explosive actuated fastening device inspection, maintenance, issue and returns register (including cartridges and nails)
Fall protection inspection register
First aid box contents
Fire equipment inspection and maintenance
Hazardous chemical substances record
Ladder inspections
Lifting equipment register
Materials hoist inspection register
Machinery safety inspection register (including machine guards and lock-outs)
Scaffolding inspections
Stacking and storage inspection
Temporary works inspections
Inspection of structures
Inspection of suspended platforms
Inspection of tunnelling operations
Inspection of vessels under pressure
Welding equipment inspections
Inspection of work conducted on or near water
Welfare facilities as provided

C3.5.2.5 Notification of Construction Work (Construction Regulation 3)

The contractor shall, where the contract meets the requirements laid down in Construction Regulation 4 prior to commencement notify the Department of Labour of the intention to carry out construction work and use the form (Annexure 2 in the Construction Regulations) for the purpose. A copy shall be kept on the OH&S file and a copy shall be forwarded to the Employer for record keeping purposes.

C3.5.2.6 Training and Competence

The training required by the Act and Regulations shall be included in the contractor's OH&S plan. The contractor shall be responsible for ensuring that all relevant training is undertaken. Only accredited training providers shall be used for the regulatory OH&S training. The contractor shall ensure that his and his subcontractors' personnel appointed are competent and that all training required for doing the work safely and without risk to health, has been completed before work commences. The contractor shall ensure that follow-up and refresher training is conducted as the contract work progresses and the work

situation changes. This does not absolve any subcontractors from their responsibilities as employers. Records of all training must be kept on the OH&S file for auditing purposes.

C3.5.2.7 Consultations, Communication and Liaison

OH&S liaison between the Employer, the contractor, the subcontractors, the designer and other concerned parties will be through the OH&S committee as contemplated in paragraph C3.5.2.3.5. 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 contractor shall be responsible for the dissemination of all relevant OH&S information to the subcontractors e.g. design changes agreed with the Employer and the designer, instructions by the Employer and/or his agent, exchange of information between subcontractors, and the reporting of hazardous/dangerous conditions/situations. The contractors' most senior manager on site shall be required to attend and sign off the minutes of all OH&S meetings.

C3.5.2.8 Checking, Reporting and Corrective Actions

C3.5.2.8.1 Monthly Audit by Employer (Construction Regulation 5(1)(p))

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 contractor has implemented and is maintaining the agreed and approved OH&S plan.

C3.5.2.8.2 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.

C3.5.2.8.3 Contractor's Audits and Inspections

The contractor must conduct his own regular internal audits to verify compliance with his own OH&S management system, as well as with this specification. Internal audits may be conducted by the appointed Construction Manager (CR 8.1) for the site, Contractor Health and Safety Manager / Officer who is registered with the SACPCMP or a OH&S Consultant registered with the SACPCMP in a Construction Health and Safety designation. The contractor shall furthermore ensure that each subcontractor`s health and safety plan is being implemented by conducting periodic audits at intervals mutually agreed between the contractor and subcontractors, but at least once per month. Audits and inspection on sub-contractors shall be conducted by the appointed OH&S Officer for the site, as listed in the scope of services of the OH&S Officer in the SACPCMP Act, Act 48 of 2000 Section 18(1)(c).

C3.5.2.8.4 Inspections by OH&S Representative's and other Appointees

OH&S representatives shall conduct weekly inspections of their areas of responsibility and report thereon to their foreman or supervisor 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.

C3.5.2.8.5 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.

C3.5.2.9 Accidents and Incident Investigation (General Administrative Regulation 9)

The contractor and his subcontractors shall coordinate their investigation of all Section 24 accidents/incidents as well as where employees and non-employees were injured to the extent that he/she/they 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 listed in paragraph C3.5.2.4.1.

The affected contractor shall be responsible for the investigation of all minor and non-injury incidents as described in Section 24(1)(b) & (c) of the Act and keeping a record of the results of such investigations including the steps taken to prevent similar accidents in future.

C3.5.2.10 Reporting

The contractor shall provide the Employer with copies of all statutory reports required in terms of the Act within 7 days of the incident occurring.

C3.5.2.11 Medical certificate of fitness (Construction Regulations 7(1)(g) and 7(8))

The Contractor as well as the subcontractor (where appointed) shall ensure that all their employees have a valid certificate of fitness, specific to the construction work to be performed and issued by an occupational health practitioner, in the form of Annexure 3 of the Construction Regulations, GNR 84 of 2014.

C3.5.3 OPERATIONAL CONTROL

C3.5.3.1 Operational Procedures

Each construction activity shall be assessed by the 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 contractor:

to be conversant with all relevant Regulations.
to comply with their provisions, and
to include them in his OH&S plan where relevant.

C3.5.3.2 Emergency Procedures

Simultaneous with the identification of operational procedures (per paragraph C3.5.3.1 above), the contractor shall similarly 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.

C3.5.3.3 Personal and Other Protective Equipment (Sections 8/15/23 of the OH&S Act)

The contractor shall identify the hazards in the workplace and conduct a risk assessment with appropriate mitigation measures. The contractor must apply the hierarchy of controls (elimination, substitution, engineering controls, administrative controls, PPE) or, where impracticable, take steps to protect workers and make it possible for them to work safely and without risk to health under hazardous conditions.

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 mitigating hazardous situations before the issuing of PPE is considered.

Where it is not possible to create an absolutely safe and healthy workplace the 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 a hazardous environment.

It is a further requirement that the contractor maintains the said equipment, 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 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 weekly inspection meetings.

C3.5.3.4 Other Regulations

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 contractor shall be conversant with and shall comply with these regulations.

C3.5.3.5 Public Health and Safety (Section 9 of the OH&S Act)

The 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, and
passers-by to the site.

C3.5.4 PROJECT/SITE SPECIFIC BASELINE RISK ASSESSMENT

The following is a generic list of hazards and a Baseline Risk Assessment prepared by the Employer in terms of Construction Regulations 5(1)(a):

Clearing and grubbing of the area/site
Site establishment including:
Office/s
Secure/safe storage for materials, plant and equipment
Ablutions
Sheltered eating area
Maintenance workshop
Vehicle access to the site
Temporary fuel storage, where applicable
Dealing with existing structures – possibility of asbestos
Location of existing services e.g. gas, telecommunications, electrical supply and similar
Installation and maintenance of temporary construction electrical supply, lighting and equipment
Adjacent land uses/surrounding property exposures

Boundary and access control/public liability exposures (NB: the Employer is also responsible for the OH&S of non-employees affected by his work activities.)

Health risks arising from neighbouring as well as own activities and from the environment e.g. threats by dogs, bees, snakes and lightning

Exposure to noise

Exposure to vibration

Protection against dehydration and heat exhaustion

Protection from wet and cold conditions

Dealing with HIV/Aids and other diseases such as silicosis or asbestos, where applicable

Use of portable electrical equipment including

Angle grinder

Electrical drilling machine

Circular saw

Generator

Excavations including

Ground/soil conditions

Trenching

Shoring

Drainage of trenches

Welding including

Arc welding

Gas welding

Flame cutting

Use of LP gas torches and appliances

Loading and off-loading of trucks

Aggregate/sand and other materials delivery

Manual and mechanical handling

Lifting and lowering operations

Driving and operation of construction vehicles and mobile plant including

Trenching machine

Excavator

Bomag roller

Plate compactor

Front end loader

Mobile cranes and the ancillary lifting tackle

Grader

Parking of vehicles and mobile plant

Towing of vehicles and mobile plant

Use and storage of flammable liquids and other hazardous substances e.g. petrol, diesel, cement, asphalt, bituminous materials and similar

Layering and bedding

Installation of pipes in trenches

Pressure testing of pipelines

Backfilling of trenches

Protection against flooding

Gabion work

Use of explosives

Protection from overhead power lines (high and low)

Work adjacent to or in proximity of railway lines

Work adjacent to or in proximity of traffic

Working at heights

Working in confined spaces – tunnelling

Formwork and support work (temporary works) including scaffolding

Demolition work, where applicable

Bulk mixing plant, where applicable

Environmental impacts such as pollution of water, air or soil

The project specific baseline risk assessment is attached in volume 4.

C3.6 LOCAL PRODUCTION AND CONTENT

C3.6.1 SCOPE

The Department of Trade and Industry in consultation with National Treasury has designated the construction sector and determined the stipulated minimum threshold for steel products and component for construction for the state procurement for local production and content.

This section provides the requirements for local production and content for the contract.

C3.6.2 PRODUCT DESIGNATION

The products and components for local content and production for construction are as follows:

C3.6.2.1 Steel

Only locally produced or locally manufactured steel products and components for construction with a minimum threshold for local content and production as stipulated below will be considered.

Table 1a: Minimum local content for Steel Value-added Products		
Steel Construction Materials	Components	Local Content Threshold
Fabricated Structural Steel	Latticed steelwork, reinforcement steel, columns, beams, plate girders, rafters, bracing, cladding supports, stair stringers & treads, ladders, steel flooring, floor grating, hand railing and balustrading, scaffolding, ducting, gutters, launders, downpipes and trusses	100%
Joining/Connecting Components	Gussets, cleats, stiffeners, splices, cranks, kinks, doglegs, spacers, tabs and brackets	100%
Frames	Doors and windows	100%
Roof and Cladding	Bare steel cladding, galvanised steel cladding and colour coated cladding	100%
Fasteners	Bolts, nuts, rivets and nails	100%
Wire Products	All fencing products, all barbed wire and mesh fencing, fabric/mesh reinforcing, gabions, wire rope/strand and chains,	100%

	welding electrodes, nails/tacks, springs and screws	
Ducting and Structural Pipework	Non-conveyance tubing fabricated from steel sheeting and plate with structural supports	100%
Gutters, downpipes & launders	Fabricated materials made from sheeting associated with roof drainage systems	100%

Table 1b: Minimum local content for Primary Steel Products	
Steel Construction Materials	Local Content Threshold
Plates (>4,5mm thick and supplied in flat pieces)	100%
Sheets (<4,5mm thick and supplied in coils)	100%
Galvanised and Colour Coated coils	100%
WireRod and Drawn Wire	100%
Sections (Channels, Angles, I-Beams and H-Beams)	100%
Reinforcing bars	100%

In the designation, imported inputs raw materials (i.e. zinc and additives in the surface preparation and protection process (cleaning and coating/galvanising)) used in the production of steel products and components for the construction are deemed as locally manufactured input materials.

The imported input raw material, as specified above, used in the manufacture and production of steel products and components for construction will be deemed to have been sourced locally for the purposes of calculating local content.

C3.6.2.2 Electrical and telecommunication cables

Only locally produced or locally manufactured electrical and telecommunication cables for construction with a minimum threshold for local content and production as stipulated below will be considered.

Electrical Cables: cables used for power transmission	
Cable Products	Stipulated minimum threshold
Low Voltage	90%
Low Cost Reticulation	90%
Medium & High Voltage	90%
ACR	90%

Telecom Cables: cables used for telecommunications	
Cable Products	Stipulated minimum threshold
Optical Fibre Cables	90%
Copper Telecom Cables	90%

Excluded in the designation are mainly primary steel, copper, aluminum, polyvinyl chloride (PVC), cross-linked polyethylene (XLPE), aramid yarn, and optical fibre used for fabrication of cable products. This is to encourage local manufactures to seek the best global competitive prices for primary materials hence the competitive imported materials used in the manufacture of cables will be deemed to have been sourced locally for the purposes of calculating local content.

C3.6.3 COMPLIANCE

Contractors may not subcontract any work in such a manner that the local production and content of the designated products does not meet the specified thresholds.

The completed Form A3.5 (SBD6.2): Declaration Certificate for Local Production and Content for Designated Sectors and Form A3.6:Local Content Declaration: Summary Schedule (Annexure C), submitted by the Contractor are included as part of the contract in Part C5 Annexure.

The Department of Trade and Industry will undertake compliance audits with a view to monitor the implementation of the industrial development strategies.

C3.6.4 MEASUREMENT AND PAYMENT

The Contractor shall not be separately reimbursed or compensated in respect of compliance with the provisions of this clause C3.6. All costs incurred in this regard shall be considered to be included in the rates tendered for the various items of work listed in the Bill of Quantities.

C3.6.5.1 STANDARD SPECIFICATION: MINI-SUBSTATIONS
C3.6.5.1.1 GENERAL

(a) Minisubs shall in general comply with the Standard Specification. Unless otherwise approved by the Engineer, all parts and components shall comply with SANS 1029 specifications.

(b) Minisubs shall be suitable for outdoor use and shall be divided into three compartments, namely:

1) HV switch compartment
2) Transformer compartment
3) LV compartment

(c) The high voltage and low voltage cubicles of all minisubs to be used at coastal or high corrosive areas shall be manufactured of fibre-glass. In such cases all metal work of the transformer tank shall be specially treated and protected against corrosion.

(d) All live connections shall be completely tamper-proof. The HV and LV cables shall enter their respective compartments from below.

(e) The low voltage compartment shall be divided into a front and a rear sections:

The front section for housing the circuit breakers, meters and street-lighting control units and the rear section for housing busbars, bushings, cable end boxes, glands, terminal blocks and all connections. The rear section shall, however, be easily accessible on site, either by means of a removable cubicle or a rear door or a hinged panel. A separate street-lighting control compartment where required, is preferred.

(f) Access to the high voltage and low voltage compartments shall be gained only by means of locked doors. Suitable tamper-proof locks shall be provided. The doors shall be provided with top and bottom locking pins. The successful Contractor shall obtain the Engineer's approval for the type of locks and locking system before manufacturing the minisub cubicles. Doors of the high voltage compartments shall be opened with one master key and doors of the low voltage compartments shall be opened with another master key. Five sets of master keys shall be supplied for all locks and handed over to the Engineer. The lock mechanism shall have lock guards similar to existing Mini-substations on Sanral roads.

(g) The separate compartments of the miniature substation shall be mounted on a galvanized and bitumen painted channel iron base in such a way that any compartment can be removed without disturbing other compartments. Each compartment shall form a completely separate steel enclosed unit.

(h) The channel iron base shall be provided with the open end of the channel facing the outside. The channel iron base shall be sufficiently rigid to prevent any movement or distortion of the base or of any metal panels when the substation is lifted and handled as a complete unit.

(i) Suitable lifting lugs shall be provided to facilitate the lifting of the minisub as a complete unit (with roof removed) or to lift any separate compartment or component, e.g. the ring main unit or the transformer.

(j) The complete Minisub shall be covered with a single sheet steel roof.

(k) All bolts, nuts, washers, contacts, terminals and other electrical parts and connections shall be properly treated against corrosion. Where equipment is used in highly corrosive areas, e.g. coastal areas and others, special care shall be given to the treatment of equipment.

(l) The HV and LV cubicles shall be provided with adequate cross ventilation holes to prevent condensation, in such a manner that foreign objects cannot penetrate the interior.

C3.6.5.1.2 High Voltage Compartment

(a) An SF6 ring main unit consisting of two isolators and one switch fuse unit shall be provided and housed in the high voltage compartment and shall comply with SANS 1874.

(b) The ring main unit shall be bolted onto the minisub frame.

(d) The fuses to be supplied shall be suitable for the protection of the minisub transformer.

(e) All minisubs shall be supplied with one set of spare fuses. The spare fuses shall be housed in the HV compartment by means of suitable brackets or clamps.

