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SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
Reg.No.1998/009584/30
BUILDING SOUTH AFRICA THROUGH BETTER ROADS

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

CONTRACT SANRAL C.002-026-2026/1S

CONSULTING ENGINEERING SERVICES FOR THE TRAINING AND CONSTRUCTION MANAGEMENT SERVICES OF A COMMUNITY DEVELOPMENT PROJECT TO UPGRADE ACCESS ROADS AND STORMWATER SYSTEM IN AND AROUND MOLOTO, NEAR NATIONAL ROAD R573, SECTION 2 FROM KM -0.500 TO KM8.600

BASE DATE: **JULY 2026**

TENDER DOCUMENT
VOLUME 1
BOOK 3 of 3

CHIEF EXECUTIVE OFFICER
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED
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NAME OF TENDERER:

……

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PART C2: PRICING DATA

PART C2: PRICING DATA

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C2.1 PRICING INSTRUCTIONS

C2.1.1 For the purposes of this Pricing Schedule, 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 Scope of Works.
Quantity:	The number of units of work for each item as provided by the Employer or as tendered by the Service Provider.
Rate:	The payment per unit of work for which a rate has been provided by the Employer or for which the Service Provider 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 Pricing Schedule, the Scope of Work or elsewhere, but of which the quantity of work is not measured in units.
Provisional Sum:	An amount allowed for in the Pricing Schedule, for which the quantity of work is not known.
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 cost for which a rate or a lump sum is offered at tender stage to cover all the tenderer's handling, supervision and liability costs in providing the item or services.

C2.1.2 The quantities provided by the Employer in the Pricing Schedule are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the Pricing Schedule, will be used to determine payments to the Service Provider.

The validity of the Contract shall in no way be affected by differences between the quantities in the Pricing Schedule and the quantities finally certified for payment. Work is valued at the rates or lump sums tendered.

C2.1.3 Rates and lump sums shall include full compensation for overheads, profits, incidentals, tax (other than VAT), etc., and for the completed items of work as specified in the Scope of Works and Contract Data and for all the risks, obligations and responsibilities specified in the General Conditions of Contract or Special Conditions of Contract, except in so far as the quantities given in the Pricing Schedule are only approximate.

C2.1.4 The Tenderer shall fill in a quantity or a rate or a lump sum for each item where provision is made. Items against which no rate or lump sum has been entered in the tender will not be paid for when the work is executed, as payment for such work will be regarded as being covered by other rates or lump sums in the pricing schedule.

The Tenderer shall fill in a rate against all items where the words "rate only" appears in the amount column. Although no work is foreseen under such item and no quantities are consequently given in the quantity column, the tendered rate shall apply should work under this item be required. Tenders should note the provisions of clause C2.1.10 of this preamble.

The tendered lump sums and rates shall be valid irrespective of any change in the quantities during the execution of the contract.

C2.1.5 The short descriptions of the payment items in the Pricing Schedule are only given to identify the items and to provide specific details. Reference shall, *inter alia*, be made to the Contract

Data, General Conditions of Contract and Particular/Special Conditions of Contract and Scope of Works for more detailed information regarding the extent of work entailed under each item.

C2.1.6 Where so indicated under measurement and payment, prices or rates will be subject to adjustment for escalation as provided for below:

a) The prices or rates shall be fixed for the first 12-month period determined from the tender base date and no change during this period will be allowed for escalation.

b) On the 12-month anniversary date of the Contract base date the rates or sums shall be adjusted by the 12-month year on year CPI index (as published in the monthly bulletin PO141. of Statistics South Africa under table B) and fixed at this value for the following 12-month period. Subsequent 12-month periods shall be dealt with on the same basis.

c) Adjustment of lump sum prices for escalation shall only be applicable to that portion of the relevant Service which is incomplete at the end of the 12-month anniversary date and shall not be applicable to any progress payments already claimed.

Adjustment for escalation shall only be applicable for services or portions thereof, that are still within the prescribed programme and any approved extensions of time.

C2.1.7 Interim payments for lump sum payment items may be permitted. Such interim payments shall however be limited to proven progress achieved for that service deliverable. The sum of any progress payments made under a lump sum payment item shall be deducted prior to calculating any adjustments for escalation as described in clause C2.1.6 above.

C2.1.8 Provisional and Prime Cost Sums: Each Sum shall only be used, in whole or in part, in accordance with the Employer's instructions and the Contract Price shall be adjusted accordingly. The total sum paid to the Service Provider shall include only such amounts, for the work, supplies or services to which the Sum relates, as the Employer shall have instructed.

For each Sum, the Employer may instruct plant, materials or services to be procured by the Service Provider in accordance with the Employer's policies, and for which there shall be included in the Contract Price:

a) The actual amounts paid (or due to be paid) by the Service Provider under the Sum, and

b) An item for compilation and printing of procurement documentation, quotation/tender process and evaluation, and all overhead charges and profit, tendered in the Pricing Schedule. Provided that for Prime Cost Sums only, where a percentage mark-up or lump sum mark-up is tendered, which shall exclude profit.

The Service Provider shall produce all quotations, invoices, vouchers and accounts or receipts in substantiation of any claim under a Sum.

Any percentage adjustment or lump sum mark-up against the Sum for handling fee, profits, etc. shall not be negative.

C2.1.9. Subject to the conditions stated in Clause C2.1.10 below, the rates and lump sums filled in by the tenderer in the pricing schedule shall be final and binding and may not be adjusted should there be any mistakes in the extensions thereof and in the total sums appearing in the tender. Should there be any discrepancies between the tender sum and the correctly extended and totaled pricing schedule, the rates and the lump sums will be regarded as being correct, and the Employer shall have the right to adjust the tender sum to reconcile the tender sum with the total of the pricing schedule. In such an event, the Tenderer will be consulted but, failing agreement between the parties, the decision of the Employer shall be

final and binding. Adjustment of the tender sum will take place prior to the signing of the contract. In their own interest tenderers must make doubly sure of the correctness of their tendered rates and lump sums, the extensions and the tender sum.

C2.1.10 A tender shall be deemed non-responsive if the unit rates or lump sums for some of the items in the Pricing Schedule are, in the opinion of the Employer, unreasonable or out of proportion, and if the Tenderer fails, within a period of seven (7) days of having been notified in writing by the Employer to adjust the unit rates or lump sums for such items, to make such adjustments.

C2.1.11 All rates and sums of money quoted in the Pricing Schedule shall be in South African Rand and whole cents.

C2.1.12 The item numbers appearing in the Pricing Schedule refer to the corresponding item numbers in the Scope of Work.

C2.2 PRICING SCHEDULE (INCORPORATING SBD3)

Notes to Tenderers:

1. The tender shall be declared non-responsive if:

    a) the Form of Offer is submitted but the Pricing Schedule is omitted, or
    b) 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.e.
        i) Pricing Schedule is incomplete, or
        ii) Only Summary of Pricing Schedule is submitted.

Refer to MS Excel Workbook.

C2.3 SUMMARY OF PRICING SCHEDULE

3.2	Project Assessment Stage	R.....
3.3	Design Development Investigations	R.....
3.4	Design Development Stage	R.....
3.5	Tender Documentation	R.....
3.6	Clarification Meeting, Tender Period and Tender Evaluation	R.....
3.7	Administration and Monitoring of the Training and Development Works Contract	R.....
3.8	Additional Duties, Special Services and Specialist Advice	R.....
3.9	Quality Control of the Training and Development Works Contract	R.....
3.10	Project Close Out	R.....

SUB-TOTAL R.....

PLUS: VAT (15%) R.....

TENDER SUM CARRIED FORWARD TO FORM OF OFFER (C1.1.1) R.....

SIGNATURE: ……

DATE: ……

NAME: ……

POSITION: ……

Refer to MS Excel Workbook.

C2.4 KEY PERSONS FOR THIS PROJECT AND SUMMARY OF TENDERED FEE (EXCLUDING PROVISIONAL AND PRIME COST SUMS)

SIGNATURE: ……

DATE: ……

NAME: ……

POSITION: ……

Refer to MS Excel Workbook.

PART C3: SCOPE OF WORK

PART C3: SCOPE OF WORK

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C3 SCOPE OF WORKS

The Service Provider's Scope of Work entails the design of infrastructure to serve an identified Community and to oversee the implementation and/or construction thereof. However, other than addressing the needs of the identified Community, the purpose of this project and the related infrastructure is to facilitate the training and skills development of the identified Community and Targeted Enterprises.

The Service Provider is thus expected to be mindful during the design and all other project phases, that the Works must be designed and constructed in such a way to enhance the training and skills development opportunities of the identified Community and Targeted Enterprises.

C3.1 GENERAL REQUIREMENTS

C3.1.1 Scope

This section covers matters that relate to the project in totality. Definitions, phrases or wording that would otherwise require repetition in other sections of this document are also covered in this section. Matters covered by the General and/or Special Conditions of Contract are not repeated in this section, except to provide more detailed information.

C3.1.2 Location of the Project

The proposed project is located at Moloto which is within the jurisdiction of the Thembisile Hani Local Municipality in the Mpumalanga Province. It is near to National Road*R573*, Section 2 from (km -0.50) to (km 8.60). A locality plan is available in SARDS (South African road Design System) online. A user manual is included in Appendix K in Part C4 of this document.

C3.1.3 Description of the Project

a) Introduction

Training and skills development forms an integral part of the Employer's Transformation Policy and Community Development Strategy and hence, it is important to the Employer that Communities and small, medium and micro enterprise (SMME) Contractors within local Communities are trained and be equipped with skills that can be used to gain meaningful employment and secure subcontracting opportunities.

The purpose of this project is thus for a Training Service Provider and a Construction Manager for A COMMUNITY DEVELOPMENT PROJECT TO UPGRADE ACCESS ROADS AND STORMWATER SYSTEM IN AND AROUND MOLOTO, NEAR NATIONAL ROAD R573, SECTION 2 FROM KM -0.500 TO KM8.600.

The training and development programme shall comprise of, amongst others, structured theoretical training with an extensive practical and developmental implementation component.

b) Theoretical (Classroom) Training

The theoretical training shall be a SAQA accredited, full learnership programme that includes multiple, but related, Unit Standards which are relevant to the practical implementation component, i.e. the Works to be constructed. The theoretical, together with the practical, component of the project is aimed at achieving the training and skills development objectives of the Employer to lead towards Targeted Enterprises obtaining a formal qualification in the Construction Industry.

c) Practical (Workplace) Training and Development

During the practical, developmental component of the project, a Construction Management Service Provider shall closely monitor and supervise Targeted Enterprises and shall train, coach, guide, mentor and assist each Targeted Enterprise in all aspects of the management, execution and completion of a typical construction project. Amongst others, Targeted Enterprises shall be developed in the planning of the Works, sourcing and ordering of materials, labour relations, monthly measurements and invoicing procedures.

d) The Construction Project

A Community Development Project has been identified to facilitate the training and development programme.

This Community Development Project entails the TRAINING AND CONSTRUCTION MANAGEMENT SERVICES OF A COMMUNITY DEVELOPMENT PROJECT TO UPGRADE ACCESS ROADS AND STORMWATER SYSTEM IN AND AROUND MOLOTO, NEAR NATIONAL ROAD R573, SECTION 2 FROM KM -0.500 TO KM8.600.

The Works consists, amongst others, of the following:

i) Surfacing of the existing gravel road to low traffic volume standards
ii) Improvement of road surface stormwater drainage.
iii) Provision of new road signs and markings.
iv) Construction of pedestrian facilities.

e) Project Approach and Execution

The Service Provider shall be required to approach and execute this project as follows:

i) Assess and review the provided site information (see Part C4: Site Information) to derive a solution that will advance the employers objectives for this project, which includes, amongst others:
   a. a theoretical, SAQA accredited, full learnership training programme for Targeted Enterprises;
   b. a practical, developmental component where Targeted Enterprises shall be trained, coached, guided, mentored and assisted in all aspects of the management, execution and completion of a typical construction project; and
   c. construction methods that embrace the principles of labour enhanced construction methods (LECM) to maximise the participation of the local community in the project.
ii) The highest applicable design standards and requirements for the infrastructure type and level of service shall be applied in the assessment. However, the Service Provider shall consider possible constraints such as limited road space, budget constraints, economic viability, LECM etc. and apply value engineering solutions to ensure optimal infrastructure utilisation.
iii) Prepare concept and preliminary design solutions for consideration and acceptance by the Employer.
iv) Prepare concept and preliminary theoretical training and practical development programmes for the Community and Targeted Enterprises.
v) Prepare a property report for land acquisition purposes and submit it to the Employer's service provider for land acquisition matters and/or the relevant municipality for processing and approvals.
vi) Prepare detail designs and tender documentation for the work to be executed, as well as for the Community and Targeted Enterprise training and development programme.

vii) Provide a supervision service for the total Targeted Enterprise training and development programme which includes supervision of the construction work activities.
viii) Where required, identify and let to tender sub-, additional and/or specialist services, e.g. environmental assessments, etc.
ix) Liaise, during all project stages, with project Stakeholders, affected Communities and other service providers who are appointed on adjacent and/or other road sections, to determine minimum design standards, coordinate design approaches and construction activities, conduct resources and skills analysis, etc. These liaisons may be on an individual basis or group meetings arranged by the Employer.

f) Stages of Services Required

The Services required of the Service Provider are divided into the following distinct stages:

i) Administration and Monitoring of the Training and Development Contract.
ii) Additional duties, Special Services and Specialist Advice.
iii) Quality Control of the Training and Development Contract.
iv) Project Close Out.

C3.1.4 Determination of Remuneration

The determining of remuneration shall be based on 4 (four) different methods, which are not necessarily mutually exclusive, namely:

a) Separate payment for services that are additional to those for which rates were provided;
b) Payment as per the quantified rates provided for;
c) Time-based fees; and
d) Reimbursable expenses.

Payment for additional services, quantified rates provided for and time-based fees, shall be made on completion of the respective quantities and/or milestones achieved.

The fees and/or rates tendered shall include full compensation for the services required under all the different stages as specified herein, including allowances for overhead charges incurred by the Service Provider as part of normal business operations, including the cost of management, as well as payments to administrative, clerical and secretarial staff used to support professional and technical staff in general, materials, printing, and all other costs and all profits.

No aspect of the Service Provider's remuneration will be based on the cost of the work and no fee adjustments will be applicable to this Contract.

Should during the project a future phase be unbundled, cancelled, abandoned or postponed (more than 6 months), no compensation will be applicable to the unbundling, cancellation, abandonment or postponement or to the outstanding phases.

C3.1.5 Employer's Cost Estimate

For the purposes of this project, the current budget for the Works is estimated based on the cost of recently completed Works of a similar nature. The final cost will, however, depend on the strategy selected by the Employer based on the most appropriate and cost-effective options identified by the Service Provider during the project assessment and preliminary design phases. The Service Provider shall note that no adjustments to any tendered rates will be applicable irrespective of the actual final cost of the project.

The estimated costs of the different project components, with an anticipated commencement date of January 2027, are provided below (excluding contingencies, CPA during the construction period and VAT):

a)	Training and Development	R 39,2 million
b)	Construction of the Works	R 137,3 million
	Estimated TOTAL project value (excl. contingencies, CPA and VAT)	**R 176,5 million**

C3.1.6 Standards, Manuals and Guideline Documents

The standards, manuals and guideline documents to be used in the project are as follows (latest revision to be used as applicable):

a) CIDB Standard for Developing Skills through Infrastructure Contracts.
b) TMH 9: Standard Visual Assessment Manual for Pavements
c) TMH 11: Standard Survey Methods
d) TMH 16: South African Traffic Impact and Site Traffic Assessment Manual
e) TMH 17: South African Trip Data Manual
f) TMH 19: Manual for the Visual Assessment of Road Structures
g) SABITA Manual: Design and Construction of Surfacing Seals
h) TRH 4: Structural Design for Flexible Pavements
i) TRH 12: Flexible Pavement Rehabilitation and Design
j) TRH 26: South African Road Classification and Access Management Manual
k) The Employer's M1 Manual: (Code of Procedure Manual for Geotechnical and Materials Investigation, Design and Documentation)
l) SANRAL's Geometric Design Manual
m) SANRAL's Drainage Manual
n) SANRAL's Land Acquisition Guideline Manual for Consulting Engineers
o) SANRAL's Statutory Control Guideline Manual
p) South African Pavement Engineering Manual (SAPEM)
q) Highway Development and Management Model (HDM-4)
r) South African Roads Design System (SAPDM) (when available)
s) South African Road Safety Audit Manual (SARSAM)
t) The SAICE Code of Practice: The Safety of Persons Working in Small Diameter Shafts or Test Pits for Civil Engineering Purposes
u) Current industry best practice
v) Conditions of Contract for Construction: FIDIC; 1999
w) The COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition).
x) The Employer's pro-forma documentation for services, sub-services, evaluations, etc.
y) Guidelines to formalise SANRAL's jurisdiction on National Roads (N14/5/6 revised manual).
z) Any relevant Provincial and/or Municipal Standards.
aa) Sabita Manual 37 - Sampling Methods for Road Construction Materials

The style, format and presentation of the documents prepared by the Service Provider shall be in accordance with the requirements of the Employer.

The latest versions and editions of these standards shall always be used. These standards are generally available on the Employer's website (www.sanral.co.za) or other industry role players' websites, e.g. CSIR website (www.csir.org.za). Others can be purchased from SANRAL and organisations such as CESA, SAICE, etc.

Guidelines for drawings are contained in Annexure 21: CAD Symbols, Signs and Weights of Technical Methods for Highways TMH 11: Standard Survey Methods. This reference contains all the relevant information relating to grid intervals, topographical detailing, symbols, colours, weight and letter sizes etc.

The above is not an exhaustive list but shall be viewed as being the minimum standards applicable to the project. The Service Provider must apply his own knowledge and experience and recommend to the Employer other appropriate standards for his consideration.

C3.1.7 Stakeholder and Community Liaison and Social Facilitation

i) **Purpose**

To give effect to the need for transparency and inclusion in the process of delivering services, the Service Provider 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 for this purpose.

Allowance has been made for Stakeholder and Community Liaison and Social Facilitation in the Pricing Schedule under Additional Duties.

ii) **Existing Contracts**

The Employer currently has a routine road maintenance (RRM) contract in progress along the National Road R573 Section 2, which is adjacent to the project area. The Service Provider shall not visit the site for purposes of undertaking any investigation without first informing the Route Manager of the visit and what type of investigation is intended. The RRM contractor needs to be able to plan his accommodation of traffic duties and no inspection or investigation can take place without acquiring assistance from the RRM for safe conduct through the site or protection when undertaking intrusive or out-of-vehicle surveys. The Service Provider shall timeously liaise with the Employer and his appointed Route Manager to program the assistance required. The contact details of the parties involved in the RRM contract are as follows:

Route Manager:	*TBP*	
	Tel. number:	TBP
	Cell number:	TBP
Contractor:	TBP	
	Tel. number:	TBP
	Cell number:	TBP

iii) **Stakeholders**

Stakeholders to the project is identified as any party who is affected by the Employer's operations in the Project Area and/or who has an interest or concern in the project, either as a decision maker, participant or affected party and may include, amongst others, the following entities:

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

iv) **Project Area**

This project is a Community Development project aimed at the development of a specific community, which was identified based on the principles of the Employer's Community Development Strategy and Policy. Participants in, and/or beneficiaries of, this project shall therefore be sourced from the Thembisile Hani Local Municipality in consultation with the Project Liaison Committee (PLC) and may typically include:

v) **Designated Groups**

Participants in, and/or beneficiaries of, this Community Development project shall be selected from the following designated groups:

i) Black designated groups as defined in the Codes of Good Practice issued in terms of Section 9(1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act 53 of 2003);
ii) Black people as defined in Section 1 of the Broad-Based Black Economic Empowerment Act, 2003 (Act 53 of 2003);
iii) Black people who are women and who are South African citizens;
iv) Black people who are youth as defined in Section 1 of the National Youth Development Agency Act, 2008 (Act 54 of 2008);
v) Black people who are people with disabilities as defined in Section 1 of the Employment Equity Act, 1998 (Act 55 of 1998);
vi) Black people who are military veterans as defined in Section 1 of the Military Veterans Act, 2011 (Act 18 of 2011);
vii) Black people who are living in rural or under-developed areas or townships;
viii) Small enterprises as defined in Section 1 of the National Small Enterprise Act, 1996 (Act 102 of 1996);
ix) Exempted Micro Enterprises (EMEs) as defined in terms of the Code of Good Practice on black economic empowerment issued in terms of Section 9(1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act 53 of 2003), with an annual turnover of R10 million or less (Construction Sector Amended Codes of Good Practice); and
x) Qualifying Small Enterprises (QSEs) as defined in terms of the Code of Good Practice on black economic empowerment issued in terms of Section 9(1) of the Broad-Based Black Economic Empowerment Act, 2003 (Act 53 of 2003), with an annual turnover of R10 million and R50 million (Construction Sector Amended Codes of Good Practice).

vi) **Project Liaison Committee (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 is a committee that represents the Employer, Engineer, Contractor, project Stakeholders and the Communities affected by the Project. The Employer's Service Providers (e.g. Consulting Engineer, Training Service Provider, Construction Manager, etc.) becomes members of the PLC on their appointment and participate in the Committee within the scope of their respective roles and responsibilities.

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

Secretarial support other than taking minutes at PLC meetings shall be provided by the Project Liaison Officer (PLO).

vii) **Duties of the PLC**

The PLC is the official platform at which the Employer, its Service Providers, project Stakeholders and the affected Communities communicate project matters which impacts on any of the parties to the PLC.

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

The PLC shall execute the following duties:

i) Project Design Stage

a. Meet as often as required to discuss and resolve the project's design stage matters, which are of interest or concern to the parties to the PLC.
b. Peruse the SANRAL Project Liaison Committee guidelines and agree on the duties of, and procedures to be followed by, the PLC to fulfil its duties. **Note**: The principles of the Guidelines shall not be amended, but duties and procedures may be altered to be project specific and to improve the functionality of the PLC.
c. Act in accordance with the agreed terms of reference for the PLC.
d. Inform the Employer of any training that project Stakeholders and affected Community representatives on the PLC require to execute their duties.
e. Assist the Engineer to source suitable candidates based on the Employer's pre-qualification criteria for the position of Project Liaison Officer (PLO).
f. Observe and verify that the qualifying criteria and procedures applied to select and employ the PLO are executed in a fair and transparent manner and are within the prescripts of the relevant legislation and regulations.
g. Assist the Engineer to identify the Project Area(s) and sign off the identified Project Area(s).
h. Assist the Engineer to identify the project's Designated Groups for inclusion in the Tender Documents and sign off the identified Designated Groups.

ii) Project Implementation and Construction Stages

a. Meet formally prior to the Employer's monthly site meeting, or as may be required, to discuss and resolve project matters, which are of interest or concern to the parties to the PLC.
b. Assis the Construction Management and Training Service Provider to establish the eligibility and preference criteria to select participants and/or beneficiaries to the project and endorse the agreed criteria.
c. Sign off the Project Databases compiled by the Service Providers from which participants and/or beneficiaries will be selected.
d. Verify that the criteria and methodologies applied by Service Providers to select participants and/or beneficiaries are executed in a fair and transparent manner, and within the Employer's and Government's Supply Chain Management Policies.
e. Verify that the conditions of employment and the conditions of subcontracting, in the employment and subcontracting of Designated Groups are applied in a fair and transparent manner and according to the Employer's employment and subcontracting requirements.
f. Make recommendations to the relevant Service Provider on the training needs, eligibility criteria and selection criteria, for the provision of training to Designated Groups, project Stakeholders and the affected Communities.
g. Verify that training, development and support programmes are implemented and executed as intended.

h. Inform the entities whom they represent of any project matters which the respective parties to the PLC wish to communicate with each other.
i. Inform the entities whom they represent of any project matters that are impacting or may impact, either positively or negatively, on project Stakeholders and the affected Communities.
j. Inform the Service Providers of Stakeholder and/or Community requests and/or needs, which could possibly be addressed within the project's Scope of Work.
k. Inform the Employer and its Service Providers of any road safety concerns within the project area(s) and advise them of possible mitigating measures and/or road safety programs that will be most feasible for acceptance by the affected Communities to promote road safety.
l. Inform the Employer and its Service Providers of any project matters that are impacting, or are anticipated to impact, negatively on project Stakeholders and the affected Communities.
m. Agree on a dispute resolution mechanism to resolve any disputes that may arise between the parties to the PLC.
n. Assist parties to the PLC to liaise with their respective entities to resolve any disputes amongst the parties which may occur due to the project.

C3.1.8 Permits and Authorisations

Any Environmental Management Plans or Programmes (EMP's) over and above the Employer's standard plan (EMPl) that may be required will be treated as a specialised additional service. Conversely, the compilation of any plans and reports necessary to comply with the relevant environmental legislation pertaining to applications to operate quarries and borrow pits will be treated as a normal sub-service. Procurement of sub-service providers in such instances shall be in accordance with the requirements of clause C3.1.17. As approvals of any EMPr's etc. are essential prior to the commencement of the Works, the Service Provider shall be responsible to ensure that all submissions to the relevant approving authorities are completed by the milestone date tabled in clause C3.1.9.

C3.1.9 Project Programme

The Service Provider shall programme its duties in such a manner to complete the various stages of the total project within the indicative milestone dates specified below. The Employer's indicative programme for this project is as follows:

Table 3.1.9: Project Programme

	Project Stage/Phase	**Stage/Phase Completion Date**
A	Submission of Tenders	*X (AUGUST 2026)*
B	Appointment of Service Provider	X + 3 Months
C	Project Hand-over meeting	X + 3.5 Months
D	First Progress meeting	X + 3.5 Months
E	Submission of draft Assessment Report	N/A
F	Submission of draft Concept Design Report	N/A
G	Submission of draft Preliminary Design Report	N/A
H	Submission of Road Safety Audit Report: Stage 1	N/A
I	Submission of Draft Detailed Design Report	N/A
J	Submission of Road Safety Audit Report: Stage 3	N/A

K	Submission of Design to SANRAL's Property Service Provider (PSP) for land acquisition purposes	N/A
L	Submission of Basic Assessment Report or full EIA Report	N/A
M	Submission of WULA to approving authority	N/A
N	Submission of EMP's to approving authority	N/A
O	Submission of Final Detailed Design Report	N/A
P	Submission of Draft Tender Documents for the Training and Development Programme	N/A
Q	Submission of Final Tender Documents for the Training and Development Programme	N/A
R	Submission of the Tender Advertisement	N/A
S	Tender Clarification Meeting	N/A
T	Tender Closure	N/A
U	Submission of Tender Evaluation Report	N/A
V	Training and Development Programme Contract Handover	X + 3.5 Months
W	Submission of Draft Contract Report and As-built Data	Within 3 months of issue of Taking-over Certificate for the Works
X	Submission of Final Contract Report and As-built Data	Within 1 month of issue of Performance Certificate for the Works

The Service Provider shall submit its draft programme, based on the indicative programme, for the Employer's scrutiny at the project hand-over meeting.

The Service Provider shall submit its final programme, for the Employer's approval at the first progress meeting.

C3.1.10 Penalties and Delays

Penalties shall be applied for each calendar day by which the Service Provider fails to meet the prescribed dates for the milestones listed in clause C3.1.9 above. The quantum of the penalty shall be as listed in the Contract Data, clause 3.11.1. Draft reports and documents shall be submitted to the Employer prior to any meetings scheduled for the discussion and finalisation thereof as specified in the documentation requirements. The Service Provider shall thus take this period into account in compiling its programme.

Any delays to the above programme that are attributable to the Employer, or to other agreed mitigating circumstances, will not be subject to penalties. In the event of such instances arising, any extensions of time granted shall be limited to the equivalent number of calendar days attributable to each instance.

C3.1.11 Personnel Requirements

a) Key Persons

The Service Provider's Key Persons become a contractual commitment upon award. However, the Employer recognises that Key Persons may for some or other reason is not available for the full duration of the project and any changes to those listed are, to

all intents and purposes, a change or variation to the contract. Any proposed change should be handled formally by way of written request and approval but does not require a Works Authorisation to be submitted. Replacement personnel shall be of the same or better competence and experience as those initially accepted. Re-evaluation by the Employer of any replacement Key Persons shall be paid for by the Service Provider as specified in clause C3.82 unless the circumstances dictating the change are completely outside of the Service Provider's control.

The Key Persons required for this project are listed in Form C1.2.2 Contract Data: Information Provided by the Employer. The Tenderer must list proposed candidates for the prescribed positions in the core team in Form C1.2.3 Contract Data: Information Provided by the Tenderer.

b) Additional Required Resources (Design Specialists)

The provision of additional required resources (Design Specialists) other than Key Persons, becomes a condition of the award. These additional required resources are listed in Form C1.2.2: Contract Data: Information Provided by the Employer. The successful Tenderer must provide proposed candidates complying with the minimum requirements for the prescribed positions as a condition of award.

c) Assistants to Key Persons and Additional Required Resources

Provision has been made in the Pricing Schedule for assistants to all the Key Persons and additional required resources (Design Specialists) other than Key Persons to participate or to gain experience in the positions proposed.

d) Minimum Requirements

The minimum qualifications and requirements for the Service Provider and sub-service provider's personnel shall be as indicated in the table below.