(f) The switch fuse unit shall be earthed to the steel frame of the minisub and to the transformer tank by means of 70mm² bare stranded copper conductor. An earth bar is to be mounted in the HV compartment. This bar is to be connected to the earth bar in the LV compartment by means of a 70mm² bare stranded copper conductor. The HV earth bar shall also be connected to the trench earth.

(g) A suitable oil level sight glass or indicator shall be provided and fitted and shall be so positioned that it is clearly visible with the doors of the high voltage compartment opened.

(h) Suitable cable end boxes shall be provided on both isolator units, where paper insulated lead covered cables are to be terminated by means of compound filled cable boxes. Tender prices shall also include for the necessary oil or compound for the filling of the cable boxes.

2.10 Tender prices for miniature substations shall include for the provision of galvanized unistrut across the channel iron frame, as well as suitable cable support clamps to clamp and support the incoming high voltage cables. The point of support shall be above the top level of the minisub foundation.

C3.6.5.1.3 Transformer in Transformer Compartment

(a)	Number of phases	:	Three
(b)	Type of load	:	315 or 200kVA (pending on requirement)
(c)	No-load voltage ratio on nominal tap	:	11/6.6kV/400V
(d)	Vector diagram	:	Dyn 11

(e)	Frequency	:	50 Hz
(f)	Type of windings	:	Double wound
(g)	Ambient temperature	:	The transformers shall be suitable for the site conditions specified.
(h)	Tapping's	:	An externally operated off-load tap changing switch shall be provided, enabling the primary voltage to be varied from 95% to 105% in five steps. Tapping switches shall be insulated for full line voltage between tapping's. Means shall be provided to prevent inadvertent operation of the tap changing switch. Padlocks are not favoured. The tap changing switch shall be housed in the low voltage compartment and shall be easily accessible.
(i)	Primary terminal arrangement	:	Three shedded bushings suitable for minisub use.
(j)	Secondary terminal arrangement	:	Four shedded bushings suitable for minisub use.
(k)	Type of cooling	:	ONAN
(l)	Tank fittings required	:	The following transformer accessories shall be provided: 1) Oil filling plug 2) Oil drain valve
(m)	Tank	:	Unless otherwise specified, sealed transformers shall be provided for miniature substations.
(n)	Transformer losses	:	Low loss transformers to be provided. Loss figures shall be submitted with tenders and shall be guaranteed.
(o)	Impedance voltage	:	Approximately 4% on the nominal tapping.

C3.6.5.1.4. Low Voltage Compartment

(a) Equipment Mounting Frame

A suitable steel mounting frame or panel shall be provided to mount the ammeters, voltmeter, fuses, switches, circuit breakers, contactors and other equipment specified. Unless specifically approved by the Engineer, the use of hardboard, pressed wood or similar products to mount equipment on, will not be acceptable. All live parts shall be screened by means of perspex or metal sheet for protection against inadvertent contact.

(b) Busbars

1) The busbar rating shall be suitable for the size transformer specified. The feeders between the transformer and the busbars shall have a current rating equal or higher than the busbars.

2) The cross-section area of the neutral busbar shall be the same as the cross-section area of the phase busbars.

3) All busbars shall be fully screened to prevent accidental contact.

(c) Fault Rating of Equipment

The fault rating of the busbars, circuit breakers and other equipment in the low voltage compartment shall be determined by the rating and impedance of the transformer used.

(d) Metering Equipment

Each miniature substation shall be provided with the following:

1) Three combined indicating and 15-minute maximum demand flush-mounted 96 mm square ammeters.

The ammeters shall be suitable for operation from current transformers with 5A secondary windings. Scale plates shall be provided as follows:

a) 200 kVA minisubs : 0- 300A plus 20% extended scale
b) 315 kVA minisubs : 0- 500A plus 20% extended scale
c) 400 kVA minisubs : 0- 600A plus 20% extended scale
d) 500 kVA minisubs : 0- 800A plus 20% extended scale
e) 630 kVA minisubs : 0-1000A plus 20% extended scale

Each ammeter shall be clearly and permanently marked with the appropriate phase colour.

2) One flush-mounted 96 mm square voltmeter with scale 0 to 550 V complete with selector switch.
3) kWh Meters for consumer service connections if applicable.
4) Combined kVA/kWh meters similar to Sangamo CYLP meters for consumer service connections if applicable.

(e) Current Transformers

1) Current transformers shall be used for the ammeters and combined kVA/kWh meters.

2) Rating and diagram plates for current transformers shall be provided.

3) Current transformers shall be properly installed and mounted.

4) Class 1,0 current transformers in accordance with BS 3938.

The following ratios shall be provided:

a) 200 kVA minisubs : 300/5 A
b) 315 kVA minisubs : 500/5 A
c) 400 kVA minisubs : 600/5 A
d) 500 kVA minisubs : 800/5 A
e) 630 kVA minisubs : 1000/5 A

5) The VA rating of current transformers shall be sufficient to drive all metering equipment connected.

(f) Surge Arresters

Unless otherwise specified, three suitable low voltage surge arresters shall be provided and installed, one on each of the low voltage phase busbars. The surge arresters shall comply with the following minimum requirements:

a) Rated voltage : 440V rms minimum
b) 50 Hz sparkover voltage: 1500V rms maximum
c) 1,2/50 microsecond pulse : 2000V peak maximum

Surge arresters shall comply with SABS 171.

The surge arresters shall be solidly connected to the earth bar by means of stranded copper conductor or copper bar with a minimum cross-sectional area of 35mm^2.

(g) Moulded Case Circuit Breakers (MCCB's)

1) All MCCB's shall carry the SABS mark in terms of SABS 156.

2) Mechanically coupled single-pole circuit breakers used as double or triple pole circuit breakers are not acceptable.

3) The fault rating of any MCCB shall not be less than the fault rating of the associated busbars to which it is connected.

4) Solid aluminium core cables may be used. Where the MCCB terminals are insufficient to house the specified cable size and lug physically, suitable tinned copper extension bars shall be provided.

(h) Outgoing Circuits

1) The miniature substations shall be complete with the outgoing circuit breakers, meters and metering equipment, contactors, cable glands and gland plates, wiring and connections, terminal strips, etc.

2) The outgoing circuits shall be connected to the phases as shown on the drawings, or as specified.

3) If consumer service connections through meters and/or single phase circuit breakers are required, then terminal strips shall be provided for these circuits. All these circuits shall be completely wired up to the terminal strips to ensure that all cables to be installed on site, can be easily connected.

4) If aluminium core cables are used, then the three-pole circuit breakers shall be fitted with suitable tinned copper terminal extensions onto which the aluminium core cable lugs can be bolted.

(i) Terminal Strip

1) Terminal strips are required for consumer connections, where applicable.

2) The terminals of the terminal strip shall be large enough to house the cores of the outgoing cables. Solid aluminium core cables can be used.

3) Terminals shall be approved by the Engineer. Full details shall be submitted at the time of tendering.

4) All terminal connections shall be placed in easily accessible positions.

5) All phase, neutral and earth connections shall be wired to terminals by the manufacturer.

6) The terminal strip shall be mounted not less than 200mm above the gland plate and the terminals to be connected to a cable shall be above the specific cable gland as shown on the drawing.

7) Each terminal shall have a colour identification tag to show whether it is connected to "Neutral" or "Red", "Yellow" or "Blue" phases.

8) Each terminal shall also be provided with an engraved ivory tab with the stand number.

(j) Switches and Selector Switches

1) The fault level of the switches and selector switches shall be equivalent to or higher than the fault level at the associated busbar, unless protection fuses are used in the circuits.

2) The voltmeter or ammeter selector switch shall be mounted directly below the associated volt or ammeter.

(k) Combination Fuse Switch Units

1) All components shall be capable of continuously carrying rated normal current without excessive temperature rise.

(l) High Rupturing Capacity Fuses and Fuse Holders

(m) Contactors and Relays

(n) Earthing

1) A pre-drilled tinned copper earth bar of suitable dimension shall be mounted above the gland plate or in a suitable position in the LV compartment.

2) The neutral bar shall be solidly connected to the earth bar by means of a 70mm² bare stranded copper conductor. This earth bar shall also be connected to the trench earth system.

3) The armouring of all cables shall be properly bolted to the earth bar by means of suitable lugs.

(o) Cable Glands and Clamps

1) Minisubs can be provided with gland plates complete with glands or Unistrut P4000, complete with one-piece cable clamps with rear pressure shoes.

2) All gland plates shall be galvanised steel or tinned copper complete with the correct size of glands for the cables.

3) All unistrut and clamps shall be galvanised.

4) Suitable glands similar to the Pratley compression type glands shall be used to ensure that the armouring of the cables can be taken through the glands and connected to the earth bar.

5) Gland plates shall be pre-drilled before galvanizing to terminate the specified quantities, types and sizes of cables.

(p) Labels

1) Where consumers are supplied from minisubs, then the stand numbers shall be labelled on the terminals, meters and circuit breakers.

2) Each cable shall be clearly marked by means of an aluminium tag or other suitable permanent means with the stand number or cubicle number supplied by the cable. This tag shall be fixed to the cable in a visible position close to the cable gland or clamp.

C3.6.5.1.5. Street-Light Compartment (where required)

The street-light compartment shall house the equipment specified in the detail specification and/or drawings, but shall in general consist of the following:

a) A three-pole contactor with minimum rating of 60A and with coils suitable for operation at a nominal voltage of 231V, 50Hz, and in compliance with IEC 158/1 and/or BS 775.

b) A three-phase circuit breaker unit with 60A fuses to protect the contactor.

c) All wiring required for the switching of the contactor by means of an externally mounted photocell; or

d) Sufficient space and all wiring to be provided for the mounting of a ripple control relay;

e) A photocell bypass switch.

f) Three-pole or single pole MCCBs to protect the street-light supply circuits.

g) A suitable terminal block for the connection of street-light circuits and photocell circuit.

h) All wiring required to complete the installation up to the terminal blocks.

C3.6.5.1.6. Installation and Erection

(a) Contractors shall tender for the complete erection of the miniature substations, including the making-off and termination of all high voltage and low voltage cable ends, the positioning and mounting of the high voltage ring main switch fuse unit and including the supply of all materials for and the casting of the concrete plinth.

(b) Concrete Plinth

The mini-substation shall be mounted on a concrete plinth. The plinth shall be cast on site.

The contractor shall issue to the engineer a detailed plinth drawing suitable for each type of mini-substation supplied.

The top of the plinth shall protrude at least 200mm above the final surrounding, ground level. The concrete plinth shall protrude approximately 100mm beyond the edges of the mini-substation to form an apron.

The concrete apron and plinth shall be wood float finished and shall slope from the base to permit rain water runoff. A 3mm thick gasket of approved material shall be inserted between the mini-substation and the concrete surface. The gasket shall be as wide as the base of the minisub.

Cable ducts shall be provided in the plinth to accommodate all the incoming and outgoing cables. The cable ducts shall be sealed to prevent entry of rodents. The sealing shall be easily removable in the event of future cable work and may consist of a layer of 10:1 sand and cement mix, approximately 10mm thick, and finished flush with the top of the concrete plinth.

On sloping ground where the above requirements cannot be met, approved methods shall be employed to the satisfaction of the Engineer. In such cases the Contractor shall ensure that the plinth is buried at least 250mm all round.

(c) The Contractor shall inform the Engineer or his duly authorised representative to inspect and approve these concrete plinths after they have been put in position and before the minisubs are placed in position.

All plinths shall be completed and approved before any minisub is placed in position. A malthoid or other suitable moisture barrier layer shall be provided and installed between the minisub frame and the foundation. The minisubs shall be bolted to the plinths.

(d) The concrete plinths shall be neatly finished after erection of the minisubs.

(e) The minisubs shall be erected on pavements in the positions as indicated on the drawings. The minisubs shall be erected parallel with the stand boundaries and shall be at least 0,2 metres away from the boundary or to suit the type of minisub.

(f) The armouring of low voltage cables shall be terminated into crimped lugs and bolted onto the earth bar. In the case of cables with copper earth continuity conductors all such conductors shall be taken through to the earth bar. Where cables with only steel armouring conductors, or only aluminium strip armouring are provided all steel or aluminium shall be taken through to the earth bar.

When CNE cables are used the armouring (neutral) shall be terminated onto the neutral bar.

(g) When aluminium core low voltage cables are used, suitable tinned copper or aluminium lugs with "Densal" paste shall be used for the terminations. Aluminium core cables shall be terminated in the lugs by means of deep indent crimping. Methods whereby the core itself (with solid core cables) is formed into a lug will be accepted if approved by the Engineer.

(h) The costs for the supply and delivery of all lugs and paste shall form part of the price for the erection of the minisubs.

(i) All paper insulated cables shall be wiped unless other suitable termination arrangements are approved by the Engineer. A stranded copper earth conductor shall be provided in the cable wipe or termination and shall be connected to an earth point.

(j) Cross-linked polyethylene cables shall be made off with suitable terminating kits recommended by the cable manufacturer. These cables shall be properly clamped with wooden blocks fixed to the switchgear.

(k) The minisub earth bar, HV ring main unit and transformer tank shall be connected to the substation or system earth.

(l) In coastal or high corrosion areas the cable glands shall be properly taped with a suitable tape where the low voltage cables enter into the glands. The supply and delivery of the tape shall be included in the prices for erection of minisubs.

(m) The floors of the low voltage and high voltage compartments shall, after complete erection of minisubs and after all the cables have been made off, be levelled and finished off with a weak cement mixture.

(n) Each minisub shall be provided with a name or number designation label with lettering at least 40mm high. Detail of the wording shall be obtained from the Engineer.

(o) Suitable vermin-proofing shall be provided.

PART C4: PROJECT INFORMATION

SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL:PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

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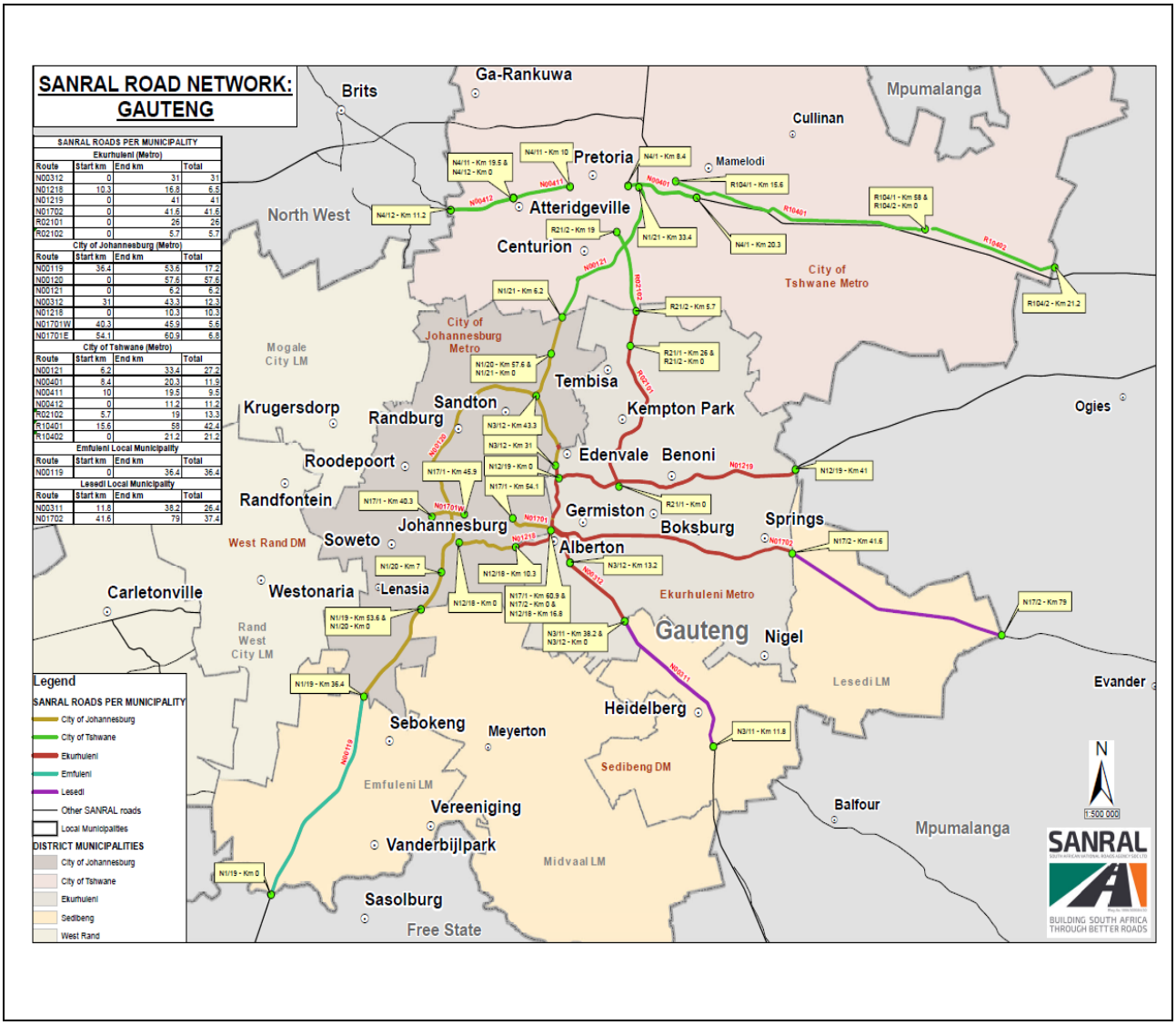

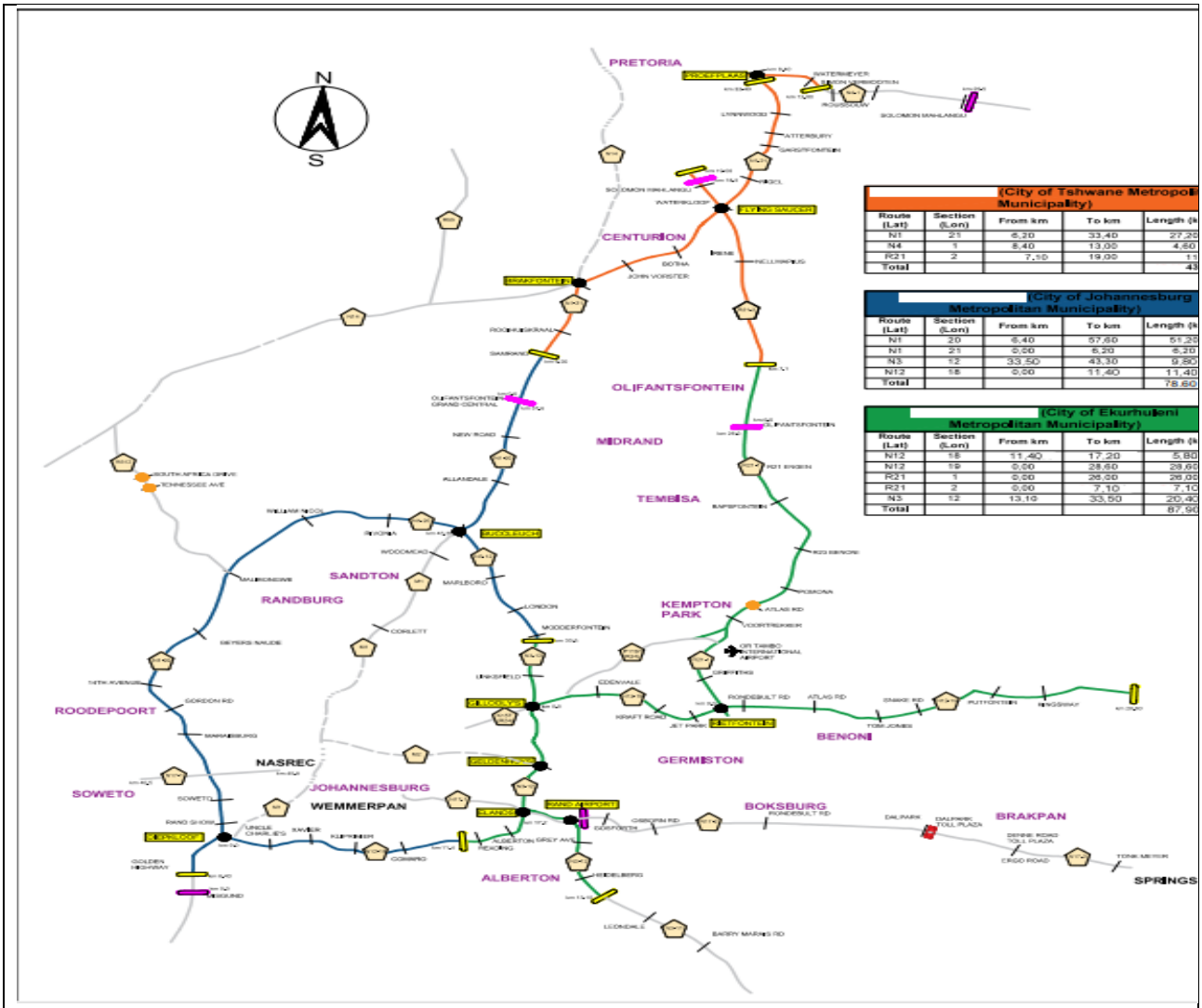

CONTRACT SANRAL: **APPOINTMENT OF CONTRACTORS ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE**

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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, Targeted Enterprise Subcontracting, and Targeted 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 Principles for Project Liaison, Targeted Enterprise subcontracting, and Targeted 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 the Contractor's subcontracting with Targeted Enterprises and the employment of Targeted Labour. It may also include the supply of material and goods, procurement of services, and participation with MOU partners to facilitate successful works execution.*
2. *Communication will be streamlined through the PLC and used to manage the expectations of local business and communities.*
3. *SANRAL will chair PLC meetings and provide secretarial support through the Consulting Engineer or its Agent. Representation on the PLC will comprise SANRAL, the Contractor, the Consulting Engineer (SANRAL's Agent), and other relevant entities such as business representatives, traditional authority representatives, provincial, district, and local municipal representatives (not political office bearers), community representatives, and any other critical local Stakeholder that may be deemed necessary by SANRAL. While serving on the PLC, members must declare any conflict of interest and recuse themselves if requested by the PLC Chairperson.*
4. *The selection process of a Project Liaison Officer (PLO), who will be employed by the Consulting Engineer, must be fair and transparent, and the individual appointed must be supported by the PLC.*
5. *The definition of a Target Area (sometimes referred to as a local area or Project Area) may be varied by SANRAL with the input of the PLC prior to the construction tender being let.*
6. *The setup of databases for Targeted Labour in the Target Area will be done with the input of the PLC. The Targeted Labour database will be disseminated to the PLC for comment and input.*
7. *A system of Targeted Labour selection from the database must be established at a PLC meeting. The Targeted Labour database will be used by the Contractor to recruit Targeted Labour.*
8. *The PLC may give input in identifying areas of the Scope of the Works that are deliverable by Targeted Enterprises, and areas where capabilities are not available locally. All Scope of the Works areas where capabilities are not available locally will be imported from outside of the local area and local service providers will be given an opportunity to learn through one of the structured training options provided in the Contract.*
9. *Capability assessments of Targeted Enterprises will be done with the input of the PLC, prior to the subcontract tender stage commencing, to identify any deficiencies in skills and experience. For Targeted Labour, skills assessments will be done at recruitment stage.*
10. *Targeted Enterprise development support and training must be coordinated and conducted, prior to the sub-contract tender stage commencing, with the input of the PLC.*
11. *The setup of databases for Targeted Enterprises will be conducted with the input of the PLC. The database will be disseminated to the PLC for comment and input. A database will only become final on the date of sub-contract tender closure.*
12. *The Targeted Enterprises on the database must be assisted by the Consulting Engineer and the Contractor to be compliant with the relevant legislation to execute work for a SANRAL project. Targeted Enterprises on the database must be registered on the National Treasury Central Supplier Database (CSD). The databases for Targeted Enterprise*

subcontracting will be used by the Contractor for open tender processes. Tender processes for Targeted Enterprise subcontracting must be conducted by the Contractor using government principles (e.g., public opening of received bids, announcement of bidders and prices). The successful tenderers will be tabled, by the Contractor, in the PLC meeting for information purposes.

13. *Appeals to the tender process, which cannot be resolved by the PLC, must be escalated to SANRAL for an independent review which will be facilitated by the Transformation Unit.*
14. *The Consulting Engineer must ensure that formal contracting arrangements between the Contractor and the Targeted Enterprise Subcontractors are in place in all projects.*

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

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:

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.

Community

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

Contract Participation

Contract Participation is the process by which the Employer implements Government's objectives by setting Specific Goals to enhance Targeted Labour and Targeted Enterprises' utilisation and development, which the Contractor must achieve as a minimum.

Contract Participation Goal (CPG)

The CPG is the monetary value of the participation goals set by the Employer for Targeted Labour and Targeted Enterprises expressed as a percentage of the Final Contract Value (excluding provision for Contract Price Adjustment (CPA, also referred to as escalation), contingencies for unforeseen additional expenditure, and Value Added Tax (VAT)).

Contract Participation Goal Plan (CPG Plan)

The CPG Plan outlines how the Contractor intends to achieve the various Specific Goals w.r.t. the CPG as set in the Specification Data. The CPG Plan includes the detail of the Targeted Enterprise work programme, as well as the contents and value of the work packages. See Annexure X1 *(insert annexure reference)* for the CPG Plan template.

Contract Participation Performance (CPP)

The CPP is the measure of the Contractor's progress in achieving the CPG and the formula for calculating its value is described in Section D1003.05.

Contract Skills Development Goals (CSDG)

The CSDG is 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.

Domestic Subcontractors

A Domestic Subcontractor 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 Contract. The appointment of the Subcontractor is treated as something entirely for the benefit of the Contractor and is a purely "domestic matter".

Final Contract Value

The Final Contract Value also means the Contract Price as defined in FIDIC, sub-clause 1.1.4.2. To calculate the CPG as per Section D1003.04, Contract Participation Goal (CPG), of the Specifications, the Final Contract Value shall exclude CPA, contingencies, and VAT).

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.

Labour

Persons:

who are employed by the Contractor or a Subcontractor in the performance of the Contract, and
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, 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.

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.

Mobilisation Period

The Mobilisation Period is the period between the Commencement Date and the date of Access to Site, which period (duration) is stated in the Contract Data. Section D1005 of the Specifications describes the purpose and requirements of the Mobilisation Period.

Project Area

The Project Area is 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.

Project Liaison Committee (PLC)

The PLC is the Committee that represents the Employer, Engineer, Contractor, project Stakeholders and the Communities affected by the project. It is important to note that:

elected and/or nominated political office bearers may not be members of the PLC, and
the Engineer and Contractor become members of the PLC on their appointment and participate in the Committee within the scope of their respective roles and responsibilities.

Project Liaison Officer (PLO)

The PLO is 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.

Specific Goals

Specific Goals may include contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination based on race, gender and disability.

The Employer's Specific Goals are set in the Specification Data, and unless otherwise permissible by the Preferential Procurement Policy Framework Act (Act 5 of 2000) and its Regulations, Specific Goals may be set by the Employer for the Contractor to subcontract with Targeted Enterprises in terms of their ownership and/or control, and employ Targeted Labour as follows:

i) Emes and/or qses which are at least 51% owned by black people as listed below.
ii) Black people who:
    are citizens of the Republic of south Africa by birth or descent; or
    became citizens of the Republic of South Africa by naturalisation:
        before 27 April 1994; or
        on or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalisation prior to that date.
iii) Women who are South African citizens.
iv) Youth as defined in the National Youth Commission Act (Act 19 of 1996).
v) People with disabilities as defined in the Code of Good Practice on employment of people with disabilities issued under the Employment Equity Act (Act 55 of 1998).
vi) Black military veterans who qualify to be called a military veteran in terms of the Military Veterans Act (Act 18 of 2011).
vii) Unemployed persons that are black people as listed in iii) to vi) above.
viii) Unemployed persons not attending and not required by law to attend an educational institution and not awaiting admission to an educational institution.

Stakeholders

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:

Relevant Provincial departments.
Relevant Municipal departments.
Traditional leadership representation.
Organised forums representing community interest groups.
Organised forums representing the youth, women, and disabled people.
Other structured community groups such as religion, education, farming, etc.
Organised forums representing the transport sector.
Organised forums representing the business sector.
Organised forums representing road users and road safety interest groups.
Organised forums representing environmental interest groups.
Any other relevant stakeholder forum or organisation recognised by the Employer and the local municipality.

Subcontractor

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

Target Area

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

one or more Provinces,
one or more Metropolitan or District Municipalities,
one or more Local Municipalities, or
one or more Wards that are predominantly located within the Project Area.

Targeted Enterprise

A Targeted Enterprise is an entity to which the Contractor subcontracts a percentage of the contract value as set in the Specification Data, acting in the capacity of a Subcontractor or JV partner, and

i) the Contractor does not have any equity holding in the enterprise, either directly or through a flow through calculation in accordance with the amended Construction Sector Code of Good Practice published in Notice 931 of 2017 in Government Gazette No. 41287 of 2017 in terms of the Broad Based Black Economic Empowerment Act (Act 53 of 2003); and
ii) is registered in terms of the Company's Act (Act No. 71 of 2008) or Close Corporation Act (Act No. 69 of 1984); and
iii) its ownership adheres to the Specific Goals as set in the Specification Data; and
iv) is registered with National Treasury's Central Supplier Database; and
v) is tax compliant prior to award of a subcontract; and
vi) is CIDB registered where applicable; and
vii) is COIDA compliant prior to award of a subcontract where applicable.

A Targeted Enterprise may be a:

a. subcontractor subcontracted to execute a portion of the Scope of the Works,
b. manufacturer that operates or maintains a factory or establishment that produces materials or goods,
c. supplier that owns, operates or maintains a store, warehouse or other establishment in which goods are kept in stock, which was bought in its own name, and regularly sold to other parties in the usual course of its business,
d. service provider who provides professional, technical, or managerial services, including those required for the acquisition of personnel, facilities, equipment, and goods.

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

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.

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.

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.

Target Group

It is a group of entities and/or persons set as the Employer's Specific Goals in the Specification Data for the Contractor to subcontract with Targeted Enterprises and employ Targeted Labour.

Targeted Labour

Persons:

who are unemployed, and
who are then employed by the Contractor or a Subcontractor (including Targeted Enterprises) in the performance of this Contract, and

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
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
who are stated as being Targeted Labour in the Specification Data.

The personnel employed by the Contractor's suppliers and service providers are not defined as "Targeted Labour" for the purposes of this Contract.

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.

Training and Skills Development Programme (TSDP)

The TSDP outlines how the Contractor intends to achieve the CSDG targets, by applying the various training methods described in Section D1010 of the Specifications.