Table 3.1.11: Minimum Qualifications and Requirements

Position	Minimum Qualification or Registration	Minimum Relevant Experience (years)[3]	Other Requirements
Project Leader	Pr Eng or Pr Tech Eng[1]	5	
Assistant Project Leader	Pr Eng or Pr Tech Eng[1]	N/A	
Design Specialist	Pr Eng or Pr Tech Eng[1]	5	
Assistant Design Specialist	Pr Eng or Pr Tech Eng[1]	N/A	
Surveyor	• Registered Professional Surveyors • Technologist Surveyors • Technician Surveyors	3	Member of SAGC[7]
Engineering Geologist	Pr Sci.Nat[5]	3	SAIEG[4]
Environmental Practitioner	Refer to sub-service procurement document.		
Occupational Health and Safety Specialist	• Design Phase: SACPCMP[6] registration as a Professional Construction HSE Agent • Construction Phase:	As required by SACPCMP[6]	

Position	Minimum Qualification or Registration	Minimum Relevant Experience (years)[3]	Other Requirements
	SACPCMP[6] registration as a Professional Construction HSE Agent or Manager		
Road Safety Audit Team Leader	Pr Eng or Pr Tech Eng[1]	5	• Road safety course (5 CPD). • Minimum 2 (two) audits within 3 (three) years.
Contract Engineer	Pr Eng or Pr Tech Eng[1]	5	
Assistant Contract Engineer	Pr Eng or Pr Tech Eng[1]	N/A	
Engineer's Representative (RE)	Pr Eng or Pr Tech Eng[1]	3	
	Pr Techni Eng[1]	5	
Assistant Engineer's Representative (ARE)	Candidate Pr Eng or Pr Tech Eng[1]	0[1]	
Senior Materials Technician	None specified	10	
	National Diploma in Civil Engineering	5	
	Pr Techni Eng[1]	3	
Materials Technician	None specified	5	
	National Diploma in Civil Engineering	3	
	Pr Techni Eng[1]	1	
Trainee Technician	Candidate Technician	0	

1 Registered with Engineering Council of South Africa (ECSA) or any other international body recognised by ECSA, i.e. Washington Accord, Dublin Accord and Sydney Accord.
2 Registered with Environmental Assessment Practitioners of South Africa.
3 Relevant experience is the actual number of years, measured from the date of acquiring the base qualification (either B.Eng / BSc.Eng for Pr.Eng or National Higher Diploma / Masters Diploma / BTech for Pr.Tech Eng and National Diploma for Pr.Techni Eng), worked in the field of the specified position.
For the road safety audit team leader, the field shall be road safety design and/or traffic and transportation engineering and/or geometric design.
4 Full membership of the South African Institute for Engineering Geologist.
5 Registered with the South African Council for Natural Scientific Professions (SACNASP).
6 South African Council for Project and Construction Management Professions (SACPCMP)
7 South African Geomatics Council (SAGC)

e) Personnel Category Definitions

The category of personnel necessary to undertake the work shall be approved by the Employer in accordance with the following definitions:

i) **Category A**
Shall mean a top practitioner whose expertise is nationally or internationally recognised and who provides advice at a level of specialisation where such advice is recognised as that of an expert.

ii) **Category B**
Shall mean a partner, a sole proprietor, a director, or a member who, jointly or severally with his other partners, co-directors, or co-members, bears the risks of business, takes full responsibility for the liabilities of such practice, performs work of a conceptual nature in engineering design and development, provides strategy guidance in planning and executing a project and/or carries responsibility for quality management pertaining to a project, e.g. the Engineer for the project.

iii) **Category C**
Shall mean all salaried senior professional and technical staff performing work of an engineering nature and who carry the direct technical responsibility for one or more specific activities related to the project. A person referred to in Categories A or B may also fall in this category if such person performs work of an engineering nature at this level, e.g. the Resident Engineer for the project.

iv) **Category D**
Shall mean all other salaried technical staff performing work of an engineering nature under the direction and control of any person contemplated in categories A, B or C.

f) Limitation on Commitments of Key Persons and Other Required Resources (Design Specialists)

Key Persons and additional required resources (Design Specialists) other than Key Persons will be limited to participate in a maximum number of 6 (six) contracts in either design or construction phase.

C3.1.12 Meetings and Liaisons

a) Meetings and Liaisons between the Employer and the Service Provider

Meetings between the Employer and the Service Provider are formal occasions. The Employer shall perform the duties of chairperson and the Service Provider the secretarial services, except for the project handover meeting where the Employer shall also perform the duties of secretarial services. The Service Provider shall submit draft minutes to the Employer for review before distribution, which shall not be later than 7 (seven) calendar days after the meeting. Meetings and liaisons shall be scheduled according to the Service Provider's approved project programme to discuss and record the progress of the Services.

Draft copies of all reports, design and tender documents submitted for review shall be discussed at specially convened meetings prior to their finalisation.

Attendance at the meetings and liaisons shall include joint venture members and/or Targeted Enterprise(s) (if any), sub-service providers and the designated Key Persons. A Key Person shall not be substituted by another Service Provider employee unless express permission for this has been sought from, and approved by, the Employer in writing. The Employer shall have the right to delay a meeting because of the non-availability of a Key Person and any delay costs so incurred shall be for the account of the Service Provider.

i) Project Handover Meeting

The date of the meeting will have been fixed and notice for it and an agenda included with the letter of acceptance of the Service Provider's offer.

The Service Provider shall come to this meeting prepared by his desktop assessment of the project details. The meeting provides a platform for the Service Provider to explain in detail how he intends to go about the design development with specific reference to the methods, manuals and systems he will apply. For example, the relevant chapters dealing with pavement composition and behaviour, materials testing, standards, materials utilisation, design, etc. contained in the *South African Pavement Engineering Manual* (SAPEM) and the supporting suite of TMH and TRH publications have particular significance. With the release of SARDS the process to be followed will be dictated by the SARDS software process flow. The Service Provider shall identify those he thinks are relevant and anticipates what he will use in developing the project design.

In addition, the Service Provider shall explain and demonstrate his awareness of the encompassing social, natural, economic, safety and statutory environment within which the project is situated and how each impact on it.

Further, the Service Provider shall demonstrate his understanding of the Topographical survey and Land Acquisition process and the critical aspects that would give rise to material delays in the project proceeding to the Design and Construction Phase.

The Employer has a standing agreement with a Comprehensive Property Management Service Provider and hereinafter referred to as the "PSP" and may elect to have the PSP present at this meeting.

This meeting also provides the opportunity for administration details to be finalised. Included among these, but without providing limits to what may be required shall be:

a. Signing and initialing the contract document.
b. Confirmation of prescribed insurance cover, including that of joint venture members (if any).
c. Confirmation of vendor registration.
d. Delivery of a flash drive containing all relevant forms and procedures needed for effective project administration.

ii) Progress Meetings

The date for the first progress meeting shall be fixed at the project handover meeting, mindful that it cannot take place until the Service Provider has conducted his *in loco* inspection of the project site. The first progress meeting shall not be scheduled longer than 4 (four) calendar weeks after the hand-over meeting. Proposals for investigation and intrusive testing will be discussed at this first meeting.

The Service Provider's programme, as envisaged at the project hand-over meeting shall be fine-tuned and approved at the first progress meeting. The approved programme shall identify the number and frequency of progress meetings. They may be reduced or increased as necessary to achieve the milestone date of delivery of the approved detailed design.

Topographical surveys and the Land Acquisition process must form an integral part of the Service Provider's programme and must be listed separately in their proposed programme.

In addition, the Service Provider's programme must have careful regard to the need to produce Property Reports at the earliest possible time. This aspect may necessitate the presence of the PSP at this meeting.

The purpose of progress meetings is to discuss the development of the project design and the minutes produced shall form the record of progress against programme. The minutes shall record the discussions held and the decisions made.

Duties of some sub-service providers are not directly related to the development and production of the project design; nevertheless, because of the severe impact their progress can place on the programme, their presence at, and participation in, design progress discussions is not negotiable. They shall attend progress meetings and any delays caused by postponements due to their non-availability shall be to the account of the Service Provider.

iii) Gateway Review Meetings

Capital projects, having an estimated capital expenditure of more than R100 million, but less than R250 million, shall have a Regional Gateway Review process at the end of the Concept or Preliminary Design Phases (whichever is applicable), prior to the acceptance of such applicable design.

The review meeting shall be initiated by the Employer and the focus of such review meeting shall in the first instance be on the quality of the documentation and thereafter on:

a. deliverability (the extent to which a project is deemed likely to deliver the expected benefits within the declared cost, time and performance envelope);
b. affordability (the extent to which the level of expenditure and financial risk involved in a project can be taken up on, given the Employer's overall financial position, both singly and in the light of other current and projected commitments); and
c. value for money.

Details of such a Gateway Review process is provided in the Annexure.

b) Other Project Related Meetings

The Service Provider must ensure that proceedings of meetings (whether formal or informal) are formally documented. These meetings may be between the Service Provider, sub-service providers, the PSP and/or other Stakeholders. The Employer may attend these meetings.

i) Project Liaison Committee (PLC) Meeting

The PLC will meet on an ad-hoc basis during the Design Stage of the project to discuss and resolve project related issues and matters of interest or concern to project Stakeholders and affected Communities, the Employer and the Service Provider.

The PLC will meet prior to the monthly site meetings or as may be required from time to time during the Construction Phase to discuss and resolve project related issues and matters of interest or concern to project Stakeholders and affected Communities, the Employer and the Service Provider.

ii) Training, Development and Construction Contract Hand-over Meeting

It is required that the Service Provider's Contract Engineer and the Engineer's Representative (Resident Engineer) attend the Training, Development and Construction contract handover meeting.

C3.1.13 Risk Management

The concept of risk shall be discussed at all meetings, starting with the hand-over meeting. The Service Provider shall identify restrictions and limitations on the design development

that the various processes may impose, estimate the probability that they will impact on performance, advise what measures are proposed to avoid them and what mitigating measures could be taken to mitigate in the event they do occur. This creates a risk register that must be raised and discussed at each successive progress meeting.

Used properly, the risk register will predict or pre-warn of change as the probability of an event increases so will the need for a Works Authorisation to approve extensions of time or allocation of more funds become more certain.

A base risk register shall be discussed and recorded at the hand-over meeting. It shall be re-visited at each successive progress meeting to confirm the status of each and record any changes. The opportunity to add more or remove others will also be discussed at the progress meetings.

A fundamental element of risk assessment, but by no means the only one, will be economic affordability, meaning that each design strategy must be separately and broadly estimated for comparison against the basis of the Employer's budget for the project. In essence, this analysis relates to testing the economic and technical feasibility of the Employer's envisaged design strategy. Similarly, other identified risks will have a cost element to them, and these must also be brought to the Employer's attention for discussion and decision. The Employer may require the Service Provider to make us of its standard risk reporting format.

C3.1.14 Document Management

Three (3) hard copies of draft reports and/or documents shall be submitted 10 (ten) calendar days prior to the meeting dates for discussion purposes. All changes emanating from these meetings shall be incorporated into a final version. The record of the changes shall be by means of track changes to the draft version and submitted on a flash drive.

When a volume consists of more than 1 book, the number of the volume appears on the cover and on the title page, together with the number of the book, e.g. Volume 3: Book 1 of …, or Volume 3: Book 2 of …, etc.

All reports and/or documents shall utilise the Employer's pro-forma formatting without alteration unless a specific request for a change has been submitted to and approved by the Employer. Pro-forma report formats are contained in Part C4: Site Information.

The table below lists the requirements of documentation that the Service Providers shall apply.

Table 3.1.14: Documentation Requirements

Document Characteristics	Draft Reports and Documents	Final Reports and Documents	Books of Drawings
Page	A4 80g/m²	A4 80g/m²	A2 80g/m²
Cover Page Layout	Employer's pro-forma works document cover page with appropriate wording for the specific report or document.		
Cover	White 80g/m²	• Reports: Tokai Blue 160g/m² • Documents: Red 160g/m²	• Draft: White 80g/m² • Final: Red 160g/m²
Printing • All left-hand margins to be 2.5cm. • Printing to be left justified.	Back-to-back pages.	• Reports: Back-to-back. • Contract Document: Back-to-back except: o New sections. o Returnable	All on separate pages.

		schedules. ○ Pricing schedule.	
Binding • Maximum thickness to be 3cm.	Plastic ring binders.	• Reports: Plastic ring binders. • Contract Documents: Stapled, glued and bound.	• Draft: Stapled and bound. • Final: Stapled, glued and bound.
Number of Paper Copies	3 (three)	• Reports: 1 (one). • Tender Documents: 1 (one). • Contract Documents: ○ 2 (two) original for signature, and ○ 1 (one) copy.	• Draft: 3 (three). • Final: ○ 2 (two) original for signature, and ○ 1 (one) copy.
Number of Electronic Copies	1 (one) flash drive.	• 1 (one) flas drive. • 1 (one) flash drive of signed contract.	1 (one) flash drive.
Electronic Format	MS Office 2013 and PDF.	MS Office 2013 and PDF.	PDF

C3.1.15 Management of Drawings

When the Service Provider produces drawings, he shall, where applicable, use the Employer's typical details and when doing so they shall become integrated into the Service Provider's detail design for which he will assume full professional responsibility.

The requirements shown on the Employer's pro-forma drawing, available on the Employer's web site, shall be used. Drawings shall incorporate what has been discussed and agreed at the various progress meetings. All drawings issued to the Construction Manager shall be fully signed and any amendments thereof shall also carry full original signatures.

C3.1.16 Building Information Modelling (BIM)

As part of SANRAL transition to Building Information Modelling (BIM) for roads and bridges, all capital projects incorporating improvements (i.e. paved shoulders, additional lanes, horizontal and vertical realignment) and new projects (new carriageway, new bridges, new brownfields/green fields) to be delivered in 3D engineered models and no longer in 2D.

SANRAL is currently initiating a research project to develop open data standards (Model View Definition) compliant with Industry Foundation Classes (IFC) data models. IFC is the industry standard in the vertical industry and is well established, and currently has global initiatives working toward implementing BIM for roads and bridges in other countries, making a natural alignment with IFC the most appropriate approach process. SANRAL will make these open standards available as soon as finalised. The Service Provider needs to ensure that the Software Packages utilised can deliver 3D engineered models.