D1002.02 Applicable Legislation, Regulations and Standards

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

a) Constitution of the Republic of South Africa Act, Act No. 108 of 1996.
b) Public Finance Management Act, Act No. 1 of 1999.
c) Preferential Procurement Policy Framework Act, Act No. 5 of 2000, and its latest regulations.
d) The South African National Roads Agency Limited and National Roads Act, Act No. 7 of 1998.
e) Construction Industry Development Board Act, Act No. 38 of 2000.
f) Broad-Based Black Economic Empowerment Act, Act No. 53 of 2003, as amended.
g) Amended Construction Sector Codes, Government Gazette Notice 931 of 2017.
h) The Skills Development Act, Act No. 97 of 1998.
i) The *Skills* Development *Levies Act, Act no.* 9 of 1999.
j) The National Small Enterprises Act, 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:

CIDB Standard for Indirect Targeting for Enterprise Development through Construction works Contracts, 29 January 2013 (Government Gazette No. 36190, 25 February 2013).

CIDB Standard for Developing Skills through Infrastructure Contracts, 08 August 2013 (Government Gazette No. 36760, 23 August 2013), amended by version 2, June 2020 (Government Gazette No. 43495, 03 July 2020).
CIDB Standard for Minimum Requirements for Engaging Contractors and Subcontractors on Construction Works Contracts, 25 October 2015 (Government Gazette No. 42021, 09 November 2015).
CIDB Standard for Contract Participation Goals for Targeted Enterprises and Labour through Construction Works Contracts, 31 October 2017 (Government Gazette No. 41237, 10 November 2017).
SANS 10845: 2015, Parts 5, 7 and 8.

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 penalties 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:

optimising the utilisation of local resources in the Project Area,
developing these local resources in the execution of the project, and
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:

employ Targeted Labour from the Target Area(s) as stated in the Specification Data, and
subcontract Targeted Enterprises as stated in the Specification Data, and
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 established at a PLC meeting 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 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 Target Groups and Target Area(s). Once the Database has been disseminated to the PLC it shall be utilised to facilitate the selection of Targeted Labour as per the resources and skills required by the Contractor during the different construction stages.

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

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

D1003.03 Targeted Enterprise Database

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

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).

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.

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:

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),
for the PLC to verify that Targeted Enterprises on the Preliminary Targeted Enterprise Database are authentic in terms of the Specification Data and other Database criteria, and
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 for consideration to ensure Target Group participation as intended by the Employer.

Targeted Enterprise Database

Once the Preliminary Targeted Enterprise Database has been disseminated to the PLC for information purposes, 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.

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

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

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

D1003.04 Contract Participation Goal (CPG)

The CPG is the monetary value of the participation goals set by the Employer for Targeted Labour and Targeted Enterprises expressed as a percentage of the Final Contract Value (excluding CPA, Contingencies, and VAT). The participation goals comprise of the following:

a) Targeted Labour

In the case of Targeted Labour, the CPG is:

i) the sum of the wages and allowances, for which the Contractor, Subcontractors, and Targeted Enterprises contract to engage Targeted Labour in the performance of the Contract, expressed as a percentage of the Final Contract Value (excluding CPA, contingencies, and VAT) associated with the Specific Goals that are set in the Specification Data; or

ii) the amount equal to the person days worked for which the Contractor, Subcontractors, and Targeted Enterprises contract to engage Targeted Labour expressed as a percentage of the total person days worked associated with the Specific Goals that are set in the Specification Data.

% Targeted Labour ($TL_{Total\%}$) = the sum of the % Targeted Labour employed by the Contractor, Subcontractors, and Targeted Enterprises.

b) Targeted Enterprises

In the case of Targeted Enterprises, including manufacturers, suppliers, and service providers, the CPG is:

i) the amount equal to the value of goods, services and works for which the Contractor contracts to engage Targeted Enterprises in the performance of the Contract, expressed as a percentage of the Final Contract Value (excluding CPA, contingencies, and VAT) associated with the Specific Goals that are set in the Specification Data, and calculated as follows:

% Targeted Enterprises ($TE_{Total\%}$) = $TE_{Subcontractor} + TE_{Supplier} + TE_{Manufacturer} + TE_{ServiceProvider.} + TE_{JonitVenture}$

Where:

$TE_{Subcontractor}$ = 1.0 x % Targeted Enterprise subcontractors, including the % Targeted Labour employed by Targeted Enterprise subcontractors.

$TE_{Supplier}$ = 0.5 x % Targeted Enterprise suppliers.

$TE_{Manufacuter}$ = 1.0 x % Targeted Enterprise manufacturers.

$TE_{ServiceProvider}$ = 1.0 x % Targeted Enterprise service providers (excluding cost of goods if service provider is not also the supplier or manufacturer of goods, e.g., a transport service).

$TE_{JointVenture}$ = 1.0 x % Targeted Enterprise joint venture participation parameter.

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

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

Where:

Final Contract Value = The total value of the Contractor's final certified work measured at the date of issue of the Taking-Over Certificate. The Final Contract Value includes the value of scheduled work and extra work but excludes any CPA, contingencies, and VAT.

The Contractor shall strive to distribute and implement the participation goals and opportunities equally and continuously over the duration of the Contract. Where the Contractor deems such an equal and continuous distribution of the participation goals to be unachievable, he shall provide reasons and motivate it clearly in the preliminary CPG Plan.

Both the Targeted Labour and Targeted Enterprise participation goals may consist of sub-goals which are stipulated in the Specification Data. The Contractor is required to achieve these individual sub-goals. If the Contractor fails to achieve any one of the individual sub-goals 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 goal set by the Employer for Targeted Enterprises. It is the Contractor's responsibility to assess the work required to meet the goals and, if necessary, to engage additional Targeted Enterprises to execute work on the Contract as well to ensure that the minimum goals 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:

CPP = CPG_{Actual}

= total monetary value (excluding VAT) of Targeted Labour employed by the Contractor plus the total monetary value (excluding VAT) of Targeted Enterprises contribution, including Targeted Labour employed by the Targeted Enterprises.

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.

CPP Penalties

Failure to reach either the CPG or any individual Target Group goals 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 goal or sub-goals 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:

Penalty Targeted Labour = $(TL - TG) + Sum\ (TL_n - TG_n) - 1.2 \times L_{dp}$

Where:

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

Penalty Targeted Enterprises = $(TE - TGE) + Sum\ (TE_n - TGE_n) - 1.2 \times TE_{mv} - 1.2 \times TE_{dp}$

Where:

$_n$	=	Each lowest order sub-group of Targeted Enterprise stipulated in the Contract Data.

TE = Monetary value (excluding VAT) of Targeted Enterprises calculated at the percentage stipulated in the Specification Data applied to the final contract value (excluding VAT).

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.

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

The total Penalty value shall be the sum of the Targeted Labour and Targeted Enterprises Penalty values unless the total Penalty value is negative then it shall be a zero (0) value.

Interim penalty valuations, based on the accepted CPG Plan, shall be calculated to interim Payment Certificate values (excluding VAT) to establish the anticipated outcome, and to plan corrective actions for non-adherence to the CPG Plan.

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

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

D1003.06 Accredited Registration

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

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

D1003.07 Contractor's Responsibility

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

The Employers CPG requirements, and the compulsory utilisation of project specific Targeted Labour and Targeted Enterprise 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:

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.
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.
PLC members, which include the Contractor, shall be held accountable to disseminate project information discussed at the PLC meetings to the entities that they represent.
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.
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, providing 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 subcontracting, 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 Annexure X2 *(insert Annexure reference)*. 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/or 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.

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.

Stakeholder representation on the PLC is project and Project Area specific and may, amongst others, include:

i) Relevant Provincial departments.
ii) Relevant District and Local Municipal departments.
iii) Traditional leadership representation.
iv) Organised forums representing community interest groups.
v) Organised forums representing the youth, woman, and people with disabilities.
vi) Other structured community groups such as religion, education, farming, etc.
vii) Organised forums representing the business sector.
viii) Organised forums representing the transport sector.
ix) Organised forums representing road users and road safety interest groups.
x) Organised forums representing environmental interest groups.
xi) Any other relevant stakeholder forum or organisation recognised by the Employer and the district and/or local municipality.

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 political office bearers 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.

The Employer's timeous establishment of the PLC and/or the level of functionality of the PLC shall not prevent the Contractor from continuing with his responsibilities during the Mobilisation Period and the subsequent commencement of construction of the Works.

Reimbursement of PLC Members

PLC membership is voluntary and PLC members shall not be renumerated for any time spent in PLC meetings or work done outside of PLC meetings, which are associated with representing their constituencies 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 reimburse PLC members for actual costs incurred in executing their PLC duties (other than time spent in PLC meetings or work done outside of PLC meetings). The Contractor will determine and table to the PLC a realistic, monthly, reimbursable amount which will be substantiated by an outline of the anticipated actual costs envisaged to be incurred by PLC members.

In establishing a reimbursement amount for PLC members, the factors listed below, as well as the Project Classification Table may be considered, but is not mandatory or conclusive:

i) Transportation costs.
ii) Sustenance (if not provided during meetings).
iii) Type, size, and complexity of the project.
iv) Facilitation of performance milestones.

Table D1004.03(a): Project Classification (Type, Size, Complexity)

Project Classification	**Project Value (Rm)**	**Indicative PLC Reimbursement**
Maintenance (M) (OPEX)	< R 100	R 585
	> R 100	R 585

Development (D) (CAPEX)	< R 100	R 585
	R 100 – R 300	R 705
	R 300 – R 500	R 820
	> R 500	R 935

PLC members will be reimbursed monthly, and the reimbursable amount may be revised bi-annually should the actual costs incurred by PLC members change during the project.

The PLC reimbursement amount shall be increased annually, or twelve (12) months after the last bi-annual adjustment, based on the CPI figure contained in Table B2 of Statistical Release P0141 by StatsSA (base date March 2023).

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 Principles for Project Liaison.
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, and
    e. envisaged work for other SMMEs (non-CPG).

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) <u>General Matters and Membership</u>

    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 PLC through the Mayor's Office and the PLC Chairperson (the Employer).
    c. If required, and in consultation with the Employer, a Political Steering Committee (PSC) may be established to address political matters.

ii) <u>Term of Office for the PLC</u>

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 the constituency whom they represented will be requested to nominate a replacement member.

iii) Targeted Enterprises and Targeted Labour

PLC members shall:

a. ensure that they, or companies in which they hold equity, do not tender for any work or on any subcontract that are issued for this Contract. Should a PLC member, or a company in which he/she holds equity, tender for such work or subcontract, it will be treated as a conflict of interest and:
   i. the person shall cease to be a PLC member for this Contract, and
   ii. the tender proposal submitted will not be evaluated.
b. not have private or business interests in any of the subcontract tenders tabled to the PLC or considered in this Contract.
c. shall recuse themselves from discussions that deal with a subcontract tender if any other member is of the opinion that a member's participation in deliberations, which is rightly or wrongly construe as improper or irregular, may lead to the award of a subcontract to a tenderer known to the member.
d. 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).
e. 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 manufacturer/supplier/subcontractor/service provider procurement or involvement in the Contract.

iv) Confidentiality

PLC members shall accept that all information, documentation, and discussions regarding any matter serving before the PLC are confidential and undertake not to communicate this information outside of the PLC meeting.
Decisions of PLC meetings may not be disseminated to any party other than the constituency whom they are representing.
Information for public dissemination shall be clearly documented in the minutes of the meeting of the PLC to ensure that sensitive information is 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 believes 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.

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:

i) Project Design Stage

Meet as often as required to provide input to the project's design stage matters which are of interest or concern to the parties to the PLC.
Peruse the PLC 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.

D1004.04 Project Liaison Officer

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 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:

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:

Schedule meetings.
Compile meeting agendas.
Compile document packages for meetings.
Distribute minutes of meetings.
Assist representatives of project Stakeholders and affected Communities to formulate their communication to the PLC in writing.
Distribute written communication between the parties to the PLC.

Keep records of all PLC correspondence and documentation; and

Provide any other reasonable secretariat function required by the PLC.

Attend all PLC meetings to report on the day-to-day project, Stakeholder and Community matters that impact on the parties to the PLC.
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.
Attend any other meetings related to the project in which any of the project Stakeholders, affected Communities, Targeted Labour and Targeted Enterprises are involved.

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.

Maintain a full-time presence on site to assist the parties to the PLC in the day-to-day liaison with each other.

Assist the Engineer and the Contractor to disseminate information to PLC members such as:

the basic Scope of the Works and how it will affect the Community,
the project programme and regular progress updates,
the anticipated employment and subcontracting opportunities,
the project programme as it pertains to the employment of Targeted Labour and subcontracting of Targeted Enterprises,
Occupational Health and Safety precautions, and
any other information relevant to project Stakeholders and the affected Communities.

Be well acquainted with the contractual requirements as they pertain to Targeted Labour employment and training.

Assist the PLC to establish and agree the criteria to follow when selecting and employing Targeted Labour.

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.

Monitor that the Contractor compiles the Targeted Labour databases based on the eligibility and selection criteria and that it is updated as and when required.

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.

Confirm that each Targeted Labourer enters an employment contract which adheres to current and relevant Labour legislation.

Confirm 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.

Identify and inform the Contractor of any relevant training required by the Targeted Labour.

Attend all disciplinary proceedings to observe that hearings are fair and conducted in accordance with the current and relevant Labour legislation.

Be proactive in identifying project Stakeholder and affected Communities’ (including Targeted Labour and/or Targeted Enterprise Subcontractor), requirements, disputes, unrest, strikes, etc., and bring it to the attention of the PLC.

Play a facilitating role to resolve any disputes between the parties to the PLC, which may occur due to the project.
Other than keeping the records already mentioned in this section, keep a record of all other documents and processes pertaining to the employment of Targeted Labour.

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, Stakeholder and affected Communities' matters and any other project matters that impact on the parties to the PLC.

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:

become acquainted with the Stakeholder and Community liaison requirements of the Contract as prescribed in this Section D of the Specifications,
allow for the Contractor's planning to obtain the CPG as required in the Specification Data,
allow for the Contractor's planning to obtain the Contract Skills Development Goals (CSDG) as required in Section D1010 of the Specifications,
follow the processes prescribed in this Section D of the Specifications to employ the initially required Targeted Labour and enter the first subcontracts with Targeted Enterprises, and
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 been submitted and/or completed by the Contractor:

i) Submission of the CPG Plan, followed by acceptance of the Engineer.
ii) Submission of the Training and Skills Development Programme, followed by acceptance of the Engineer.
iii) Appointment of the initial Targeted Enterprise Subcontractors.

D1005.02 Duties of the Contractor

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

i. 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 Annexure X1 *(insert Annexure reference)* 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 w.r.t. the Mobilisation Period have been executed to the satisfaction of, the Engineer after consultation with the Employer's Project Manager.

The Employer's Project Manager 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.

ii. Compile a Training and Skills Development Programme

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

The Training and Skills Development Programme 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 Programme has been accepted by, and all the duties w.r.t. the Mobilisation Period have been executed to the satisfaction of, the Engineer after consultation with the Employer's Project Manager.

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

iii. Subcontracting to Targeted Enterprises

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

Liaise with the Employer's Project Manager, the Engineer and the PLC to structure and finalise the work packages to be subcontracted to Targeted Enterprises.

Liaise with the Employer's Project Manager, the Engineer, and the PLC to determine the Targeted Enterprise Database criteria for the subcontracting of Targeted Enterprises.
Compile the Targeted Enterprise Database(s) for input by the PLC.
Undertake a skills audit of the Targeted Enterprises which appear on the Targeted Enterprise Database(s).
Based on the skills audit, and with the input of the PLC, identify the pre-tender training requirements of Targeted Enterprises.
Provide an opportunity to Targeted Enterprises to receive the identified pre-tender training.
Tender the initial work packages and subcontract the first group of Targeted Enterprises for commencement of the Works.

iv. Employment of Targeted Labour

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

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

v. 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.

All training provided by the Contractor shall be aligned with the training requirements as described in Section D1010 of the Specifications.

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 and Targeted Labour in the Project Area. The purpose of the audit was to:

obtain an understanding of the Community's skills, both educational and occupational,
obtain and understanding of the resources available within the Community, i.e., Targeted Enterprise availability and capabilities, and Targeted Labour skills levels.
establish the CPG targets for Targeted Enterprises and Targeted Labour for inclusion in the Specification Data; and 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:

Targeted Enterprise Subcontracting

Make recommendations to the Contractor in identifying, structuring, and scheduling the work packages to be subcontracted to Targeted Enterprises.

Approve the scope and extent of the work packages and, in consultation with the Employer, accept the CPG Plan.

Verify that the Targeted Enterprise Database(s) has been updated prior to the letting of every new set of subcontracts.

Approve tender procedures, tender documents, tender submission requirements and adjudication processes for the subcontracting of Targeted Enterprises.

Review all tender adjudication reports and monitor that the criteria and procedures applied by the Contractor to subcontract to Targeted Enterprises are executed in a fair and transparent manner and are within the Employer's and Government's Supply Chain Management Policies.

Verify that subcontract agreements and the conditions of subcontracting to Targeted Enterprises are fair and transparent and within the prescripts of the Contract requirements.

Monitor the management of Targeted Enterprise subcontracts and ensure that conditions such as the application of penalties, the termination of contracts, etc. are applied in a fair and transparent manner and within the prescripts of the subcontract agreement.

Targeted Labour Employment

Verify that the Labour Database(s) from which Targeted Labour will be employed is updated prior to every new Labour intake.

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.
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.

Target Group Training Requirements

Make recommendations to the Contractor in identifying the training requirements of Targeted Labour and Targeted Enterprises.
Approve the proposed Training and Skills Development Programme, in consultation with the Employer.
Monitor that the Training and Skills Development Programme and any Targeted Enterprise support programmes, which the Contractor committed to, are implemented, and executed as intended.

D1007 TENDER PROCESS FOR TARGETED ENTERPRISES

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

D1007.01 Targeted Enterprise (TE) Procurement Coordinator

The Contractor shall appoint a TE Procurement Coordinator to facilitate the subcontracting of work to Targeted Enterprises as defined in the Specification Data. For Contracts with a value of less than R 100 million the Contractor may appoint a TE Procurement Coordinator from its site staff. For Contracts with a value of more than R 100 million the Contractor shall employ or subcontract a dedicated TE Procurement Coordinator, whose sole responsibility will be the management of Targeted Enterprise procurement and subcontracting matters.

The TE Procurement Coordinator shall be well acquainted with, and has experience in:

the management of road construction and ancillary works,
road construction and ancillary works suitable for SMMEs,
National Treasury's Supply Chain Management Legislation and Regulations,
the Employer's Supply Chain Management and Procurement Policies,
the Employer's Transformation Policy,
the Employer's proforma document for Targeted Enterprise Subcontracting,
claims, amicable settlement, and dispute resolution facilitation, and
Stakeholder and Community relations management.

The TE Procurement Coordinator shall conduct the tender processes and procedures for Targeted Enterprise subcontracting as prescribed in this Section D of the Specifications and shall adhere to Government's Supply Chain Management legislation and regulations and the Employer's policies.

The TE Procurement Coordinator shall provide the PLC with the necessary pre- and post-tender information for them to be able to observe that the criteria and methodologies applied by the Contractor to subcontract Targeted Enterprises are executed in a fair and transparent manner and are within Government's legislation and regulations and the Employer's policies.

D1007.02 Procedures for Targeted Enterprises Subcontracting

The Contractor shall utilise the Employer's proforma tender and contract document for Targeted Enterprise Subcontracting. The proforma subcontract document is attached as Annexure X3 *(insert annexure reference)* and an electronic version will be provided to the Contractor on award.

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

Activity 1 Tender Preparation

1.1 Compile preliminary list of subcontracting work packages.
1.2 Conduct a market analysis and resources and skills audit.
1.3 Call for an expression of interest.
1.4 Establish a Targeted Enterprise Helpdesk.
1.5 Compile Preliminary Targeted Enterprise Database.
1.6 Identify Targeted Enterprises, Target Groups and Project Area.
1.7 Finalise the Contract Participation Goal (CPG) Plan.
1.8 Acceptance of the CPG Plan.
1.9 Compile tender documents.

Activity 2 Tender Process

2.1 Advertise the subcontract packages.
2.2 Conduct a tender briefing and tender training session.
2.3 List of minimum tender submission documents.
2.4 Tender closure and opening of tenders.
2.5 Finalise Targeted Enterprise Database.

Activity 3 Tender Evaluation

3.1 Stage 1 – Eligibility
3.2 Stage 2 – Functionality

3.3 Stage 3 – Price and Preference

3.4 Stage 4 – Compliance Check

Activity 4 Appoint Successful Targeted Enterprises

4.1 Submitting a Tender Report.

4.2 Negotiating tender sum and/or rates with Targeted Enterprises.

4.3 Low tender sums submitted by Targeted Enterprises.

4.4 Payment to the Contractor.

4.5 Entering the Subcontract Agreement.

The summarized list of activities above, are further elaborated on in the paragraphs below:

Tender Preparation

Although the Contractor is required to implement the Targeted Enterprise work opportunities equally and continuously over the duration of the Contract, most of the Tender Preparation activities must be concluded during the Mobilisation Period.

Compile a preliminary list of subcontracting work packages.

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

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

Conduct a market analysis and resources and skills audit.

Based on the preliminary list of work packages, the Contractor shall conduct a market analysis and resources and skills audits to determine the availability of the required resources and skills in the Project Area to execute the anticipated Targeted Enterprise work packages. The Contractor shall consult the following databases as a minimum:

Construction Industry Development Board (CIDB)'s contractor database (not applicable to manufacturers, suppliers, and non-construction service providers).

National Treasury's Central Supplier Database (CSD) to be obtained from the Employer's Supply Chain Management Department.
Call for an expression of interest.

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

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

evaluation and selection criteria such as eligibility, functionality, and preference,
compliance requirements such as CSD and CIDB registration, tax clearance and COID compliance, and
the anticipated scope of the works to be undertaken by Targeted Enterprises.

Establish a Targeted Enterprise Helpdesk

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

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

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

Compile Preliminary Targeted Enterprise Database

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

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

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

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

Targeted Enterprises (CIDB grades and types); and Target Groups (woman, youth, etc.) which are anticipated to benefit from the subcontracting opportunities; andProject Area(s) from which Targeted Enterprises will be given preference for subcontracting opportunities.

Finalise the Contract Participation Goal (CPG) Plan.

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

a list of work packages (scope of work and number of packages) to be subcontracted to Targeted Enterprises, procurement, award, and execution dates for the work packages, distributed over the duration of the Works Contract (from site establishment to completion of the Works) to ensure continuous work opportunities,the Preliminary Targeted Enterprise Database(s) for each work package.

the Targeted Enterprises (CIDB grades and types) and Target Groups (woman, youth, etc.) which are to benefit from the subcontracting opportunities,

the Project Area(s) from which Targeted Enterprises will be given preference for subcontracting opportunities, and
the tender evaluation and selection criteria for the respective work packages.

Acceptance of the CPG Plan

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

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

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

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

Compile tender documents.

The Contractor shall compile the tender documents for each Targeted Enterprise subcontract work package and shall utilise the Employer's proforma document for Targeted Enterprise Subcontracting (see Annexure X3)

The Contractor shall compile each subcontract tender document in a manner that facilitates the achievement of all objectives and principles pertaining to the development of the Targeted Enterprises.

The subcontract work packages, its evaluation and selection criteria, and the Tender Advertisement shall be acknowledged by the PLC and accepted by the Employer, prior to advertising the tender (see Annexure X4) *(insert Annexure reference)*. The draft subcontract tender documents shall be approved by the Engineer before letting the tender.

Tender Process

Advertise the sub-contract packages.

The Contractor shall advertise and invite tenders from Targeted Enterprises for the respective subcontract packages. Advertisements shall be placed in local newspapers, on community notice boards, on SANRAL's electronic supply development desk portal (https://sanralesdd.co.za), and any other place or medium as advised by the PLC. The Contractor shall keep printed proof of all advertisements and the platforms where the subcontract packages were advertised.

If the Employer have a pro-forma Tender Notice available, the Contractor shall use this document.

Conduct a tender briefing and tender training session.

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

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

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

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

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

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

i. Minimum tender submission documents.

It shall be a condition of tender that Targeted Enterprises include in their tender submissions the following documentation (if applicable, based on the subcontract type, e.g., construction, manufacturing, supply, or services):

A valid B-BBEE certificate or Sworn Affidavit with the Tenderer's B-BBEE contributor level.
Proof that the Tenderer is an EME or QSE entity.
Proof that the Tenderer is registered on National Treasury's CSD.
Proof of the Tenderer's locality (address registered with the CIPC).
Proof that the Tenderer is registered with the CIDB in the required grading and class (if applicable).
Proof that the Tenderer is compliant with the COID act.
Proof that the Tenderer is tax compliant.

ii. Tender closure and opening of tenders.

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

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

iii. Finalise Targeted Enterprise Database

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

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

On the date of tender closure, the Contractor shall request the Employer's Supply Chain Management Department, through the Project Manager, to print out a list from National Treasury's CSD, of entities that adheres to the Targeted Enterprise Database criteria. This list shall become the Final Targeted Enterprise Database for the relevant subcontract tender and shall be made available to the PLC if requested.

Tender Evaluation

The Contractor shall evaluate the tenders and it shall be a condition of tender that tenders will only be accepted from Targeted Enterprises that fully comply with the definition of a Targeted Enterprise as described in Section D1002 of the Specifications.

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

Stage 1 – Eligibility

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

Stage 2 – Functionality

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

To ensure Targeted Enterprise participation as it is intended by the Employer and as defined in the Specification Data, Functionality shall be scored based on the type of sub-contract package, e.g., construction or the supply of goods or services and at least three (3) or more of the criteria listed below shall be applied.

The points allocated for the listed criteria shall be clearly demonstrated to tenderers as a matrix in the tender document. The functionality matrixes provided in the Employer's proforma document for Targeted Enterprise subcontracting (Annexure X3) *(insert Annexure reference)* shall be applied to evaluate the functionality of Tenderers.

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

Stage 3 – Price and Preference

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

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

Preference will be scored as follows:

Table D1007.02(a): Allocation of Preference Score

	Criteria	10 Points	20 Points

Specific Goals		Points	Max Points	Points	Max Points
TE's B-BBEE Level	1	10	10	20	20
	2	9		18	
	3	6		14	
	4	5		12	
	5	4		8	
	6	3		6	
	7	2		4	
	8	1		2	
	Non-compliant	0		0	

The highest scoring tenderer for each sub-contract package shall be checked for compliance.

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

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

Stage 4 – Compliance Check

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

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

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

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

Appoint successful Targeted Enterprises

i. Submitting a Tender Report.

The Contractor shall present the Tender Report for each sub-contract package to the Employer's Project Manager and the Engineer and thereafter table the winning tenderers to the PLC prior to award of the sub-contract.

*(**Note to Proforma Compilers**: Amend or omit paragraphs in the remainder of this Section D1007 to suit the respective contract types.)*

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

Rates

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

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

approach the second highest points scoring compliant tenderer for negotiation. This process may be repeated up to the third highest points scoring compliant tenderer, where after the package shall be retendered. the Contractor shall be limited to negotiate down to 25% above his own rates (this process must be clearly explained to the PLC prior to negotiation.; or

accept the highest points scoring tenderer's higher rates and total sum and remunerate the Subcontractor, at the Subcontractor's tendered rates, from the Lump Sum which the Contractor has tendered for the fluctuation between the Contractor's rates and that of the Targeted Enterprise Subcontractors.

Provisional Sum

If the Employer has provided a Provisional Sum for the work items in the sub-contract package, the Contractor shall report on the feasibility of the highest point scoring compliant tenderer's tender rates and tender sum to the Employer's Project Manager and the Engineer.

If the highest points scoring compliant tenderer's rates and tender sum are deemed market related by the Engineer, the Contractor shall obtain the Employer's approval to utilise the Provisional Sum provided for the work items.

If the highest points scoring compliant tenderer's rates and tender sum are deemed not market related and the Employer does not approve the utilisation of the relevant Provisional Sum, the Contractor may negotiate with the tenderer for market related rates and tender sum.

If the Contractor fails to negotiate market related rates and a tender sum with the tenderer, he may:

approach the next highest point scoring compliant tenderer for negotiation. This process may be repeated up to the third highest points scoring compliant tenderer, where after the package shall be retendered; or

accept the highest points scoring tenderers rates and total sum and remunerate the Subcontractor from the Lump Sum which the Contractor has tendered for the fluctuation between the Contractor's rates and that of the Targeted Enterprise Subcontractors. The Contractor shall not pay rates or tender sums that is more than 15% higher than what are deemed market related by the Engineer.

iii) Low tender sums submitted by Targeted Enterprises.

The Contractor shall report to the Employer's Project Manager and the Engineer on the feasibility of tendered rates, sums, or Provisional Sums of tenderers who tendered exceptionally low. Exceptionally low rates, sums or Provisional Sums are those that are more than five percent (5%) less than what the Contractor tendered, or in the case of a Provisional Sum, what is deemed market related by the Engineer.

If the tendered rates, sums, or Provisional Sums of those tenderers who tendered exceptionally low are deemed by the Engineer to still be feasible, the Contractor may continue to include these tenders in his tender evaluation.

If the tendered rates, sums, or Provisional Sums of those tenderers who tendered exceptionally low are deemed by the Engineer to not be feasible, the Contractor may disqualify these tenders from his tender evaluation.

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

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

iv) Payment to the Contractor.

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

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

v) Entering the Sub-contract Agreement.

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

D1008 GENERAL RESPONSIBILITIES OF THE CONTRACTOR TOWARDS TARGETED ENTERPRISES

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

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.