C3.1.17 Safety

This part of the specification has the objective of assisting the Service Provider entering contracts with the Employer that they comply with the Occupational Health and Safety (OH&S) Act, No 85 of 1993, as well as all applicable Regulations. Compliance with this document does not absolve the Service Provider from complying with minimum legal requirements and the Service Provider remains responsible for the health and safety of his employees and those of his Mandataries. The Service Provider shall therefore include this

part of the specification in any contract that he may have with sub-service providers and/or suppliers.

This part 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 Service Provider shall comply with, 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.

The Service Provider shall on award of the contract become the Client's Agent in terms of Construction Regulation 5(5), (6) and (7) of the Occupational Health and Safety Act, (Act 85 of 1993). The duties and responsibilities as the Client's Agent are as prescribed in Construction Regulation 5(7).

For purposes of clarity typical duties required of the Service Provider are given in (b) and (c) below, but they shall not be interpreted as being exhaustive and if any conflict between them and the legislated Construction Regulations occurs the latter shall rule.

a) Project Specific Requirements

The following is a list of Baseline Risk Assessment and project specific health and safety specifications prepared by the Client in terms of Construction Regulation 5(1)(a) and 5(1)(f).

i) Baseline Risk Assessment for Supervision Phase

a. Clearing and grubbing of the area and/or the site.
b. Site establishment including:
    i. Office(s)
    ii. Secure and safe storage for materials, plant and equipment.
    iii. Ablutions.
    iv. Sheltered eating area.
    v. Maintenance workshop.
    vi. Vehicle access to the site.
    vii. Temporary fuel storage, where applicable.
    viii. Laboratory establishment, where applicable (Client responsibility).
c. Location of existing services, e.g. gas, telecommunications, electrical supply, etc.
d. Installation and maintenance of temporary construction electrical supply, lighting and equipment.
e. Adjacent land uses and/or surrounding property exposures.
f. Boundary and access control and/or public liability exposures (NB: The Employer is also responsible for the occupational health and safety of non-employees affected by his/her work activities).
g. Health risks arising from neighbouring as well as own activities and from the environment, e.g. threats by dogs, bees, snakes, lightning, etc.
h. Exposure to noise.
i. Exposure to vibration.
j. Protection against dehydration and heat exhaustion.
k. Protection from wet and cold conditions.
l. Dealing with HIV/Aids and other diseases such as silicosis or asbestosis, where applicable.
m. Use of portable electrical equipment including:
    i. Angle grinder
    ii. Electrical drilling machine
    iii. Circular saw
    iv. Generator

n. Excavations including:
   i. Trenching
   ii. Shoring
   iii. Drainage of trenches
o. Loading and off-loading of trucks.
p. Aggregate, sand and other material delivery.
q. Manual and mechanical handling.
r. Lifting and lowering operations.
s. Driving and operation of construction vehicles and mobile plant including:
   i. Trenching machine
   ii. Excavator
   iii. Bomag roller
   iv. Plate compactor
   v. Front end loader
   vi. Mobile cranes and the ancillary lifting tackle
   vii. Grader
   viii. Parking of vehicles and mobile plant
   ix. Towing of vehicles and mobile plant
t. Use and storage of flammable liquids and other hazardous substances, e.g. petrol, diesel, cement, asphalt, bituminous materials and similar.
u. Layering and bedding.
v. Installation of pipes in trenches.
w. Pressure testing of pipelines.
x. Backfilling of trenches.
y. Protection against flooding.
z. Gabion work.
aa. Protection from overhead power lines (High and low).
bb. Work adjacent or in proximity of traffic.
cc. Formwork and support work (temporary works).
dd. Environmental impacts such as pollution of water, air or soil.

b) Construction Phase

During the construction phase the supervising Service Provider must ensure that the Employer's duties are continuously fulfilled, meaning that the Service Provider shall include amongst its permanent monitoring staff at least one appropriately trained member. In addition, the Service Provider must conduct monthly internal audits to ensure the site personnel are adhering to the statutory requirements. Costs for performing this duty are recoverable via the rate offered for this scheduled item of work. An Occupational Health and Safety Audit Questionnaire is included in Part C4: Appendix D for this purpose. This audit may be conducted by either the registered Professional Construction Health and Safety Agent or a registered Construction Health and Safety Manager.

The Employer may order external audits, the costs of which are separately recoverable as a disbursement to the specialist sub-service provider selected to conduct such audits.

Furthermore, the Service Provider must, in compliance with Section 24 of the Occupational Health and Safety Act (Act 85 of 1993) report immediately to the Employer's Health and Safety Officer and the relevant project manager the details of a Section 24 incident, including confirmation that the construction contractor has similarly reported the same incident directly to the Department of Labour.

c) General Occupational Health and Safety Provisions

Site specific health and safety specifications for the intended construction work based on the Baseline Risk Assessment in included in Part C4: Appendix D.

C3.1.18 Procedure for Procurement of Sub-service Providers

A sub-service is taken to mean any service necessary to produce the project design and later construction, which is performed by someone other than the Service Provider. A sub-service procured directly by the Service Provider requires the Service Provider to enter into a sub-service agreement with that sub-service provider. The relationship between the Service Provider and sub-service provider is that of contractor/sub-contractor.

Another type of sub-service is less direct because the service required has already been procured by the Employer under a separate agreement. The role of the Service Provider in the management of this sub-service is that of the Employer's agent.

In both cases the Service Provider is responsible for the performance of the sub-service.

Procurement of a sub-service shall be undertaken by means of a quotation or tender process. The Service Provider shall compile and issue relevant and approved terms of reference, together with the relevant work or pricing schedules, in accordance with the Employer's standard proformas and Supply Chain Management and procurement policies. This will require the Service Provider to advertise an open tender process or to invite quotations from identified potential sub-service providers and submit tender documents to the relevant regional office for collection and receipt of the tenders at that office.

Submitted quotations or tenders, in a sealed envelope, directly to the Employer's regional office by the date and time agreed, will be opened in public by the Employer's delegated staff. The Service Provider shall remove under signature all submitted offers for analysis and submit a report with recommendations to the Employer for approval prior to the appointment of any sub-Service Provider. Once approved, the Service Provider shall enter into an agreement with the sub-service provider with a copy of same submitted to the Employer.

In cases where a conflict of interest may arise, e.g. the Service Provider have shares in a laboratory that also wants to tender, the Employer will take over the procurement process described in the above paragraph as well as do the evaluation and recommendation of the sub-service provider.

The minimum requirements for different types of sub-services to be procured under provisional and/or prime cost sums are described in Part C4: Annexure J.

C3.1.19 Participation of Targeted Enterprise(s)

The Employer may stipulate the participation of Targeted Enterprise(s) in the project design and construction as a mechanism to broaden the economic share of the national spend on engineering services and as a means to hasten and improve the transfer of technical skills.

The Service Provider's Targeted Enterprise(s) become a contractual commitment upon award.

The Targeted Enterprise(s) shall be involved throughout the project stages and the percentage specified in the Contract Data shall be applicable to actual work split (excluding all provisional and prime cost sums but including site staff salaries) amongst the following stages:

i) Project Assessment.
ii) Design Development Investigations.
iii) Design Development.
iv) Tender Documentation.
v) Clarification Meeting, Tender Period and Tender Evaluation.
vi) Administration and Monitoring of the Training and Development Contract.
vii) Additional Duties, Special Services and Specialist Advice.
viii) Quality Control of the Training and Development Contract.

ix) Project Close Out.

The use of Targeted Enterprise personnel as site staff during the administration and monitoring of the Training, Development and Construction phase is included as part of the percentage specified in the Contract Data.

C3.1.20 Training

a) Service Provider's Staff and Targeted Enterprise

The Employer encourages training of candidate engineers or undergraduates requiring experiential training on this project. Training of the Service Provider's own permanent staff, temporary staff or Targeted Enterprise(s) involved in this project becomes a reportable monthly event in terms of time and cost attributable to the Employer's spending from its allocated budget. A separate allowance has been made to train the Service Provider's and Targeted Enterprise's staff as assistants to certain required positions.

b) Employer's Trainees

The Employer may enter a separate arrangement with the Service Provider for training of its own permanent employees as a secondment for the express purpose of providing its candidate engineers with design and/or site supervision experience. The Employer may also enter an arrangement with the Service Provider to provide experiential training to students.

The design phase provides the opportunity for students and candidate engineers to receive training. Three distinct categories of training are recognised. The first, and most formal, is the placement of the Employer's candidate engineers with the Service Provider for training distinctly geared to professional registration with the Engineering Council of South Africa (ECSA). The training provided shall be predominantly, but not exclusively, related to this project and may be subject to scrutiny and inspection in loco by the Employer who is responsible for candidates' remunerations. The trainees are expected to work according to the Service Provider's terms and conditions of employment, especially those related to confidentiality. They are to be treated as if they were the Service Provider's own full-time personnel. No allowances shall be made for working overtime.

Less formal will be experiential training the Service Provider is requested to provide to university or university of technology undergraduate students. The training provided must be in accordance with the academic institution's requirements.

The Service Provider, apart from providing the technical training, shall also provide trainees with all the tools (including appropriate information technology hardware and software) and space necessary to carry out engineering or survey work as if they were the Service Provider's own permanent staff.

Reporting on training progress of each candidate engineer and student shall be compiled according to the formats and intervals set by ECSA (for engineering students) or SAGC (The South African Geomatics Council).

C3.1.21 Payment and Monthly Reporting using the Employer's Integrated Transportation Information System

When submitting interim certificates for payment the Service Provider shall use the Employer's standard forms and formats. No payment can be made before the Service Provider is registered as a vendor on the Employer's system.

The Service Provider shall submit payment certificates for all work rendered in the Employer's financial year within that specific year.

The Service Provider shall monthly, submit and update a cash flow forecast for the remuneration of the full service to be rendered.

The Service Provider shall complete monthly reports regarding training, empowerment, capacity building, small contractor development, labour and staff returns and any such aspects on the Employer's Integrated Transportation Information System (ITIS).

The Employer has developed a comprehensive information management tool called Integrated Transportation Information System (ITIS) 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 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 Service Provider following procedures to populate the system with data. ITIS currently consist of the following platforms:

a) ITIS Web — Web enabled portal providing online access to various functions, workflows and reports.
b) ITIS Desktop — Offline data capture tool enabling the capture of information offline, validation and then synchronisation of data with the ITIS database.
c) 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 has several ITIS modules running on any of the above ITIS platforms which affect the Service Provider and Training and Construction Manager, who will need to use some of these modules to perform certain procedures and to provide required information. The current modules applicable to this contract and their description are as follows:

i) Contract Module — management of contracts.
ii) Project Information Module — uploading of employment and training data.

User manuals for the various functions can be downloaded from https://itis.nra.co.za/Portal/MyAccount/UserManuals after the successful registration as a public user. This ITIS public user registration procedure is explained in the document as attached in Part C4: Appendix K.

Allowance has been made for these requirements in the Pricing Schedule under Additional Duties. Failure to comply may result in payments being withheld.

C3.1.22 Contract(s) or Agreement(s) with Targeted Enterprise(s)

The Service Provider shall enter into a contract or agreement with the Targeted Enterprise(s) to provide him with the opportunity to participate in this SANRAL project under their guidance. Copies of the contract(s) or agreement(s) shall be provided to the Employer.

C3.1.23 Multiple Strategies

Service Provider appointments by the Employer premise the fundamental concept that the Service Provider can formulate a training and development strategy for the identified Community and Targeted Enterprises and provide a design that is not just fit for purpose but also carries the hall mark of value for money. The training and design strategies on which the Employer has based its budget has been explained in section C3.1.4. It is expected of the Service Provider to interrogate the appropriateness of these training and design strategies and to offer alternatives to it for consideration by the Employer.

C3.1.24 Service Provider's Estimated Cost of the Training and Development Contract

The Service Provider shall, at the completion of each stage or phase where applicable, provide the Employer with an updated realistic estimate of the cost of the training and development contract. Despite this requirement, the Service Provider shall, at the end of September of each year, provide the Employer with an updated realistic estimate of the cost of the training and development contract, as well as the foreseen duration of the contract.

C3.1.25 Economic Feasibility Analysis

Development of the design shall include continuous testing of the feasibility of the project so that in the unlikely event of a total misreading of the project scope as prescribed a decision can be made to abandon, change or continue with the design development. The earlier the warning the earlier change decisions can be made.

Where applicable for a stage, the feasibility outcome shall be accompanied by the output of an HDM-4 analyses and even at the first progress meeting, comments on the feasibility must be discussed, however unrefined the input parameters might be.

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The Service Provider shall undertake an economic feasibility analysis utilising HDM-4 at the end of the following stages or phases:

Clarification Meeting, Tender Period and Tender Evaluation

In performing the economic feasibility analysis, the Service Provider shall

i) Utilise the latest release of HDM-4 or any other software as instructed by the Employer.
ii) Divide the project into uniform sections that as minimum considers changes in geometry or alignment, pavement condition, construction and maintenance history, climate and traffic characteristics.
iii) For each identified uniform section determine the appropriate input parameters for geometry and alignment, pavement condition, construction and maintenance history, climate, traffic characteristics and calibration parameters as per the latest HDM-4 Configuration Setup where applicable. The Employer will provide the general network input parameters.
iv) Define the default Employer vehicle fleet with associated inputs as within the latest HDM-4 Configuration Setup. This process will also include defining appropriate traffic growth sets for the project or uniform sections if applicable.
v) Define a "Do Minimum" maintenance standard consisting of the following routine maintenance activities:
    a. patching,
    b. crack sealing,
    c. edge repair and
    d. road reserve maintenance

    as per the latest HDM-4 Configuration Setup where applicable.
vi) Define various maintenance and improvement standards under consideration for the various uniform sections on the project, as per the latest HDM-4 Configuration Setup where applicable.
vii) Perform economic cost benefit analysis, including accident costs and acceleration effects as per the latest HDM-4 Configuration Setup where applicable.
viii) Analyse the economic analysis results obtained and submit to the Employer for discussion and review.

C3.1.26 Communication Management

Communication management must be identified early in the life of the project and discussed with the Employer as to who shall be responsible for liaising with which party and to define the limits or authority that either party shall speak for or commit the other.

At the earliest stage of design development, the Service Provider should have already identified the relevant and potential Stakeholders and affected/identified Community in the project and list those that may play a sanctioning role that could accelerate or delay delivery of the project.

C3.1.27 Services

The early identification of services is a critical element in the project. The Service Provider shall identify those that are observable during the project assessment stage and those resulting from further later investigations.

During the design development phase, the Service Provider shall continuously liaise with the identified service owners (who form part of the strategic partners) and with the Employer. The first step is to search for any wayleave or similar authorisation agreement for the service to be placed within, alongside or across the project site. All liaisons shall be formal and in writing.