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, guidance, coaching, development, and support of Targeted Enterprises as per the Contractors 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:

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

b) TE Construction Manager's Qualifications and Experience

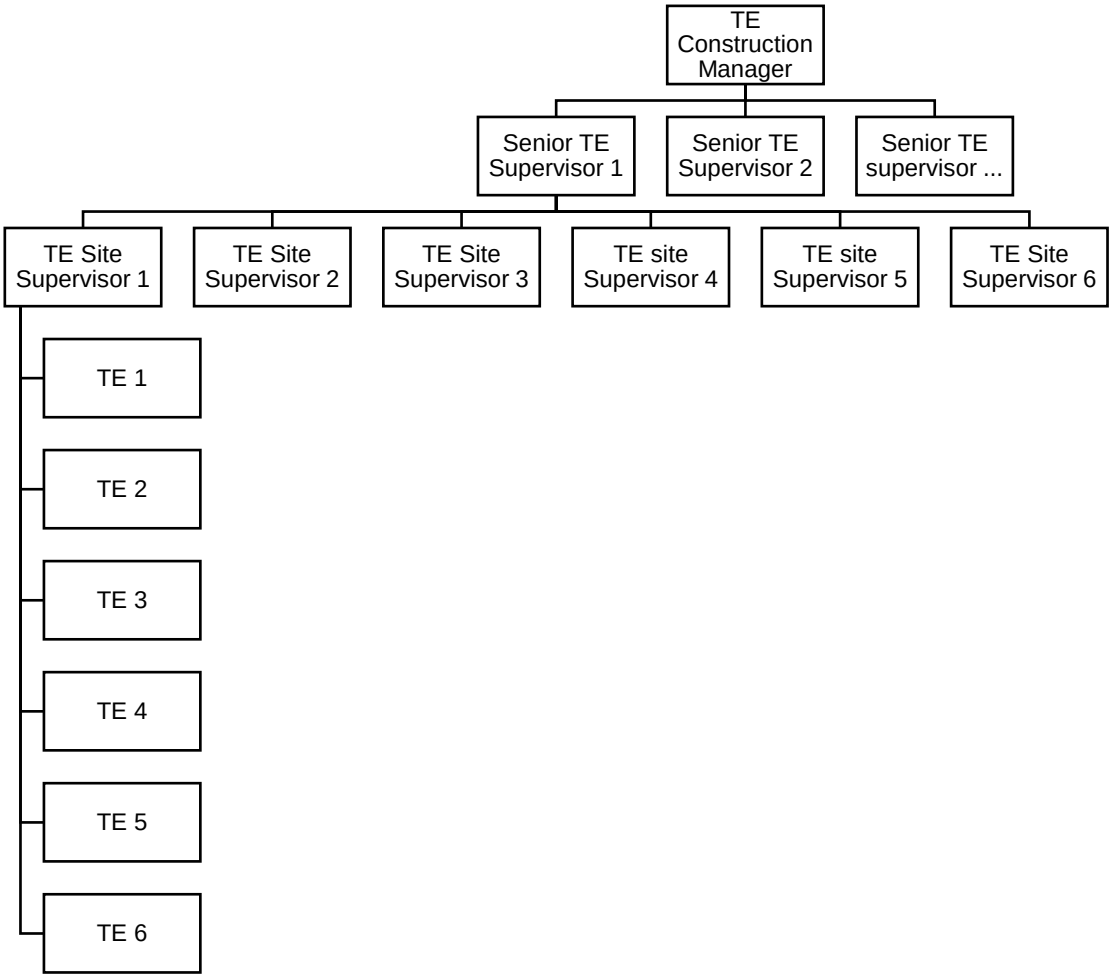
The TE Construction Manager shall have as a minimum a National Diploma: Management of Electrical Engineering Construction Processes (NQF Level 5) or an equivalent qualification.

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:

Assist the Targeted Enterprises in instituting a quality assurance system.

Provide adequate training, coaching, guidance, mentoring and any other identified and approved assistance to Targeted Enterprises and their employees.
Provide support and any other identified and approved assistance to ensure that the Targeted Enterprises meet their obligations and commitments with respect to their sub-contracts.
Assist Targeted Enterprises to monitor and manage the schedules, costs, and cash flows of their sub-contracts.
Endeavour to avoid sub-contract disputes and if disputes do arise, facilitate a process to find an amicable solution.
Ensure that the CPG objectives are achieved.

D1008.03 Sub-contract Agreements

The Contractor shall conclude sub-contract agreements with each sub-contracted Targeted Enterprise and shall utilise the Employer's proforma document for Targeted Enterprise subcontracting (see Annexure X3) *(insert Annexure reference)*, 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.

Special Conditions of Contract

Amongst others, the sub-contract agreement includes the following Particular Conditions of Contract:

The Targeted Enterprise's entitlement to receive the training contemplated in the main Contract (sub-contract Part C1, C1.2.1, Part B, clause 6.8).
The Targeted Enterprise's obligation to participate and co-operate in the training provided for in the main Contract (sub-contract Part C1, C1.2.1, Part B, clause 6.8).
The allowable sources from which Labour may be drawn in terms of the main Contract (sub-contract Part C1, C1.2.1, Part B, clause 6.5).
The terms and conditions relating to the recruitment, employment and remuneration of Labour engaged on the main Contract (sub-contract Part C1, C1.2.1, Part B, clause 6.5).
The training to be provided to the Targeted Enterprise's workforce (sub-contract Part C1, C1.2.1, Part B, clause 6.8).
The terms and conditions related to payment of the Targeted Enterprise (sub-contract Part C1, C1.2.1, Part B, clauses 14.6 to 14.8 and 15.3).
Sanctions in the event of failure by the Targeted Enterprise to comply with the terms and conditions of the sub-contract agreement (sub-contract Part C1, C1.2.1, Part B, clauses 14.6 and 20.4 to 20.7).
Dispute avoidance and resolution procedures (sub-contract 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 sub-contract agreement once approved by the Employer and the Engineer.

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 request insight into the Conditions of Subcontract 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.

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 PC1.3.1 of the COTO specification payment items, i.e.:

C1.3.1.1 paid in 3 instalments of 50%, 35% and 15%.
C1.3.1.2 paid as a percentage of the total value progressively per certificate.
C1.3.1.3 paid monthly for the Subcontractor'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

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 subcontracting 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.

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.

Assist the Targeted Enterprise to Make Good

The Contractor shall, in terms of the sub-contract agreement (sub-contract Part C3, clause 3.1.12), give reasonable warning to the Targeted Enterprise when any contravention of the terms and conditions of the sub-contract 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.

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.

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.

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.

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.

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's Project Manager and the Engineer are satisfied that the Contractor has made every effort to correct t**he performance of the Targeted Enterprise.**

The Targeted Enterprise may dispute any ruling given or deemed to be given by the Contractor or the Engineer, within 21 calendar days after receipt thereof by submitting a written Dispute Notice to the Contractor, in terms of the relevant Conditions of the 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) Supply of transport to Local Labour.
z) Specialised sub-contract work such as:
   Cable Supply
   Cable installation and terminations
   Cable Joints
   Earthing installation and testing
   Concrete basis for masts

From the above work items, the following have been identified as suitable for execution by CIDB EP1 and EP2 Targeted Enterprises:

(Note to Compiler: Insert relevant work types.)

Concrete plinths for masts .
Cable installation
Luminaire Replacements
Construction and clearing of drains.

Any other work identified by the Employer to be executed in the Target Area.

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

A Provisional Sum for the work by CIDB 1 and 2 Targeted Enterprise Subcontractors 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 (TSDP) which shall be managed by the Contractor's TE Construction Manager.

The CIDB Standard for Developing Skills through Infrastructure Contracts, 08 August 2013 (Government Gazette No. 36760, 23 August 2013), as amended by version 2, June 2020 (Government Gazette No. 43495,03 July 2020) shall apply to projects with a Works Construction Period of 12 months or more, as set out under this Section D1010.

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

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.

The TSDP shall provide the learning detail for Targeted Labour, Targeted Enterprises and other Learner categories, including course and/or module contents and timeframes. See Annexure X5 (insert Annexure reference) for the TSDP format.

D1010.02 Developing the TSDP

The Employer shall, through its Project Manager, be involved in the decision making and quality control pertaining to the development and implementation of the TSDP facilitated through this Contract.

The complete TSDP shall be developed during the Mobilisation Period, accepted by the Engineer after consultation with the Employer's Project Manager, and tabled to the PLC for their information before any training commence.

Skills Development Requirements

Contract Skills Development Goals (CSDG)

This section establishes a minimum CSDG which is to be achieved in the performance of a Contract in relation to the provision of different types of workplace opportunities linked to work associated with a Contract which culminate in or lead to:

a part- or full occupational qualification registered on the National Qualification Framework,
a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012),
a national diploma registered on the National Qualification Framework, and
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 final contract value multiplied by the percentage (%) for Civil Engineering work (CE) as set in the Specification Data.

To attain the CSDG, it is estimated that the following number of Learners must be trained on the Contract in the stated categories:

Training Category		Up to R100 mil	R100 - R200 mil	R200 - R400 mil	R400 - R800 mil	R800 - R1600 mil	R1600+
Method 1	Occupational qualification.	10	20	30	40	60	60
Method 2	TVET College graduates. Apprenticeships.	1	2	4	6	12	16
Method 3	P1 and P2 learners. 240 credits qualification	1	2	4	6	12	16
Method 4	Candidates with 360 credits qualification. Candidates with 480 or more credits qualification.	1	2	4	6	12	16
Generic Skills	Occupational qualification.	10	20	30	40	50	60
Community Training	Occupational qualification.	10	20	30	40	50	60

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 Learners (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 50 percent (%) of the CSDG. The Contractor's permanently employed Trainees may not account for more than 25 percent (%) of the CSDG, and not more than one method may be applied to any individual concurrently in the calculation of the CSDG.

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.

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.

Compliance with Requirements

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

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 is 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.

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.

Sanctions (Penalty)

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. Penalty = {[LoAs + LoLs + LoUSs + 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).

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

D1010.03 TSDP 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) **Sourcing of Trainees**

The Employer may provide the Contractor with its list of Trainees or source from which Trainees may be selected.

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 be the relevant academic institution

If the Employer does not provide the Contractor with a list or source of Trainees, the Contractor may source beneficiaries of the CSDG from the CIDB Skills Development Agency (SDA) or an SDA recognised by the CIDB such as the Construction Education and Training Authority (CETA) or a relevant Sector Education and Training Authority (SETA).

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

b) 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 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.

c) 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(ess). 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.

d) Training Programme Requirements and Considerations

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

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

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

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

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

The above criteria are not exhaustive, and the Training Service Provider shall apply the systems and processes required by the relevant SAQA and other related legislation pertinent to training. The Training Service Provider shall regularly consult the SAQA website (www.saqa.org.za) to ensure that the most current Unit Standards are presented. In the event of any conflict, the legislated requirements shall apply.

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

NQF Level 3	National Certificate:	Construction Roadworks.
NQF Level 4	National Certificate:	Supervision of Construction Processes
NQF Level 4	National Certificate:	Business Management
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.

e) Learning Material

Learning material is required for each Unit Standard. This learning material is the equivalent of prescribed textbooks for other qualifications. Each Trainees shall receive a copy of the learning material to learn the contents and to use it as 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 a 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:

Purpose of the Unit Standard.
Specific outcomes (typically 4 per Unit Standard).
Assessment criteria (typically 4 per specific outcome).
Range as is defined for each specific outcome.
Critical cross-field outcomes for the Unit Standard.
Unit Standard essential embedded knowledge.

f) Generic Skills Training

Generic skills training, which is not construction (technical) specific, but which are beneficial to the skills development of Targeted Enterprises and Targeted Labour, shall be taught in learning areas where the need has been identified and approved by the Employer's Project Manager and the Engineer.

The Contractor shall make representation to the Employer's Project Manager 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 examples of generic skills training programmes are:

i) National Certificate: Vocational, levels 1, 2, and 3 in various fields.
ii) National Certificate: Road Safety Development.
iii) National Certificate: Occupational Hygiene and Safety.

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Generic skills training shall add towards the Contractor's CSDG credits and shall be structured learning as per the CSDG Method 1 requirements. Training shall be accredited by the relevant Sector Education and Training Authority (SETA) and shall be provided by SETA accredited entities and individuals.

g) Community Training

Community training shall be taught in learning areas where the need has been identified. Affected Communities may submit their training needs to the PLC for the Contractor's consideration and inclusion into the Training and Skills Development Programme.

While considering the training needs of affected Communities, the Engineer shall inform the PLC of the Contract's training limitations, as well as of the training that could be undertaken through the Contract.

Trainees from the Community shall be identified through the Community structures and with the input and support of the PLC. Trainees selected from the Community shall receive formal skills training in a programmed and progressive manner in compliance with sub-clause (d). Priority shall be given to training that will equip Community members with skills that will enhance their employability.

Typical examples of community training programmes are:

i) General Education and Training Certificate: Hygiene and Cleaning
ii) General Education and Training Certificate: ABET
iii) National Certificate: Vocational, levels 1, 2, and 3 in various fields.
iv) National Certificate: Travel and Community Tourism
v) Further Education and Training Certificate: Community Development
vi) Further Education and Training Certificate: Public Awareness HIV/AIDS

Community skills training shall add towards the Contractor's CSDG credits and shall be structured learning as per the CSDG Method 1 requirements. Training shall be accredited by the relevant Sector Education and Training Authority (SETA) and shall be provided by accredited entities and individuals.

D1010.04 The Training Service Provider

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.

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 sub-contract a Training Service Provider to implement the theoretical training components of the Programme by applying the Employer's Supply Chain Management Policy for second tier procurement.

a) Accreditation of the Training Service Provider

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

b) Qualifications and Experience of the Training Service Provider

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

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 and ad hoc basis with the levels of experience which are required for the Unit Standards to be presented.

c) 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 monthly, 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.

D1012.02 Community Development Projects

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

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

The theoretical training, as well as the practical training (which is the construction of the CD Works) is undertaken by the Trainee Targeted Enterprises under the mentorship and supervision of a Training and 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 cooperate with the CD Project(s)' Service Provider(s) and take cognisance of the CD Project(s)' programme in compiling the programme of the Works Contract.

D1013 MEASUREMENT AND PAYMENT

Item **Unit**

D10.01 Target Group Participation

	N/A.	

Item **Unit**

D10.02 Stakeholder and Community Liaison and Social Facilitation

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

The prime cost sum for item D10.02(a) shall cover the direct costs incurred by attending members of the PLC. The rate of compensation shall be fair and agreed by the Engineer in accordance with clause 13.5 of the FIDIC Conditions of Contract. The tendered percentage for sub-item D10.02(b) shall include full compensation for all handling costs and profit of the Contractor associated with sub-item D10.02(a).

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

Item **Unit**

D10.03 Tender Process for Targeted Enterprises

(a)	Contractor's charge for the management and execution of the Targeted Enterprise procurement process:	

		Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise Subcontractors of CIDB 1 and 2 contractor grading.	Number (No)
	(ii)	Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise Subcontractors of CIDB 3 and 4 contractor grading.	Number (No)
	(iii)	Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise Subcontractors of CIDB 5 and higher contractor grading.	Number (No)
	(iv)	Procurement process for the totality of all tenders concluded for the appointment of Targeted Enterprise suppliers.	Number (No)
(b)	Targeted Enterprise Procurement Coordinator		Month

The unit of measurement for item D10.03(a) shall be the number of individual sub-contract agreements concluded with Targeted Enterprise Subcontractors 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(a) shall include full compensation for the provision of the relevant personnel on a full-time basis to carry out the requirements in terms of sub-item D10.03(a) and the full contents of this Section D of the Specifications.

Each tendered rate shall be in full compensation for the management and execution of the Targeted Enterprise procurement process in the relevant CIDB contractor grading designation scheduled, including for the appointment of a TE Procurement Coordinator (if required), the pre-tender training of eligible Targeted Enterprises, the compilation, printing, binding and issue of the tender documents for each tender, for the advertising of each tender, for the provision of the venue and the conducting of each compulsory briefing session for tenderers, for the conducting of each tender opening process, for the adjudication of the tenders received for each tender, for the preparation of each tender adjudication report and the review thereof in conjunction with the Employer, Engineer and the PLC, for the award of each tender and for the conclusion of the sub-contract 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 sub-contract agreements and the management of all the Targeted Enterprise sub-contracts, including for the provision of the necessary management, support, coaching, guidance, mentoring and supervision of the Targeted Enterprise Subcontractors.