Service relocation may be required. If any design is required to temporarily or permanently relocate the service, such design shall not be to the Employer's account unless agreed during liaison with the service owner. Regardless that any agreement is reached the Employer shall not take responsibility for the subsequent design, it being deemed that it cannot assume liability for property that it does not own or operate. However, the Service Provider is at liberty to offer its design capabilities to the service owner under an agreement between them. The service owner's design cost recovery may be via the contract should the Employer and service owner agree, but no design liability shall pass to the Employer.

C3.2 PROJECT ASSESSMENT STAGE (NOT APPLICABLE FOR THIS CONTRACT)

C3.2.1 Scope

This section covers the project assessment stage which precedes any design development. Thereafter, the actual designs will be produced in single or multiple phases depending on the complexity of the project. This stage requires assessment of the project through perusal of relevant reports and previous studies, designs or surveys relating to the project, undertaking new inspections, surveys, studies and/or intrusive investigations, including subsequent testing, and analysis of test results.

Whilst the aspect of Land Acquisition may still be premature in the sense that the work required to determine what land will be required is only done later, it is nevertheless important that the Service Provider is always familiar with the contents of the SANRAL Land Acquisition Guideline Manual for Consulting Engineers (hereinafter referred to as the "LAC Manual').

The stage ends with the production of a report detailing the findings of the assessment and the identification of multiple design options to be developed in the following stage.

C3.2.2 Assessment in Phases

Assessment of the project shall be conducted in the sequence described hereunder.

In the first part of project assessment the Service Provider shall undertake an initial assessment, i.e. a desktop assessment of the information provided, which may also include additional data, reports, studies etc. issued with the letter of acceptance of an offer. This part culminates with attendance at the project handover meeting at which the Service Provider will put forward for discussion and approval of the planned assessments in the context of an overall design development strategy.

The second part of project assessment is the visual assessment and thorough analysis of information provided, where after the Service Provider shall arrange for the first progress meeting with the Employer to confirm the design strategy and acquiring approval for the type, quantity and positioning of intrusive and other investigations which form the third part of project assessment.

First and second parts of the assessment requirements are summarised below and expanded in the following paragraphs:

i) Review and analyse information provided.
ii) Conduct visual assessment of the infrastructure.
iii) Identify statutory and regulatory requirements.
iv) Identify other stakeholders with whom consultations may be needed.
v) Consider feasibility of various construction strategies.
vi) Evaluate risk that the project presents to the Employer.
vii) Other criteria.

C3.2.3 Initial Assessment

Existing information with respect to the relevant project is given in Part C4: Site information and/or Part C5: Annexures. The information provided there is deemed sufficient both for purposes of tendering and for initial assessment (i.e. desktop assessment). This information shall be studied and used to determine the extent of intrusive investigations that need to be undertaken to prove pavement or existing ground or structural conditions. In the case of reports, studies or designs previously undertaken and not able to be condensed into Part C4: Site Information, these must be collected from the Employer by the Service Provider and returned together with the submission of the Detailed Design report. Failure to return information for which the Service Provider will have signed out from the Employer's registry

will constitute reason for the Employer to withhold payment until such information has been returned in an acceptable condition for continued archiving.

The Service Provider should not take the existing data at face value only but shall interrogate its integrity and accuracy as well as determine the need to access any additional data such as as-built drawings, plans, traffic counts etc. and enquire from the Employer whether such additional information does exist and assist in sourcing same if possible.

With the release of the SARDS, the available electronic information will be made available online for review during the tender period to assist the Service Provider, if applicable to this CD project.

Existing data is, by itself, insufficient to conduct a detailed assessment and must be amplified by visual inspections and subsequent surveys and investigations.

a) Socio-economic Status of the Community (Not required for this CD project)

The Service Provider shall prepare questionnaires and conduct site visits to, and interviews with, the local community to establish their socio-economic status prior to commencement of the project. Typical aspects of this assessment may include determining the level of access that the community has to developmental and economic opportunities, as well as the level of access to services and how it impacts on their lifestyle and quality of life. The purpose of the study is to compare pre-project assessment results with post-project assessment results to determine the impact of the project, if any, on the socio-economic status of the community.

b) Traffic Assessment (Not required for this CD project)

The Service Provider shall review the traffic data provided to determine any potential need for capacity and pavement improvement and identify any need for additional traffic counts or studies.

With the release of the SARDS, the Capacity Analysis will be performed by the Service Provider using the SARDS software, if applicable to this CD project.

c) Geometric Assessment (Not required for this CD project)

The Service Provider shall compare the existing horizontal and vertical alignment data and accompanying geometric values with the Employer's geometric standards to identify any potential need for capacity improvements.

With the release of the SARDS, the Capacity Analysis will be performed by the Service Provider using the SARDS software, if applicable for this CD project.

d) Pavement Assessment (Not required for this CD project)

Identify uniform sections within the project site.

With the release of the SARDS, the identification of uniform sections will be performed by the Service Provider using the SARDS software, if applicable for this CD project.

e) Structures Assessment (Not required for this CD project)

No vehicular, pedestrian or any other major overpass or bridge structure shall form part of this CD project. However, the recording, inspection, maintenance and/or new major culverts and/or minor bridge structures may be included with this CD project and the Service Provider shall deliver his services pertaining to these structures under the directive of SANRAL's Bridge Engineer.

Assess the available information and conduct a site inspection of all structures located on/in the project area to undertake a condition assessment and to gain a general appreciation for the structures and the structural issues that may arise as a result of the envisaged work.

Identify which structures require capacity improvement (hydrologically, traffic, strength, etc.) and maintenance or rehabilitation interventions. All structures shall be assessed and those requiring intervention shall be reported in the Project Assessment Report for further action by the Employer.

f) Drainage Assessment (Not required for this CD project)

Assess all drainage systems and compare them to drainage manual guidelines.

g) Geotechnical Assessment (Not required for this CD project)

Identify potential geotechnical risks from the provided Slope Management System data or any other information provided.

h) Assessment of Material Sources (Not required for this CD project)

Assess information provided from previous contracts (if available).

In addition, the Service Provider must take cognizance of the Employer's transformation efforts with respect to the utilization of local material resources produced and delivered by local SMME businesses and/or Communities. The Service Provider shall thus make a distinct effort to assess the availability of such material sources.

i) Safety Assessment (Not required for this CD project)

Assess Incident Management System (IMS) data for potential hazardous locations.

With the release of the SARDS, the identification of potential hazardous locations will be performed by the Service Provider using the SARDS software, if applicable to this CD project.

j) Environmental Assessment (Not required for this CD project)

The Employer anticipates that the appropriate environmental authorisation process is a basic assessment. From data available, assess whether the Employer's expected authorisation process is correct, using the services of an environmental specialist who shall confirm the type of environmental approval, (i.e. basic application or full environmental investigation including all other permits and authorisations) that must be applied for from the relevant Authorities.

In addition, the Service Provider will also assist in identifying the content for an independent Environmental Assessment Practitioner's (EAP) sub-service tender document.

k) Land Assessment (Not required for this CD project)

At this stage, the identification of informal settlements that may impact on the project must be carried out. Where the project traverses land under the control of a Tribal (Traditional) Authority then the identification of clusters of homes and/or other structures that may require relocation should be made. The above, if evident, must immediately be reported to the Employer.

C3.2.4 Visual Survey (Not required for this CD project)

The Service Provider shall carry out a comprehensive visual assessment survey for the project with the purpose of comparing the desktop assessment assumptions against visible reality. Apart from an overall impression, the visit shall be used to assess the existing condition of the pavement, all drainage and other structures, roadside furniture, slopes, road safety and all other aspects to ascertain the current overall condition. This survey shall be conducted by the Service Provider's designated Design Specialist(s) and cannot be delegated to others.

With the release of the SARDS, the data from the Visual Assessment based on TMH 9 (Pavements) will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format in TMH 18, if applicable to this CD project.

The visual survey shall also include the identification of any other associated aspects located within the road prism affecting the functionality and/or structural integrity of the road and/or road safety issues including but not limited to:

a) Surface drainage.
b) Sub-surface drainage (including pipe culverts).
c) Present or potential geotechnical instability.
d) Excessive shoulder drop-off.
e) Intersection details.
f) Pedestrian issues.
g) Any evident or suspected road safety issues.
h) Condition of bridge joints and balustrades and/or handrails.
i) All identifiable services.
j) Any other issues that may be glaringly evident.

The visit should include an inspection of all borrow pits and quarries identified during the initial assessment and act on any other relevant information emanating from the hand-over meeting discussions. Where any borrow pit or quarry is in any way affected by an informal settlement, the information gathered must immediately be brought to the attention of the Employer.

Major bridge structures generally do not form part of the scope of Community Development Projects. The condition of existing major bridge structures shall thus not be inspected unless specifically listed as part of this Scope of Work, in which case the Scope of Work shall list the bridge structures to be inspected. All major and minor culverts and minor bridge structures shall, however, be inspected.

C3.2.5 Identification of Statutory and Regulatory Controls

The Service Provider shall identify legislation applicable to this project and bring it to the attention of the Employer together with recommendations on how compliance thereto can be incorporated into the project design. The following aspects must be dealt with at this point:

a) Road closures arising from the design.
b) The closure of public places that would arise from the design.
c) The impact must be determined that the project or design will have on zoning criteria for properties in a township. This is particularly relevant where such properties will be reduced in size due to the design and where such remaining portions will be against the zoning criteria.
d) Statutory provisions relating to Mining Rights, Proclamations and De-proclamations of Provincial and Municipal Roads, the closure of streets and public places, the existence of Informal Property Rights, Traditional Authorities, etc. need to be clearly identified at this stage.
e) Agreements with Municipality(ies)

The Employer have prepared a "generic" agreement with respect to the following:

i) Take-over of Access Roads by a Municipality; and
ii) Declaration of National Road through "Towns".

The above agreements are annexures to the LAC Manual and to Part C4: Appendix H of this document.

The Service Provider will be required to facilitate the conclusion of the above agreement(s) and where such agreement(s) shall be concluded prior to the commencement of any construction phase of the project.

All the above may give rise to the need to appoint other professionals such as a Land Surveyor, Town Planner, etc. to ensure formal compliance at the time of Detailed Design. The Service Provider must therefore set out the Terms of Reference with regards to each such statutory requirement in a report to the Employer having specific regard to the time frames involved and an estimate of costs in obtaining such statutory authorisation. The Employer may instruct the PSP to assist the Service Provider if it becomes evident that there are complexities that would require specialist input.

C3.2.6 Other Authorities and Stakeholders

The Service Provider shall identify all authorities and stakeholders who should be consulted about the design and implementation of this project and the degree to which liaison with each is expected. In addition, the Service Provider shall compile a list of the relevant persons, their capacity to act for such authority or body and their contact details, with whom liaison must take place but shall not commit to any meetings without first engaging the Employer to confirm how and when such meetings should be held.

Where the Project traverses land under the control of a Tribal (Traditional) Authority then the Department of Rural Development and Land Reform is to be notified and a determination and record of which officer is responsible for the area affected must be made.

Where a Project Liaison Committee (PLC) has not been established, the Service Provider under the guidance of the Employer, shall establish such a PLC within the boundary of the Project Area consisting of members as specified in clause C3.1.7.

During the development of the design and the construction phases the Service Provider shall continue these same liaison duties, including representing the Employer if so authorised and providing the Employer with written records of all liaison meetings and conversations.

Allowance has been made for these requirements in the Pricing Schedule under Additional Duties.

C3.2.7 Other Criteria

The above aspects of project assessment should not be considered as exhaustive. The Service Provider shall undertake the first phase of assessment to identify as many items as possible that will need to be considered when developing the design and the emanating scope of work, including consultation with the relevant routine maintenance service provider.

C3.2.8 Presentation of Visual Survey

The Service Provider shall, at the first progress meeting, present for discussion the findings of the visual survey that will ultimately be included in the Project Assessment Report. This meeting also serves the purpose of affording the Service Provider the opportunity to further demonstrate his understanding of the project and seek approval for proposed investigations and/or studies. The Service Provider shall also present initial design strategy proposals at this meeting.

With the release of the SARDS, the presentation of the visual survey will be based on utilising the SARDS portal by Service Provider, if applicable to this CD project.

C3.2.9 Skills and Resources Audit

As stated earlier, one of the primary objectives of this project is for the identified Community and local Targeted Enterprises to be trained and equipped with skills that can be used to gain meaningful employment and secure subcontracting opportunities.

The Service Provider shall thus undertake a skills and resources audit of the identified Community and the local Targeted Enterprises in the Project Area. The purpose of the audit is to obtain an understanding of the Community's skills, both academically and occupationally, as well as of the resources within the Community, i.e. Targeted Enterprise availability and capabilities.

This information will assist the Service Provider to develop a preliminary training and development programme and to align the design of the Works to support this training and development programme.

As a minimum, the Service Provider shall utilise the following sources of information:

a) Statistics South Africa.
b) Construction Industry Development Board.
c) National Treasury's Central Supplier Database (CSD).
d) Any other reliable source of information, e.g. the local municipality's Local Economic Development department.

C3.2.10 Project Assessment Report

A project assessment report shall be submitted for discussion at the progress meeting. The content of this report will depend on the available information and the scope of the work and may include the following aspects where applicable:

a) Document initial scope of works and the methods and procedures required to construct and/or maintain the required condition of infrastructure.
b) Establish the scale and cost plan for the project.
c) Identify risks that need to be mitigated.
d) Identify additional studies, e.g. geotechnical, survey, traffic, etc.
e) X-section development strategy for a 20-year period.
f) Intersection and/or interchange improvements.
g) Appropriate Legislation.
h) Identify stakeholders.
i) Identify services.
j) Existing pavement condition.
k) Geotechnical stability.
l) Road furniture condition and compliance.
m) Confirm BMS assessment with recommendations (if applicable).
n) Economic Feasibility Analysis (if applicable).
o) Preliminary Land Report.
p) Skills and Resources Audit.

Although all aspects are important, emphasis should be given to the materials making up the existing pavement, their current reported condition and their respective sources.

A separate Structures Assessment Report (which includes minor bridges, major culverts, lesser culverts, walls, gantries, light masts and buildings) must be submitted for new and existing structures. The report must discuss the available information, describe each structure, report on the condition assessments undertaken and the need for any maintenance and/or rehabilitation of existing structures and describe the structural constraints due to the envisage works.

During the first part of the assessment and based purely on the information given and/or collected, the Service Provider must devise other feasible strategies for further discussion with the Employer.

C3.2.11 Measurement and Payment

Item	Description		Unit
3.2.1	**Initial Assessment**		
	(a)	Initial Assessment	Lump Sum (LS)
	(b)	Disbursements	Lump Sum (LS)

The unit of measurement under pay item 3.2.1(a) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all time-related costs associated with undertaking the initial assessment.

The unit of measurement under pay item 3.2.1(b) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all disbursements, materials, printing, travel (including toll fees) and subsistence and all other costs associated with the initial assessment.

Contract price adjustment shall be applicable in accordance with clause C2.1.6.

Item	Description		Unit
3.2.2	**Visual Survey**		
	(a)	Visual survey	Lump Sum (LS)
	(b)	Disbursements	Lump Sum (LS)

The unit of measurement under pay item 3.2.2(a) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all time-related costs associated with undertaking the visual survey.

The unit of measurement under pay item 3.2.2(b) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all disbursements, materials, printing, travel (including toll fees) and subsistence and all other costs associated with the visual survey.

Contract price adjustment shall be applicable in accordance with clause C2.1.6.

Item	Description		Unit
3.2.3	**Project Assessment Report**		
	(a)	Project assessment report	Lump Sum (LS)
	(b)	Disbursements	Lump Sum (LS)

The unit of measurement under pay item 3.2.3(a) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for time-related costs associated with the compilation of the Project Assessment Report.

The unit of measurement under pay item 3.2.3(b) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all disbursements, materials, printing and all other costs associated with the Project Assessment Report.

The Service Provider shall be entitled to render interim monthly fee accounts based on progress for up to 70% of the Lump Sum. A further 20% of the Lump Sum is claimable upon delivery of the draft report. The remaining 10% of the Lump Sum is claimable upon delivery of the final report.

Contract price adjustment shall be applicable in accordance with clause C2.1.6.

C3.3 DESIGN DEVELOPMENT INVESTIGATIONS (NOT APPLICABLE FOR THIS CONTRACT)

C3.3.1 Scope

This section covers the investigations preceding any design development. This process requires investigations to be undertaken either in-house or through the appointment of relevant sub-service providers.

C3.3.2 Investigations, Sampling and Testing

Intrusive investigations are deemed to be any type of investigation that probes into or removes from the pavement layers, sub-grades, structures' elements and other areas, e.g. cuttings, etc.

Supervision of intrusive investigations shall not be delegated but shall be supervised and logged by the Key Person listed as the relevant Design Specialist.

Provision for investigations, sampling and testing has been allowed for in the Pricing Schedule.

The Service Provider shall submit for approval a schedule of proposed work for all field work, sampling and testing prior to commencement.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format, if applicable to this CD project.

C3.3.3 Survey Services

All survey requirements must be identified by the Service Provider as early as possible during the Project Assessment stage to ensure that there will be sufficient time to undertake these surveys. It is important that the Service Provider familiarises himself with the requirements of TMH11: Standard Survey Methods, to ensure that the survey deliverables will conform to the Service Provider's requirements.

The Employer has a continuous standing agreement with a Property Service Provider (PSP) who is tasked with providing survey services when instructed. In view of the need for all survey controls used on the national road network to be available in a single managed database the Employer requires that its PSP remains fully responsible for checking and the approval of all survey controls used on all projects.

Unless otherwise agreed, the Service Provider is required to make use of the PSP for its survey needs. The Service Provider is required to provide the type and extent of the survey and determine a reasonable timeframe for its production. A "Request for Survey Work" form is included in Part C4: Appendix G for this purpose. This request must be sent to the Employer's Regional Survey Representative for approval.

a) Procurement of the Survey Sub-service

The Service Provider shall identify all potential survey requirements during the initial and visual assessment stages, including the survey of potential borrow pits and/or quarries. Discussion of purpose and extent of the survey shall be included in the agenda of the first progress meeting to which the PSP may be invited should it be required.

While interaction between the Service Provider and the PSP will be necessary, the survey tender documents, advertising, evaluation, appointment of surveyor, payment of the surveyor, the survey project management and quality control shall be

undertaken by the PSP. The Service Provider will agree to a program with the PSP, who shall be responsible for the performance of their sub-service providers.

However, if agreed that the Service Provider shall procure the survey services, a prime cost sum has been provided in the Pricing Schedule. In such a case the latest standard survey pro-forma tender document, which covers all survey types, will be made available by the PSP. Tenders shall be invited only from surveyors who are suitably registered in terms of the Geomatics Profession Act, Act 19 of 2013. The procurement of survey work shall conform to the Employer's procurement policies and procedures. The procedures set out below shall apply after the appointment of the survey contractor. The Service Provider shall then become responsible for the performance of their sub-service providers.

All surveys are to be carried out to TMH11 standards as set out in the survey pro-forma tender document.

b) Management of the Survey Sub-service Provider

i) Whenever the Service Provider procures the survey services, the following processes shall be applied:

a. Call for and evaluate regular progress reports and attend relevant progress meetings.
b. Attend to enquiries from the survey company.
c. It is a requirement for the survey sub-service provider to submit a survey verification report for existing beacons prior to using their values. The verification entails the following:
    i. Evaluate the verification survey methodology.
    ii. Evaluate the verification residuals.
    iii. Advise the survey sub-service provider to re-survey the existing control beacons or to adopt their values for the rest of the survey.
d. Receive the newly established permanent survey control survey data and co-ordinate for approval prior to the acceptance of the values for any further surveys.
e. The approval of the co-ordinates will entail the following:
    i. Evaluate survey methodology for height and position determination.
    ii. Evaluate the reduction for height and position.
    iii. Evaluate the survey datums and the connection to other controls.

ii) When receiving completed survey data from the survey sub-service provider the following processes listed below shall be followed:

a. Check that all deliverables have been submitted by the survey sub-Service Provider in terms of the tender requirements.
b. Submit the complete data set to the PSP for quality control.
c. Receive quality control reports from the PSP and forward them to the survey sub-Service Provider for corrections. The date by when the corrections must be completed must be advised by the Service Provider.
d. Re-submit the corrected data to PSP for verification. The entire survey must be re-submitted each time corrections have been undertaken in order for all previous data to be destroyed.
e. Make payment to the survey sub-Service Provider.

C3.3.4 Traffic Monitoring Services

All traffic monitoring requirements must be identified by the Service Provider as early as possible during the Project Assessment stage to ensure that there will be sufficient time to undertake these surveys. It is important that the Service Provider familiarises himself with the requirements of TMH3: Specifications for the Provision of Traffic and Weigh-in-Motion Monitoring Services and TMH14: South African Standard Traffic Data Collection Format, to ensure that the traffic monitoring deliverables will conform to the Service Provider's requirements.

The Employer has a continuous standing agreement with a Traffic Monitoring Service Provider (TMSP) who is tasked with providing traffic monitoring services when instructed. In view of the need for all traffic monitoring data used on the national road network to be available in a single managed database the Employer requires that its TMSP remains fully responsible for checking and the approval of all traffic monitoring data used on all projects.

Unless otherwise agreed, the Service Provider is required to make use of the TMSP for its traffic monitoring needs. The Service Provider is required to provide the type and extent of the survey and determine a reasonable timeframe for its production. A request for traffic monitoring should be submitted to the Employer, i.e. SANRAL Head Office, for the attention of A. Robinson at e-mail address: robinsona@nra.co.za).

a) Procurement of the Traffic Monitoring Service Provider

The Service Provider shall identify all potential traffic monitoring requirements during the initial and visual assessment stages. Discussion of purpose and extent of the survey shall be included in the agenda of the first progress meeting.

While interaction between the Service Provider and the TMSP will be necessary, the traffic monitoring tender documents, advertising, evaluation, appointment of the TMSP, payment of the TMSP, the project management and quality control shall be undertaken by the relevant SANRAL Head Office Project Manager (HO-PM) responsible for the TMSP, i.e. M. Van Der Walt at e-mail address vdwaltm@nra.co.za. The Service Provider will agree to a program with the HO-PM who shall be responsible for the performance of the TMSP.

However, if agreed that the Service Provider shall procure the traffic monitoring services, a prime cost sum has been provided in the Pricing Schedule. In such a case, the latest standard traffic monitoring pro-forma tender document, which covers all traffic monitoring types, will be made available by the Employer. Tenders shall be invited only from traffic monitoring Service Providers who are suitably certified in terms of TMH3 for the specific traffic monitoring system type required. The procurement of traffic monitoring work shall conform to the Employer's procurement policies and procedures. The procedures as set out below shall apply after appointment of the TMSP. The Service Provider shall then become responsible for the performance of the TMSP.

All traffic monitoring is to be carried out to TMH3 and TMH14 standards as set out in the traffic monitoring pro-forma tender document.

b) Management of the TMSP

i) Whenever the Service Provider procures the traffic monitoring services, the following processes shall be applied:

a. Call for and evaluate regular progress reports and attend relevant progress meetings.
b. Attend to enquiries from the traffic monitoring company.
c. It is a requirement for the TMSP to submit a traffic monitoring report. The report entails the following:
    i. Evaluate the survey methodology.
    ii. Evaluate the positions for traffic monitoring.

iii. Advise the Service Provider to re-evaluate the proposed positions or advise on the suitability of the traffic monitoring system to be used.
iv. Take the necessary geocoded photographs to verify positions of traffic counts.
v. Compile the Station Information Report.
vi. Receive the traffic monitoring data for approval prior to the acceptance of the values for any further surveys.

When receiving completed traffic monitoring data from the TMSP the following processes listed below shall be followed:

a. Check that all deliverables have been submitted by the TMSP in terms of the tender requirements.
b. Submit the complete data set to the HO- PM for quality control.
c. Receive quality control reports from the HO-PM and forward it to the TMSP for corrections. The date by when the corrections must be completed must be advised by the Service Provider.
d. Re-submit the corrected data to the HO-PM for verification. The entire survey shall be re-submitted each time corrections have been undertaken for all previous data to be destroyed.
e. Make payment to the TMSP.

With the release of the SARDS, the data from the traffic monitoring based on TMH 3 or 8 will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format in TMH 14, if applicable for this CD Project.

C3.3.5 Environmental Sub-service

The Service Provider shall identify all potential environmental issues relating to the envisaged scope of the Works during the assessment stage, including areas where potential borrow pits and/or quarries may be located.

The environmental sub-service provider shall distinguish between the design and construction stages. The Employer requires that the same sub-service provider fulfils the duties of the Environmental Assessment Practitioner (EAP) and later as the Environmental Control Officer (ECO), in accordance with the Mineral and Petroleum Resources Development Act (28 of 2002). The Service Provider shall use the Employer's standard documentation for the procurement of environmental sub-services.

Specialist studies identified as being necessary do not form part of normal duties, and such services may have to be separately procured, but still in accordance with the procedures for the procurement of sub-service providers.

C3.3.6 Geotechnical and Drilling Services

The Service Provider shall use the Employer's standard documentation for the procurement of geotechnical and drilling sub-services. Once appointed, the contract will be between the geotechnical and drilling sub-service provider and the Service Provider.

Supervision of the sub-service work shall only be undertaken by suitably qualified and experienced personnel. Depending on the scope and/or scale of such sub-services, supervision may be required on a full time or part time basis as determined by the Employer.

The logging of the cores and profiling of test pits are the Service Provider's responsibility. All core logging and test pit profiling are to be carried out, officially checked and signed by a suitably qualified and experienced engineering Geologist as specified in Section 38 of the COTO Standards and Specifications for Sub-service Investigations (2010).

The Service Provider's Geotechnical Engineer shall be responsible for reviewing the results of the investigations and confirming its acceptance. The Geotechnical Engineer will be involved in the planning, procurement and management of the sub-contract. The Geotechnical Engineer will be responsible for the acceptance of data collected during the investigation including amongst others, core logs, test pit profiles, laboratory test, etc. and the production of a factual geotechnical report. In addition, the Geotechnical Engineer will be responsible for an interpretive geotechnical report as well as a design geotechnical report required for fulfilling the design. The Geotechnical Engineer shall be involved during the construction phase in accordance with his/her obligation w.r.t. professional responsibilities and clause C3.7.2(f) Site Visits by Design Specialist(s).

C3.3.7 Other Special Services and Specialist Advice

The Employer may require other special services and specialist advice which are not included in the normal duties. These may include:

i) road network planning studies;
ii) traffic, axle weight and transportation studies (including traffic counts only);
iii) economic studies;
iv) model studies;
v) soil mapping and seismic or similar surveys;
vi) monitoring of road and bridge elements;
vii) pavement surveillance surveys (e.g. FWD);
viii) mediation, arbitration and litigation; and
ix) land acquisition assistance provided by the PSP.

The Service Provider shall, when required by the Employer to do so, procure such other specialist services in accordance with the procedures for the procurement of sub-service providers. The Service Provider may tender for these services.

It is to be noted that, subject to the Employer's approval, the land legal advice and property acquisition assistance provided to the Service Provider by the PSP will be paid under a separate contract administered by the Employer.

In the event of "specialist advice" the reimbursable costs shall be inclusive of the investigations and analysis to provide the Employer with an appropriate technical solution. In the case of "special services" the reimbursable cost is only for the specific survey, tests or data required and exclude the analysis thereof, the cost of which shall be included in the tendered rates for design.

Provision for payment of other special services and specialist advice are provided in Section C3.8: Additional Duties. Where investigations are to be undertaken, the Service Provider shall compile a schedule of required work, which shall be subject to the approval of the Employer, before any investigation may commence.

C3.3.8 Specialist Transportation Engineering Service

For projects requiring basic analyses of traffic volumes and trends, or capacity improvements involving geometric designs that are basically extensions to existing road infrastructure, a Design Specialist will not be specified as part of the Key Persons. However, for more complex green-fields projects, a Design Specialist may be specified as part of the Key Persons. In both cases the cost for this service shall be deemed to be included in the rates tendered for design.

C3.3.9 Specialist Geometric Design Service

For projects requiring basic geometric analyses of traffic volumes and trends, or capacity improvements involving geometric designs that are basically extensions to existing road infrastructure, a Design Specialist will not be specified as part of the Key Persons. However, for more complex projects, a Design Specialist will be specified as part of the Key Persons.

In both cases the cost for this service shall be deemed to be included in the rates tendered for design.

C3.3.10 Materials Investigation and Testing

a) Test Pits

All test pits shall be excavated, profiled and sampled in accordance with the M1 Manual and industry best practice. The dimensions of the excavation shall be sufficient to permit safe working conditions and to allow for adequate quantities of material to be sampled from each horizon for the envisaged testing. All test pits shall be excavated to a minimum depth of 800mm, or deeper if specified by the Design Engineer.