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

Item **Unit**

D10.05 Construction Works by Targeted Enterprises

(a)	Payments associated with the construction works executed by Targeted Enterprise Subcontractors of CIDB 1 and 2 contractor grading designation appointed in terms of Section D of the Specifications. ***(Note to Compiler:** The Prime Cost Sum allowance in the pricing schedule shall be the CPG target percentage, for CIDB 1 and 2 contractors as stated in Section B clause D1003.04.)*	Prime Cost (PC) Sum
(b)	Handling costs and profit in respect of payment associated with sub-item D10.05(a).	Percentage (%)
(c)	Fluctuation between the main contractor's rates and that of the Targeted Enterprise Subcontractors.	Lump Sum (LS)
(d)	Preliminary and General Obligations of Targeted Enterprise Subcontractors 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 Prime Cost 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 Prime Cost Sum amount stated in the Pricing Schedule. Construction works by Targeted Enterprise Subcontractors of CIDB 1 and 2 contractor grading designation, exceeding the Prime Cost Sum amount shall be measured for payment from the applicable work items in the Contractor's pricing schedule

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

The Lump Sum tendered under item D10.05(c) is for fluctuation of the Targeted Enterprise Subcontractor rates more than the contractor's tendered rates, for work not paid under items D10.05(a). Payment of the Lump Sum shall be on a 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 item D10.05(c) will be for the Contractor's account. Item D10.05(c) is applicable where the Target Enterprise Subcontractor's tender amount is higher than the Main Contractor's tender amount. The Lump Sum will cover the fluctuation for all the tendered rates of the Subcontractors.

The Lump Sum tendered under item D10.05(d) is for the Preliminary and General Obligations of Targeted Enterprise Subcontractors (excluding CIDB 1 and 2 contractor grading designation). Payment of the Lump Sum shall be on a pro-rata basis to provide compensation for the P&Gs of Targeted Enterprise Subcontractors until the Lump Sum is depleted. Any costs incurred for the P&Gs of Targeted Enterprise Subcontractors more than that tendered for under item D10.05(d) will be for the Contractor's account.

Item **Unit**

D10.06 Training, coaching, guidance, mentoring and assistance

(a)	Accredited occupational qualification training.		
	(i)	Stipend/wages for unemployed learners.	Prime Cost (PC) Sum

	(ii)	Handling costs and profit in respect of payment associated with sub-item D10.06(a)(i).	Percentage (%)
	(iii)	Mentorship and other costs.	Person Month
(b)	TVET college graduates and apprenticeships.		
	(i)	Stipend/wages for unemployed learners.	Prime Cost (PC) Sum
	(ii)	Handling costs and profit in respect of payment associated with sub-item D10.06(b)(i).	Percentage (%)
	(iii)	Mentorship and other costs.	Person Month
(c)	P1 and P2 learners and learners with a 240 credits qualification.		
	(i)	Stipend/wages for unemployed learners.	Prime Cost (PC) Sum
	(ii)	Handling costs and profit in respect of payment associated with sub-item D10.06(c)(i).	Percentage (%)
	(iii)	Mentorship and other costs.	Person Month
	(iv)	Travel and Accommodation	Prime Cost (PC) Sum
	(v)	Handling costs and profit in respect of payment associated with sub-item D10.06(c)(iv).	Percentage (%)
(d)	Candidates with 360 credits or more qualification.		
	(i)	Stipend/wages for unemployed learners.	Prime Cost (PC) Sum
	(ii)	Handling costs and profit in respect of payment associated with sub-item D10.06(d)(i).	Percentage (%)
	(iii)	Mentorship and other costs.	Person Month
	(iv)	Travel and Accommodation	Prime Cost (PC) Sum
	(v)	Handling costs and profit in respect of payment associated with sub-item D10.06(c)(iv).	Percentage (%)
(e)	Generic skills training		
	(i)	Stipend/wages for unemployed learners.	Prime Cost (PC) Sum

	(ii)	Handling costs and profit in respect of payment associated with sub-item D10.06(e)(i).	Percentage (%)
	(iii)	Mentorship and other costs.	Person Month
(f)	Community training		
	(i)	Stipend/wages for unemployed learners.	Prime Cost (PC) Sum
	(ii)	Handling costs and profit in respect of payment associated with sub-item D10.06(f)(i).	Percentage (%)
	(iii)	Mentorship and other costs.	Person Month

Cost per month for number of learners in Table D1010/1(a). Multiply cost below by contract duration (months).								
		Up to R100 mil	R100 - R200 mil	R200 - R400 mill	R400 - R800 mill	R800 - R1600 mill	R1600+	
D10.06 (a)	Accredited occupational qualification training.							
(i)	Stipend for unemployed learners.	PC Sum	R 23 400	R 46 700	R 70 000	R 93 400	R 140 000	R 140 000
(ii)	Mentorship and other costs.	Person month	R 30 000	R 60 000	R 90 000	R 120 000	R 180 000	R 180 000
D10.06 (b)	TVET College graduates and apprenticeships.							
(i)	Stipend for unemployed learners.	PC Sum	R 4 700	R 9 400	R 18 700	R 28 000	R 56 000	R 74 700
(ii)	Mentorship and other costs.	Person month	R 3 500	R 7 000	R 14 000	R 21 000	R 42 000	R 56 000
D10.06 (c)	P1 and P2 learners and learners with a 240 credits qualification.							
(i)	Stipend for unemployed learners.	PC Sum	R 10 200	R 20 400	R 40 700	R 61 000	R 122 000	R 162 700
(ii)	Mentorship and other costs.	Person month	R 8 200	R 16 400	R 32 700	R 49 000	R 98 000	R 130 700
D10.06 (d)	Candidates with 360 credits or more qualification.							
(i)	Stipend for unemployed learners.	PC Sum	R 15 700	R 31 400	R 62 700	R 94 000	R 188 000	R 250 700
(ii)	Mentorship and other costs.	Person month	R 2 200	R 4 400	R 8 700	R 13 000	R 26 000	R 34 700
D10.06 (e)	Generic Skills							
(i)	Stipend for unemployed learners.	PC Sum	R 23 400	R 46 700	R 70 000	R 93 400	R 116 700	R 140 000
(ii)	Mentorship and other costs.	Person month	R 30 000	R 60 000	R 90 000	R 120 000	R 150 000	R 180 000
D10.06 (f)	Community Training							
(i)	Stipend for unemployed learners.	PC Sum	R 23 400	R 46 700	R 70 000	R 93 400	R 116 700	R 140 000
(ii)	Mentorship and other costs.	Person month	R 30 000	R 60 000	R 90 000	R 120 000	R 150 000	R 180 000

The Prime Cost Sums under sub-items D10.06(a)(i), (b)(i), (c)(i), (d)(i), (e)(i), and (f)(i) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract. The rime Cost Sums shall cover the monthly stipends and/or wages as prescribed by the Employer to be paid to the relevant categories of unemployed Trainees receiving training and/or workplace training. No provision is made for stipends or wages of employed Trainees and the Contractor must make provision for loss of production for his own employees which are included in the TSDP.

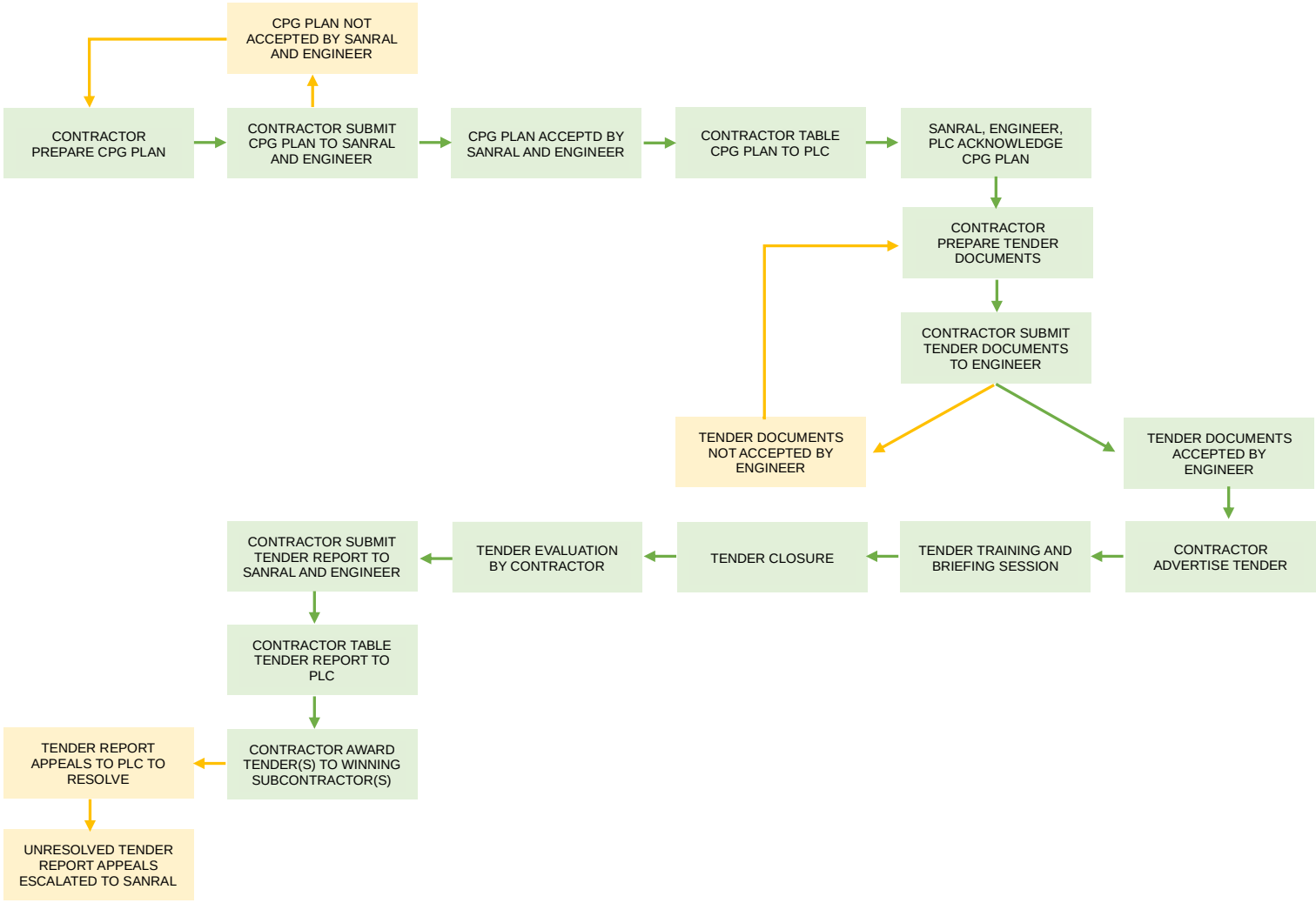
The Percentage tendered for sub-items D10.06(a)(ii), (b)(ii), (c)(ii), (d)(ii), (e)(ii), and (f)(ii) is the percentage of the stipends and wages paid under sub-item D10.06(a)(i), (b)(i), (c)(i), (d)(i), (e)(i), and (f)(i) and shall include full compensation for the Contractor's handling costs, and any other costs associated with the pay-out of stipends and wages, which are not provided for in other pay-items.

The Person Month under sub-items D10.06(a)(ii), (b)(ii), (c)(ii), (d)(ii), (e)(ii), and (f)(ii) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract. The Person Month shall cover the monthly cost to mentor and/or train a Trainee and shall include all charges for the provision and delivery of the service including an accredited Training Service Provider (if required), learning material, stationery, information technology hardware and software, connection or licence costs, Trainee sustenance, fully furnished and equipped training venue(s), travel and accommodation (if/where required) and any other requirement as described in Section D1010 of the Specifications, and shall include the Contractor's loss of production, handling cost, profit, record keeping, reporting to the Employer and any other body or organisation as required in terms of the mentoring or training category, and all other administrative and overhead costs associated with mentoring and training. No mark-up is payable to the Contractor under this item.

No payment, nor pro rata payment, shall be made for trainees that, once selected, do not attend or only partially complete structured training modules. The Contractor's own staff may attend the training modules provided. However, training of the Contractor's staff shall be considered for measurement and payment purposes within the limits set in Section D1010.02 and if they also qualify as Targeted Labour.

The Prime Cost Sums under sub-items D10.06(c)(iv) and (d)(iv) shall be paid in accordance with the provisions of sub-clause 13.5 of the FIDIC Conditions of Contract. The Prime Cost Sums shall cover the travel and accommodation of Trainees in the relevant learning categories and in line with the Employer's Travel, Accommodation and Disbursement Policy. No provision is made for travel and accommodation of Trainees in other learning categories and the Contractor must make provision for travel and accommodation (if required) for these categories in other relevant pay-items.

The Percentage tendered for sub-items D10.06(c)(v) and (d)(v) is the percentage of the travel and accommodation paid under sub-item D10.06(c)(iv) and (d)(iv) and shall include full compensation for the Contractor's handling costs, and any other costs associated with the travel and accommodation, which are not provided for in other pay-items.


CPG PLAN NOT ACCEPTED BY SANRAL AND ENGINEER
CONTRACTOR PREPARE CPG PLAN
CONTRACTOR SUBMIT CPG PLAN TO SANRAL AND ENGINEER
CPG PLAN ACCEPTD BY SANRAL AND ENGINEER
CONTRACTOR TABLE CPG PLAN TO PLC
SANRAL, ENGINEER, PLC ACKNOWLEDGE CPG PLAN
CONTRACTOR PREPARE TENDER DOCUMENTS
CONTRACTOR SUBMIT TENDER DOCUMENTS TO ENGINEER
TENDER DOCUMENTS NOT ACCEPTED BY ENGINEER
TENDER DOCUMENTS ACCEPTED BY ENGINEER
CONTRACTOR ADVERTISE TENDER
TENDER TRAINING AND BRIEFING SESSION
TENDER CLOSURE
TENDER EVALUATION BY CONTRACTOR
CONTRACTOR SUBMIT TENDER REPORT TO SANRAL AND ENGINEER
CONTRACTOR TABLE TENDER REPORT TO PLC
CONTRACTOR AWARD TENDER(S) TO WINNING SUBCONTRACTOR(S)
TENDER REPORT APPEALS TO PLC TO RESOLVE
UNRESOLVED TENDER REPORT APPEALS ESCALATED TO SANRAL

1. INTRODUCTION

Xxx (insert details)

Xxx

Xxx

2. OBJECTIVE

Xxx (insert details)

Xxx

Xxx

3. TARGETED ENTERPRISES

List of Work Packages for Targeted Enterprises

List of Work Packages for Main Contractor

Table 1: CPG Expenditure Breakdown

Project Number				
Project Name				
Target 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 Enterprises (TEs)	**Min. xx% of Final Contract Value**	**R**	**%**	**R**

Youth				
Women				
Military Veterans				
Disabled				
CIDB 1 and 2				
CIDB 3 and 4				
Other				

Breakdown of Work Packages

The table below describes the work package breakdown with reference to Target 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 & 2 CE**	**Black 3 & 4 CE**	**Comment**	
TE Subcontractors																
1																
2																
3																
TE Suppliers and Service Providers																
4																
5																

6															
TE Subcontractor Sub-total															
TE Supplier/Service Provider Sub-total															
Provisional Total															
Provisional %															
Target Amount															
Target %															

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

Targeted Enterprises Procurement Program

Table 4: Example: Targeted Enterprise Procurement Program

Item	**Activity Name**	**Duration (Days)**	**Start**	**Finish**

Procedures for Targeted Enterprises Subcontracting (*As Per Section D1000 of the Specifications*)

Tender Preparation

Compilation of TE Work Packages

Establishment of a Help Desk

Market Analysis and Resources and Skills Audit

Compilation of Tender Documents

Tender Process

Advertising of Works Packages

Tender Briefing Sessions

Minimum Tender Submission Documents

Tender Closure and Opening of Tenders

Tender Evaluation

Eligibility

Functionality

Price and Preference

Compliance Check

Appointment of Successful Targeted Enterprise

Price and Rates Discussion

Sub-contract Agreement

TARGETED LABOUR

Appointment of Targeted Labour

TRAINING DEVELOPMENT AND IMPLEMENTATION PLAN

General Overview

Purpose of the Training Interventions

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.							