All test pits shall be backfilled utilizing material which is at least of a similar quality as that removed from the relevant horizon. The upper 150mm horizon shall consist of at least G2 quality material stabilized with 2% emulsion and 1% cement. The surfacing shall consist of hot or cold asphalt or prefabricated seal patches as appropriate to the existing surfacing and traffic or road class. Compaction shall be by appropriate compaction equipment in layers not exceeding 150mm.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by the Service Provider as per the defined standard format or SARDS interface, if required for this CD project.

b) Dynamic Cone Penetration (DCP) Testing

Dynamic Cone Penetration (DCP) testing shall be carried out in accordance with the standard test method. Appropriate drilling equipment shall be utilized to penetrate asphalt, highly stabilized or cemented layers prior to proceeding with the testing. Results of DCP testing shall be produced in a format enabling full assessment of the various pavement layers to be assessed.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by the Service Provider as per the defined standard format or SARDS interface, if required for this CD project.

c) Coring in Pavement Layers

Where required and scheduled, coring shall be carried out utilizing appropriate equipment. The layer type and diameter of the cores shall be as specified in the pricing schedule.

d) Transport of Samples to Laboratory

All samples shall be securely fastened, labelled and transported to the laboratory appointed to carry out the required testing. A distinction has been made in the Pricing Schedule between large bags and small bags or cores.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface, if required by this CD project.

e) Laboratory Testing

Only SANAS accredited laboratories shall be permitted to carry out laboratory testing of materials. All testing shall be carried out in accordance with the methods specified in the relevant test methods.

Provision for the costs of any laboratory testing has been included under specific tests and/or under a provisional sum item in the Pricing Schedule.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by the Service Provider as per the defined standard format or SARDS interface, if required for this CD project.

C3.3.11 Measurement and Payment

Item	Description		Unit
3.3.1	**Survey Services**		
	(a)	Survey services when procured by Service Provider	Prime Cost (PC)
	(b)	Cost for procuring and managing sub-service provider under sub-item 3.3.1(a)	Lump Sum (LS)
	(c)	Cost when making use of SANRAL's Property Service Providers	Lump Sum (LS)

The Prime Cost under sub-item 3.3.1(a) shall be paid in accordance with Clause C2.1.8

The unit of measurement under sub-item 3.3.1(b) shall be the Lump Sum. The Lump Sum tendered shall only be applicable where such service is carried out under the Prime Cost Sum and shall include for all costs associated with the planning, compiling a schedule of all envisaged survey work, compilation of quotation or tender documentation for procurement purposes, issuing of up to 20 (twenty) quotation or tender documents in electronic format and evaluation for the procurement of the sub-service and recommendations to the Employer including management cost, administrative cost, handling fees and profit.

The unit of measurement under sub-item 3.3.1(c) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all costs associated with making use of SANRAL's Property Service Providers as specified in Clause C.3.3.3.

Contract price adjustment shall be applicable to sub-items 3.3.1(b) and (c) in accordance with Clause C2.1.6.

Item	Description		Unit
3.3.2	**Traffic Monitoring Services**		
	(a)	Traffic monitoring services when procured by Service Provider	Prime Cost (PC)
	(b)	Cost for procuring and managing sub-service provider under sub-item 3.3.2(a)	Lump Sum (LS)
	(c)	Cost when making use of SANRAL's Traffic Monitoring Service Providers (TMSP)	Lump Sum (LS)

The Prime Cost under sub-item 3.3.2(a) shall be paid in accordance with Clause C2.1.8.

The unit of measurement under sub-item 3.3.2(b) shall be the Lump Sum. The Lump Sum tendered shall only be applicable where such service is carried out under the Prime Cost Sum and shall include for all costs associated with the planning, compiling a schedule of all envisage traffic monitoring work, compilation of quotation or tender documentation for procurement purposes, issuing up to 20 (twenty) quotation or tender documents in electronic format and evaluation for the procurement of the sub-service and recommendation to the Employer including management cost, administration cost, handling fees and profit.

The unit of measurement under sub-item 3.3.2(c) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all costs associated with making use of SANRAL's TMSP as specified in Clause C3.3.4.

Contract price adjustment shall be applicable to sub-item 3.3.2(b) and (c) in accordance with Clause C2.1.6.

Item	Description		Unit
3.3.3	**Environmental Service**		
	(a)	Environmental services during design stage	Prime Cost (PC)
	(b)	Cost for procuring and managing sub-service provider under sub-item 3.3.3(a)	Lump Sum (LS)

The Prime Cost under sub-item 3.3.3(a) shall be paid in accordance with Clause C2.1.8

The unit of measurement under sub-item 3.3.3(b) shall be the Lump Sum. The Lump Sum tendered shall include for the initial assessment as specified in Clause C3.2.3. as well as all costs associated with the planning, scheduling, compilation of quotation or tender documentation, issuing of up to 20 (twenty) quotation or tender documents in electronic format and evaluation for the procurement and management of the sub-service including administrative cost, handling fees and profit.

Contract price adjustment shall be applicable to sub-items 3.3.3(b) in accordance with Clause C2.1.6.

Item	Description		Unit
3.3.4	**Geotechnical and Drilling Services**		
	(a)	Geotechnical and/or drilling investigations	Prime Cost (PC)
	(b)	Handling cost for planning and procuring geotechnical and/or drilling services	Lump Sum (LS)
	(c)	Administration and monitoring of the geotechnical and/or drilling contract by the Engineer	Month
	(d)	Supervision of the work	
		(i) Full time supervision	Provisional Sum (PS)
		(ii) Engineering Geologist for logging of cores and profiling of test pits	Month
		(iii) Accommodation cost	Provisional Sum (PS)
		(iv) Occupational health and safety obligations (continuous compliance and monthly audits)	Month

	(e)	Geotechnical and drilling contract	
		(i) Geotechnical and drilling contractor	Prime Cost (PC)
		(ii) Handling cost for planning, procuring geotechnical and drilling contractor i.r.o. item 3.3.4(e)(i)	Lump Sum (LS)

The Prime Cost under sub-item 3.3.4(a) shall be paid in accordance with Clause C2.1.8.

The unit of measurement under sub-item 3.3.4(b) shall be the Lump Sum. The Service Provider shall identify the full scope of the sub-service investigation(s), type and estimated quantity of tests required and shall compile quotation or tender documents in accordance with the Employer's standard requirements, procurement policy and industry best practices for procuring the relevant sub-service. The Lump Sum tendered shall include full compensation for personnel, transport, accommodation, materials, printing and all other costs associated with the compilation of quotation or tender documents, issuing quotation/tender documents, clarification meetings, evaluation and producing a tender evaluation report.

The unit of measurement under sub-item 3.3.4(c) shall be the Month or part thereof and the rate tendered shall include full compensation for the Engineer's cost including all subsistence, travel, accommodation, meeting attendance and other costs associated with administration and monitoring of the geotechnical and/or drilling investigation, including preparation and submission of the contractor's payment certificates.

The Provisional Sum under sub-item 3.3.4(d)(i) shall cover all monthly costs for personnel including all subsistence and travel costs associated with providing full time supervision of the work.

The unit of measurement under sub-item 3.3.4(d)(ii) shall be the Month or part thereof and the rate tendered shall include full compensation for all personnel costs including all subsistence and travel costs associated with providing an Engineering Geologist for the logging of cores.

The Provisional Sum under sub-item 3.3.4(d)(iii) shall cover all costs associated with the accommodation for full-time supervision personnel and the Engineering Geologist.

The unit of measurement under sub-item 3.3.4(d)(iv) shall be the Month or part thereof and the rate tendered shall include full compensation for all costs, including personnel, transport, accommodation and subsistence for the Occupational Health and Safety Specialist for fulfilling the Service Provider's obligations as the Agent with respect to the requirements of the Construction Regulations of the Occupational Health and Safety Act (Act 85 of 1993).

The unit of measurement under sub-item 3.3.4(e)(ii) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for personnel, transport, accommodation, materials, printing and all other costs associated with the compilation of quotation/tender documents, issuing quotation/tender documents, clarification meeting, evaluation and producing a tender evaluation report.

Contract price adjustment shall be applicable to sub-items 3.3.4(b), 3.3.4(c), 3.3.4(d)(ii), 3.3.4(d)(iv) and 3.3.4(e)(ii) in accordance with Clause C2.1.6.

Item	**Description**	**Unit**
3.3.5	**Pavement Investigation and Sampling**	

	(a)	Establishment of personnel and equipment for test pitting	Lump Sum (LS)
	(b)	Pavement test pit, sampling and profiling	Number
	(c)	Dynamic Cone Penetration (DCP)	Number
	(d)	Cores in asphalt layers (100/150 mm dia)	Number
	(e)	Cores in concrete layers (100/150 mm dia)	Number
	(f)	Transport of samples to laboratory	
		(i) Large bags	Number
		(ii) Small bags or cores	Number

The unit of measurement under pay item 3.3.5(a) shall be the Lump Sum. The Lump Sum tendered shall cover all costs associated with establishing an appropriately sized team on site to carry out the scheduled test pit programme. The rate tendered shall be fixed irrespective of the final number of test pits excavated.

The unit of measurement under pay item 3.3.5(b) shall be the Number of test pits excavated, sampled and profiled or photographed by the Design Specialist. With the release of the SARDS, the Service Provider will be required to follow the Standard workflow within SARDS to determine the number and locality of testing required. The data shall be uploaded into the SARDS portal by the Service Provider as per the defined standard format or SARDS interface.

The rate tendered shall include for the safeguarding of the test pits whilst open, all costs including travel, labour, accommodation, subsistence, plant, materials, sample bags, etc. associated with the excavation, profiling and sampling of test pits and subsequent backfilling and compaction thereof as specified.

The unit of measurement under pay item 3.3.5(c) shall be the Number of DCP tests at locations identified by the Design Specialist. With the release of the SARDS, the Service Provider will be required to follow the Standard workflow within SARDS to determine the number and locality of testing required. The data shall be uploaded into the SARDS portal by the Service Provider as per the defined standard format or SARDS interface.

The rate tendered shall include for drilling through any “refusal” layers, completing the test and submission of the DCP analysis to the Design Specialist.

The unit of measurement under pay items 3.3.5(d) and (e) shall be the Number of cores in asphalt and/or concrete at locations identified by the Design Specialist irrespective of the thickness of the core. With the release of the SARDS, the Service Provider will be required to follow the Standard workflow within SARDS to determine the number and locality of testing required. The data shall be uploaded into the SARDS portal by the Service Provider as per the defined standard format or SARDS interface.

The rates tendered shall include all costs including labour, transport, coring rig, backfilling of core holes, accommodation, subsistence, etc. The rates tendered shall be fixed, irrespective of the length of the core extracted.

The unit of measurement under pay item 3.3.5(f) shall be the Number of large bags and/or small bags or cores transported. The rates tendered shall include all costs to transport the bags and/or cores to the laboratory selected to carry out the testing, irrespective of distance.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description		Unit
3.3.6	**Laboratory Testing and Reporting**		
	(a)	Standard tests as listed in the Pricing Schedule	Number
	(b)	Laboratory testing where no schedule is available, or specialised testing	Prime Cost (PC)
	(c)	Handling costs i.r.o. pay item 3.3.6(b)	Percentage (%)

The unit of measurement under pay item 3.3.6(a) shall be the Number of tests prescribed by the Design Specialist and carried out by the laboratory. The rates tendered shall cover all costs associated with completing the individual tests and shall include all calculations and reporting. Any tests proven to be erroneous shall not be paid for.

The Prime Cost under pay item 3.3.6(b) shall be paid in accordance with Clause C2.1.8. The Service Provider shall identify the type and estimated quantity of tests required and shall compile a quotation document in accordance with the Employer's standard requirements and policies to procure the service.

The unit of measurement under pay item 3.3.6(c) shall be the Percentage. The percentage tendered is a percentage of the amount spent under payment item 3.3.6(b) and shall include full compensation for all costs of the Service Provider as specified.

Where the prior identification of materials testing requirements is not possible, a Provisional sum has been included in the Pricing Schedule for the procurement of such services. Where testing is carried out under a Provisional Sum the percentage handling fee tendered in the Pricing Schedule shall include for all the Service Provider's costs associated with:

a) compiling a schedule of all envisaged work;
b) production of a document for procurement purposes (including printing etc.);
c) calling for quotations and/or tenders;
d) evaluation of quotations and/or tenders received and recommendations to the Employer;
e) handling fees; and
f) profit.

Procurement of such services shall be in accordance with clause C3.1.12.

Contract price adjustment shall be applicable to sub-item 3.3.6(a) in accordance with Clause C2.1.6.

C3.4 DESIGN DEVELOPMENT STAGE (NOT APPLICABLE FOR THIS CONTRACT)

C3.4.1 Scope

This section covers the requirements for the compilation and submission of a Concept and/or Preliminary and/or Detailed Design and the various phases that the Service Provider may have to apply to develop the design in such a way that the Employer is provided the opportunity to select the most appropriate design strategy.

a) Design Guidelines

It is a fundamental requirement that the Service Provider has a thorough working knowledge of the Employer's complete suite of design standards, codes, manuals and guidelines (i.e. those that it publishes and those for which it provides an industry custodianship), which shall be used in the production of the designs in all their separate phases. In addition, the Service Provider shall apply any other industry best practice publication that may be appropriate. Furthermore, the Employer's philosophy of appropriate standards and cost effectiveness shall always be considered.

b) Training and Development Guidelines

In addition, the Service Provider shall have a thorough knowledge and understanding of the Employer's Transformation Policy, Community Development Strategy, Community Development pro-forma for Training and Construction Managers, CIDB Standard for Developing Skills through Infrastructure Contracts, and any other documents provided by the Employer that assist in the enhanced Training and Development of local Communities and Targeted Enterprises.

For each stage of the design development, the enhanced training, development and utilization of local Communities and Targeted Enterprises shall form the foundation of the design development strategy.

C3.4.2 Design Development Strategy

On completion of the project assessment stage and before findings from further investigations and sub-services are available, the Service Provider shall discuss with the Employer and confirm the design development strategy that will be applied.

New work (i.e. predominantly 'greenfield' projects that require route determination and/or new structures for which aesthetics and service are not fixed) may require development through separate multiple phases of concept, preliminary and detailed designs.

Many capital expenditure projects that require capacity improvements, in addition to rehabilitation and or repair, may require development through the separate multiple phases of preliminary and detailed designs.

Some capital expenditure projects, and most operational expenditure projects, will only require the single phase of detailed design development.

The purpose of confirming the total strategy to be applied is based on the precept that public funds must be wisely spent, and it may occur that the details emerging from the project assessment dictate that development through multiple phases is not required. Any decision not to proceed with either the conceptual or preliminary phases shall not give cause for a Service Provider to request or demand an adjustment to its pricing structure. Each development phase is distinctly separate and thus shall be priced in such a way that no cross-subsidisation between them occurs.

Conversely, any decision to introduce an additional development phase shall be subject to pricing variation.