Training Methodology

Selection of Participants

Targeted Participants

Training Materials

Training Times

Training Implementation Plan

Supporting Documents

ANNEXURE X2

PROJECT LIAISON COMMITTEE AND PROJECT LIAISON OFFICER FORMS

FORM A1: PROJECT LIAISON COMMITTEE – MEMBER NOMINATION FORM

Notes to Nominators and Nominees:

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.

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.

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, 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 reimbursement for participating in the PLC meeting.

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 Form describes the general processes pertaining to the PLC, as well as its role and responsibilities.

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

Stakeholder representation on the PLC is project and project Area specific and may, amongst others, include:

a) Relevant provincial departments.
b) Relevant District and Local Municipal departments.
c) Traditional leadership representation.
d) Organised forums representing community interest groups.
e) Organised forums representing the youth, woman, and people with disabilities.
f) other structured community groups such as religion, education, farming, etc.
g)
h) Organised forums representing the business sector.
i) Organised forums representing the transport sector.
j) Organised forums representing road users and road safety interest groups.
k) Organised forums representing environmental interest groups.
l) Any other relevant stakeholder forum or organisation recognised by the Employer and the District and/or Local Municipality.

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 political office bearers 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.

Reimbursement of for PLC Members

PLC membership is voluntary and PLC members will not be renumerated for any time spent in PLC meetings or work done outside of PLC meetings, which are associated with representing their constituencies on the PLC.

Provision has been made in the Contract to reimburse PLC members for actual costs incurred in executing their PLC duties (other than time spent in PLC meetings or work done outside of PLC meetings). The Contractor will determine and table to the PLC a realistic monthly, reimbursable amount which will be substantiated by an outline of the anticipated actual costs envisaged to be incurred by PLC members.

In establishing a reimbursement amount for PLC members, the factors listed below, as well as the Project Classification Table may be considered, but is not mandatory or conclusive:

i) Transportation costs.
ii) Sustenance (if not provided during meetings).
iii) Type, size, and complexity of the project.
iv) Facilitation of performance milestones.

Table D1004.03(a): Project Classification (Type, Size, Complexity)

Project Classification	Project Value (Rm)	Indicative PLC Reimbursement
Maintenance (M) (OPEX)	< R 100	R 585
	> R 100	R 585
Development (D) (CAPEX)	< R 100	R 585
	R 100 – R 300	R 705
	R 300 – R 500	R 820
	> R 500	R 935

PLC members will be reimbursed monthly, and the reimbursable amount may be revised bi-annually should the actual costs incurred by PLC members change during the project.

The PLC reimbursement amount will be increased annually, or twelve (12) months after the last bi-annual adjustment, based on the CPI figure contained in Table B2 of Statistical Release P0141 by StatsSA (base date March 2023).

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 Principles for Project Liaison.
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).

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 PLC through the Mayor's Office and the PLC Chairperson (the Employer).
    iii) If required, and in consultation with SANRAL, a Political Steering Committee (PSC) may be established to address political matters.

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 the constituency whom they represented will be requested to nominate a replacement member.

c) Targeted Enterprises and Targeted Labour

    PLC members shall:

    i) ensure that they, or companies in which they hold equity, do not tender for any work or on any subcontract that are issued for this Contract. Should a PLC member, or a company in which he/she holds equity, tender for such work or subcontract, it will be treated as a conflict of interest and the person shall cease to be a PLC member for this Contract, 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 construe as improper or irregular, may lead to the award of a sub-contract to a tenderer known to the member.

iv) 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).
v) 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 manufacturer/supplier/Subcontractor/service provider procurement or involvement in the contract.

d) Confidentiality

i) PLC members shall accept that all information, documentation, and discussions regarding any matter serving before the PLC are confidential and undertake not to communicate this information outside of the PLC meeting.
ii) Decisions of PLC meetings may not be disseminated to any party other than the constituency whom they are representing.
iii) Information for public dissemination shall be clearly documented in the minutes of the meeting of the PLC to ensure that sensitive information is 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 believes 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.

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 provide input to 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 the Employer's Project Manager of any training that PLC members require to execute their duties.
v) Provide input to the Engineer in sourcing suitable candidates, based on SANRAL's qualifying criteria, for the position of PLO.
vi) Observe 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) Provide input to the Engineer in identifying the project's Target and Project Area(s) from which Targeted Labour and Targeted Enterprises could be employed and sub-contracted, respectively.
viii) Provide input to the Engineer in identifying the project's Target Groups for inclusion in the Tender Documents.

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) Provide input to the Contractor in establishing the selection criteria and process to employ Targeted Labour
iii) Provide input to the Contractor in identifying the eligibility, functionality, preference, and compliance criteria to select and sub-contract Targeted Enterprises.
iv) Provide input to 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) Observe 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) Observe that the conditions of employment and the conditions of subcontracting, in the employment of Targeted Labour and subcontracting of Targeted Enterprises are applied in a fair and transparent manner and according to SANRAL's employment and subcontracting requirements.
vii) Provide input to the Contractor on the training needs, eligibility criteria and selection criteria for the provision of training to Targeted Labour, Targeted Enterprises, Target Groups, project Stakeholders and the affected Communities.
viii) Observe that training and skills development programmes, which the Contractor committed to, are implemented, and executed as approved and intended.
ix) Inform the constituency whom they represent of any project matters which the respective parties to the PLC wishes to communicate with each other.
x) Inform the constituencies 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 SANRAL, the Engineer and Contractor of any road safety concerns within the Project Area(s) and provide input on possible mitigating measures and/or road safety programs that will be most suitable for acceptance by the affected Communities to promote road safety.
xii) Agree on a dispute resolution mechanism to resolve any disputes that may arise between the parties to the PLC.
xiii) Assist parties to the PLC to liaise with their respective constituencies to resolve any disputes amongst the parties which may occur due to the project.

PLC Meetings

a) Frequency
   i) Meetings will be conducted monthly or as required by the parties to the PLC based on the urgency of 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 been absent from a meeting, he/she bears the onus of acquiring 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 PLC members 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.
   ii) The Chairperson shall:
      a. chair all meetings of the PLC,
      b. co-ordinate all the activities of the PLC with the assistance of the PLO,
      c. monitor that PLC members are fulfilling their tasks as assigned by the PLC,
      d. see to the execution of decisions taken by the PLC,
      e. ensure, with the assistance of the Engineer, the validity of members' claims for reimbursement,
      f. monitor that all activities of the PLC comply with current laws, regulations, and SANRAL policies, 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. In an emergency where a PLC member could not apologise in advance, a written apology must be submitted as soon as possible.
   ii) Apologies may be sent through any media agreed to by the PLC for example through SMS or WhatsApp messaging or similar application.

iii) The constituency, represented by a PLC member who fails to attend three (3) consecutive meetings without an apology, will be informed in writing and requested to nominate a replacement member.

i) Language

i) PLC meetings will be conducted in English to enable all participants to understand the discussions of the meeting.
ii) However, care and consideration must be given to provide non-English speakers an opportunity to participate and hence, if agreed by all PLC members, any of the 11 official languages may be spoken and translated during the meeting. Even if a language other than English is used, the minutes of the meeting will be recorded in English.

j) Other

i) Sustenance shall be provided at PLC meetings as per government policy.

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,	SC/PMT	

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)
			the team can select the member with the highest number of nominations.		
		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)	
		b)	All members must be provided with a copy of the PLC Duties and Responsibilities (extract from	SC/PMT	

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)
			D1004.03). The signed duties and responsibilities must be scanned and shared with all members. The PM retains a copy for future reference.		
		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:

a) The checklist consists of several sections. Only print 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)
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	CE/PMT	

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)
			transparency in the process.		
		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:					
Name		**Sign**		**Date**	
Project Manager:					
Name		**Sign**		**Date**	

FORM A5: CHECKLIST – PROJECT LIAISON COMMITTEE – MEETINGS

Notes:

a) The checklist consists of several sections. Only print 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)
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	PLO/PM	

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)
			the Chairperson at the following meeting.		
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:

This declaration of interest shall be signed by all attendees at every PLC meeting.

THE SOUTH AFRICAN NATIONAL ROADS ANGECY LTD

PROJECT LIAISON COMMITTEE - DECLARATION OF INTEREST

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.

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.

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).

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.

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		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
		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 within 14 days of the date of the meeting**	Contractor		
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		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
		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		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
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		
		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		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility		Complete (Yes/No or N/A)	Source Document
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		

Form No.	Item	Explanatory Note for Compliance Check		Responsibility	Complete (Yes/No or N/A)	Source Document
				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**	a)	Copy of contractor performance report.	End-User /		

	Engineering contracts).			Contract or		
Project Manager:						
Name		**Sign**		**Date**		

ANNEXURE X3

PROFORMA SUB-CONTRACT DOCUMENT FOR TARGETED ENTERPRISES

https://docs.nra.co.za/otcs/cs.exe/link/19334307

PROJECT NUMBER **NRA X-XXX-XXXX/X *(Insert project number)***

PROJECT DESCRIPTION : PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

ANNEXURE X4

ACCEPTANCE TO ADVERTISE SUBCONTRACT TENDER

Notes to Compiler:

1. Delete all notes to Compiler (highlighted in yellow) before submitting for acceptance.

2. Every package to be tendered must appear in the table(s); Insert more tables if necessary.

*3. Refer to the functionality points **guidelines** below and table to the PLC before submitting for acceptance by the PLC and the Employer.*

*4. Tables A and B are **guidelines**, and the Contractor must consult the Contract document or the relevant proforma subcontract agreements where applicable.*

Table A – Example of Maximum Points per Functionality Criteria

CIDB Grade (if applicable) and Package Value	Points Allocation			Total Points
	Locality	CIDB Grading (or other relevant sector criteria)	Target Groups	
1 - R 500 000	60	30	10	100
2 - R 1 000 000	60	30	10	100
3 - R 3 000 000	60	35	5	100
4 - R 6 000 000	60	35	5	100
5 - R 10 000 000	60	35	5	100
6 - R 20 000 000	60	30	10	100

Table B – Example of Allocation of Points for Functionality Criteria

	CIDB Package Category	1CE	2CE	3CE	4CE	5CE	6CE
	Typical Package Value	**Up to R 1 mill**		**R 1 - 6 mill**		**R 6 - 20 mill**	
Locality	Tenderer is based in the Local Municipality(ies).	60	60	60	60	60	60
	Tenderer is based outside the Local Municipality(ies), but in the District Municipality(ies).	45	45	40	40	40	40
	Tenderer is based outside the District Municipality(ies), but in the Province.	0	0	35	35	35	35
	Tender is based outside the Province, but in the RSA.	0	0	0	0	30	30
-							
CIDB Grading (or other relevant sector criteria)	Tenderer is registered as a CIDB 1	30	30	0	0	0	0
	Tenderer is registered as a CIDB 2	30	30	30	0	0	0
	Tenderer is registered as a CIDB 3	0	0	35	30	0	0
	Tenderer is registered as a CIDB 4	0	0	30	35	30	0
	Tenderer is registered as a CIDB 5	0	0	0	30	35	30
	Tenderer is registered as a CIDB 6	0	0	0	0	30	35
	Tenderer is registered as a CIDB 7 - 9	0	0	0	0	0	30
-							
Target Groups	Tenderer is 51%+ owned by black youth.	5	5	5	5	5	5
	Tenderer is 51%+ owned by black women.	5	5	5	5	5	5
	Tenderer is 51%+ owned by black people with disabilities.	5	5	5	5	5	5
	Tenderer is 51%+ owned by black military veterans.	5	5	5	5	5	5
	Maximum Total Points	**100**	**100**	**100**	**100**	**100**	**100**

PROJECT NUMBER NRA X-XXX-XXXX/X *(Insert project number)*

PROJECT DESCRIPTION : PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

Contract Value*	*e.g.* R 100 000 000						
Contract Data**	**Employer's Min CPG (%)****	**Packages Previously Let (No.)**	**Packages in this Form (No.)**	**Packages still to be Let (No.)**	**Total Packages to be Let (No.)**	**Contractor's Tendered CPG (%)**	**CPG Tendered Value (R)**
TEs	*e.g.* 30%	0	4	16	20	30%	R 30 000 000
TE Sub-Goals							
CIDB 1	9%	0	1	8	9	4,5%	R 4 500 000
CIDB 2		0	2	3	5	4,5%	R 4 500 000
CIDB 3	9%	0	0	1	1	3,0%	R 3 000 000
CIDB 4		0	0	1	1	6,0%	R 6 000 000
CIDB 5	N/A	0	0	1	1	10,0%	R 10 000 000
CIDB 6		0	0	0	0	0%	R 0
Other Sectors***	N/A	0	1	2	3	2,0%	R 2 000 000

Table 2: Subcontract Packages for Targeted Enterprises

Package Number	**1** ***(Example)***	**2** ***(Example)***	**3** ***(Example)***
Package Description	General Maintenance	Repair Potholes	Install Culverts
Package Estimated Value	R 500 000	R 1 000 000	R 1 000 000
Target Group(s)			
a) Locality	Sundays River LM	Sundays River LM	Sundays River LM
b) CIDB Grade	1CE	2CE	2CE
Functionality Criteria			
a) Locality	60	60	60
b) CIDB Grade	30	30	30
c) Target Groups	20	20	20
d) Total	100	100	100
e) Threshold	75	75	75

PROJECT NUMBER **NRA X-XXX-XXXX/X *(Insert project number)***

PROJECT DESCRIPTION **: PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI**

Table 3: Sub-contract Packages for Targeted Enterprises

Package Number	**4 *(Example)***	**5**	**6**
Package Description	Site Security		
Package Estimated Value	R 500 000		
Target Group(s)			
a) Locality	Sundays River LM		
b) CIDB Grade	N/A		
Functionality Criteria			
a) Locality	60		
b) PSIRA Registration *(E.g., security sector requirement.)*	30		
c) Target Groups	20		
d) Total	100		
e) Threshold	75		

PROJECT NUMBER **NRA X-XXX-XXXX/X *(Insert project number)***

PROJECT DESCRIPTION : PROVISION OF ELECTRICAL ROUTINE MAINTENANCE FOR ELECTRICAL LIGHTING INFRASTRUCTURE: PACKAGE 3 CITY OF EKURHULENI

The sub-contract packages in Tables 1 to x *(insert no. of tables)* for Targeted Enterprises and the accompanying Tender Notice have been perused and are supported.