C3.4.3 Investigations, Sampling and Testing

Intrusive investigations are deemed to be any type of investigation that probes into or removes from the roadbed, borrow pits, quarries, structure founding materials and other areas, e.g. cuttings, etc. Investigations, both intrusive and non-destructive, sampling as well as associated laboratory testing, must be approved by the Employer before they are undertaken.

The Service Provider shall initially identify and then determine the viability of sources for the supply of materials by arranging for test pits, samples, laboratory testing and reporting on them. The investigations may involve drilling, both by percussion and core recovery if needed to prove new sites or extensions to existing pits. Depending on the locality of the project site, the investigation of materials sources shall include the use of commercial sources as well as existing and/or new sources on, alongside or near the project site. This will require sampling and testing of the commercial products. When the project demands crushed stone products the investigation of more than one source shall be required. Where intrusive investigations are required to be carried out on land not under the control and/or jurisdiction of the Employer, suitable arrangements must be made with the Landowner, Authority etc. In this regard, the Service Provider must refer to the LAC Manual and in particular to those sections dealing with access to land.

Supervision of intrusive investigations shall not be delegated but shall be supervised and logged by the Key Person listed as the relevant Design Specialist.

Provision for investigations, sampling and testing has been allowed for in the Pricing Schedule.

The Service Provider shall submit for approval a schedule of proposed work for all field work, sampling and testing prior to commencement.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface, if applicable to this CD project.

C3.4.4 Materials Investigation and Testing

a) Test Pits

All test pits shall be excavated, profiled and sampled in accordance with the M1 Manual and industry best practice. The dimensions of the excavation shall be sufficient to permit safe working conditions and to allow for adequate quantities of material to be sampled from each horizon for the envisaged testing. All test pits shall be excavated to a minimum depth of 800mm, or deeper if specified by the Design Specialist: Pavements and Materials.

All test pits shall be backfilled utilizing excess material excavated and additional material to ensure that there will be no unsafe depressions. The backfill shall be compacted sufficiently to ensure that no significant settlement occurs after completion of the investigation.

All test pits that are required to be left open and unattended shall be secured by means of appropriate fencing and danger tape.

At the commencement of excavation, all topsoil shall be stockpiled separately and replaced after completion of the backfilling operation.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service

Provider as per the defined standard format or SARDS interface, if applicable to this CD project.

b) Dynamic Cone Penetration (DCP) Testing

Dynamic Cone Penetration (DCP) testing shall be carried out in accordance with the standard test method. Results of DCP testing shall be produced in a format enabling full assessment of the various pavement layers to be assessed.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface, if applicable for this CD project.

c) Hire of Excavator

Where an excavator is required to excavate the test pits, the Service Provider shall determine the capacity of such plant appropriate to the expected material category and depth of excavation.

The excavation of test pits by mechanical means shall be done in such a manner to prevent any contamination of the specific soil and/or gravel horizons encountered.

d) Transport of Samples to Laboratory

All samples shall be securely fastened, labelled and transported to the laboratory appointed to carry out the required testing. A distinction has been made in the Pricing Schedule between large bags and small bags or cores.

e) Laboratory Testing

Only SANAS accredited laboratories shall be permitted to carry out laboratory testing of materials. All testing shall be carried out in accordance with the methods specified in the relevant test methods.

Provision for the costs of any laboratory testing has been included under specific tests and/or under a Provisional Sum item in the Pricing Schedule.

With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface, if applicable to this CD project.

C3.4.5 Concept Design

This development phase requires the Service Provider to produce multiple concepts (not less than three) for consideration. Each concept shall be complete in context with the purpose of the project within which there may be further smaller refinements. Refinements of a single concept are not considered to be multiple concepts.

The duties to be performed include, but are not limited to, the following:

a) Provide a programme for documentation and for implementation of the training, development and construction works.
b) Include a skills and resources audit report of the local and/or identified Community's academic and occupational skills and the local Targeted Enterprise availability and capabilities.

c) Include a concept training and development programme for the identified Community and local Targeted Enterprises, which is outlined, based on the concept design alternatives.
d) Include a baseline risk assessment and a health and safety specification.
e) Include an operations and maintenance support plan over the service life.
f) Establish the feasibility of satisfying the original scope of works within the original budget, and if not, motivate a revised scope and/or budget.
g) Consultation with the Employer or his authorised representatives.
h) Inspection of the site of the Works.
i) Identify and discuss with the Employer all the technical inputs which will be researched and applied.
j) Consider alternatives and advise the Employer of advantages and disadvantages, including reference to land use and acquisition feasibilities as required by the Employer. To assist the Service Provider with the Land Use and Land Acquisition Feasibilities, the Employer may request the PSP to conduct a Land Audit. This will generally be determined by the complexities evident from the project assessment conducted by the Service Provider and/or from the initial documentation provided by the Employer to the Service Provider.
k) Preliminary investigation, route location and design where any of these are required for determination of feasibility. Included in these can be traffic (including non-motorised transport and pedestrians) densities, road geometry including cross-sections and longitudinal sections, drainage needs, materials availability, pavement requirements, structural requirements. Also establish access, utilities, services and connections required for the design. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface and then analysed using SARDS, if applicable to this CD project.
l) Consultation with authorities having rights or powers of sanction, as well as consultation with the public, project Stakeholders and affected and/or identified Communities.
m) Advice to the Employer as to the need for surveys of any kind, analysis, tests and site or other investigations where such are to be carried out at the Employer's expense including a risk report associated with the need.
n) Searching for, obtaining, investigation and collation of available data, drawings and plans relating to the Works.
o) Investigations, as may be required, of economic and financial implications in relation to the proposals or feasibility studies and the confirmation of the financial sustainability thereof.
p) Advice to the Employer as to regulatory and statutory requirements including environmental issues and management.
q) Produce drawings depicting the designs, particularly those for route alignments. However, they need not contain full design layout details, but must show the basic road geometry and cross-drainage. Full structural drawings are not necessary and only need to show the basic layouts accompanied by loading calculations indicating the type of foundation necessary.
r) Compile a Concept Design report to be submitted at a progress meeting. The report shall, as a minimum, cover the aspects listed under the duties above.
s) Preparing, reporting and presenting the alternatives to the Employer's Regional Gateway Review Committee for project cost higher than R100 million.

C3.4.6 Preliminary Design

The purpose of preliminary design is to develop more than one option for presentation to the Employer for selection of which is the most appropriate based on technical functionality and economic benefit. The selected option(s) will then be further developed in the detailed design phase.

For projects that commence with this design phase, the Service Provider shall, using the findings of the project assessment and investigations or concept design already conducted,

identify problem areas, provide comprehensive evidence that their underlying cause is understood and propose appropriate corrective or reparative remedies. These proposals will accompany others for multiple design methodologies that are considered appropriate to the project including identification of their respective technical inputs. All proposals shall be discussed with the Employer. At least 3 (three) different methodologies must be proposed, not all of which need to include identified remedies. Proposed methodologies should separately deal with elements relating to capacity improvements so that these may be individually developed together with the methodologies so that the Employer is presented with an array of design options from which to make decisions for progression to detailed design.

The duties to be performed include but are not limited to the following:

a) Provide a programme for documentation and implementation of the training, development and construction works.
b) Include a skills and resources audit report of the local and/or identified Community's academic and occupational skills and the local Targeted Enterprise availability and capabilities.
c) Include a preliminary training and development programme for the identified Community and local Targeted Enterprises, which is outlined, based on the preliminary design alternatives.
d) Include a baseline risk assessment and a health and safety specification.
e) Include an operations and maintenance support plan over the service life.
f) Establish the feasibility of satisfying the original scope of works within the original budget, and if not, motivate a revised scope and/or budget.
g) Include a technology (alternatives) options assessment.
h) Include a regulatory due diligence (compliance with various regulations and required statutory permissions impacting this project).
i) Advising the Employer as to the need for any further surveys of any kind, analysis, tests and site or other investigations which may be required and arranging for these to be carried out at the Employer's expense including a risk assessment and sensitivity analysis associated with the need.
j) Advising the Employer regarding environmental requirements and management plans and attending to the same.
k) Advising the Employer, as may be necessary, upon the appointment of and brief to other professional engineers, architects and specialist advisers and arranging such appointments and consultations with such advisers in matters affecting the works.
l) Preparation of preliminary design plans and other drawings in accordance with the Employer's current Codes, Manuals and Guidelines necessary for seeking approval of statutory authorities and beaconing of the road reserve. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface and then analysed using SARDS, if applicable to this CD project.
t) Consultation on technical matters with authorities and interested and affected parties, as well as consultation with the public, project Stakeholders and affected and/or identified Communities.
m) Making modifications to the preliminary design of the works based on, or dictated by, the consultations aforesaid.
n) Identification and reporting on services and owners as well as relocations and/or protection measures required.
o) Submission of estimates of capital and life cycle costs and economic and financial implications in relation to the proposals and the confirmation of the financial sustainability thereof.
p) Conduct a Land Audit as per the LAC Manual of each Route under consideration. The Service Provider must produce a high-level property report, including the land required for material sources. This report must identify at the very least the following:
    i) Property type.
    ii) Ownership type.

iii) Title type.
iv) Informal rights.
v) Informal settlements.
vi) Mining rights.
vii) Real rights (servitudes, etc.).
viii) Jurisdiction of affected non-National Roads.
ix) Traditional (Tribal) Authorities and their jurisdiction.
x) Municipal Authorities.
xi) Affected streets and public places.
xii) Proclaimed forestry, conservation, irrigation, etc. areas.

In addition, the Service Provider must undertake a high-level Land Acquisition cost analysis, inclusive of the land required for material sources.

The Service Provider shall at this stage ensure that relevant one-on-one consultations with affected landowners are conducted including the holders of formal, informal rights and all other rights as defined above. Where land is in the ownership of the State (Municipal, Provincial or National) or other State Authorities, the Service Provider shall attend on such authorities to give notice of the intention to acquire portions of or the whole of such properties. The impact of the routes on such rights must be clearly documented in the report.

Regarding all the above, the Employer may instruct the PSP to assist the Service Provider if it becomes evident that there are complexities that would require specialist input.

The Employer must be advised immediately if there is evidence of unlawful occupation of land along the proposed Routes and on land earmarked for material sources.

q) Compilation and submission of a Preliminary Design Report and if required a Preliminary Materials Report.
r) A separate Geotechnical Report must be submitted where geotechnical investigations are required.
s) A separate Drainage Report will be needed for each Bridge and Major Culvert and shall form part of the first stage submission as described above.
t) Preparing, reporting and presenting the alternatives to the Employer's Regional Gateway Review Committee for project costs higher than R100 million.

Unless the project terminates at the preliminary design stage, drawings produced to depict the various elements of the design methodologies need not follow the exacting standards for final drawings. However, they shall be comprehensive in their detail so that they accurately reflect the design outcomes. The size of drawings is similarly not prescriptive. Structural drawings shall comply with the standards set in the Employer's publication *Code of Procedures for the Planning and Design of Highway and Road Structures in South Africa*. Notwithstanding the aforesaid, sketches and hand-drawn depictions will not be accepted, but they shall be professionally drawn.

C3.4.7 Detailed Design

The Employer will select from the outcome of the project assessment stage or preliminary design phase, the design option and other possible design elements that are to be developed into detailed design.

The duties to be performed include but are not limited to the following:

a) Provide a programme for documentation and implementation of the training, development and construction works.

b) Include a skills and resources audit report of the local and/or identified Community's academic and occupational skills and the local Targeted Enterprise availability and capabilities.
c) Include a detailed training and development programme for the identified Community and local Targeted Enterprises, which is outlined, based on the detailed design.
d) Include a baseline risk assessment and a health and safety specification.
e) Include an operations and maintenance support plan over the service life.
f) Establish the feasibility of satisfying the original scope of works within the original budget, and if not, motivate a revised scope and/or budget.
g) Include a technology (alternatives) options assessment.
h) Include a regulatory due diligence (compliance with various regulations and required statutory permissions impacting this project).
i) Advise the Employer as to the necessity for setting out or staking out the works, establishment of construction beacons.
j) Advise the Employer as to the need for any further surveys of any kind, analysis, tests or other investigations which may be required and arranging for these to be carried out including a risk assessment and sensitivity analysis associated with the need.
k) Advise the Employer regarding environmental requirements and management and attending to same as agreed with the Employer.
l) Preparation of designs inclusive of all calculations, drawings, project specifications and Engineering schedules of quantities in accordance with the requirements of the Employer's current appropriate Codes, Manuals and Guidelines; including labour maximisation/optimisation in all phases of the design as per COTO specifications. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of testing required. The data will need to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface and then analysed using SARDS, if applicable to this CD project:
m) Estimates of the cost of the works, using the unit rates of the Employer's database if applicable.
n) Identify and advise the Employer on communication channels, employment forums and issues impacting on the design.
o) The timeous arrangement for the relocation of any services which may disrupt the construction programme. This may include relocation of services prior to construction stage.
p) Conduct a Detailed Land Audit as per the LAC Manual of the entire project area.

The Employer may instruct the PSP to assist the Service Provider if it becomes evident that there are complexities that require specialist input

With regards to this land audit, the Service Provider must produce a detailed report for each property along the route and all land required for material sources. This report must identify, at the very least, the following:

i) Property type.
ii) Ownership type.
iii) Title type.
iv) Informal rights.
v) Informal settlements and/or illegal occupation of land.
vi) Mining rights.
vii) Real rights (servitudes, etc.).
viii) Jurisdiction of affected non-National Roads.
ix) Traditional (Tribal) Authorities and their jurisdiction.
x) Municipal Authorities.
xi) Affected streets and public places and where such streets and public places may be impacted on and/or closed.
xii) Proclaimed forestry, conservation, irrigation, etc. areas.

The Service Provider shall, at this stage, conduct one-on-one consultations with each landowner affected by the project and with the holders of formal and informal rights and indeed all other rights as defined above. Where land is in the ownership of the

State (Municipal, Provincial or National) or other State Authorities, the Service Provider shall accompany the PSP when meeting with such authorities to deal with aspects raised by such authorities and where such aspects are of a Technical/Design nature. In this regard, careful reference must be made to the formalities as described in the LAC Manual.

It is emphasised that the purpose of this interaction is to reach consensus with each landowner so affected with regards to the impact that the land acquisition will have on his property and to his entitlements and to clearly determine the conditions under which the landowner will be willing to sell the land required.

This is expanded on further in this document below. In this regard, the Employer must be advised immediately if there is evidence of unlawful occupation of land along the proposed route and on land earmarked for material sources.

The revised road reserve must be determined and have the Employer's approval.

The Service Provider shall then compile a detailed Property Report as defined in the LAC Manual and transmit same to the Employer's Project Manager and to the relevant Regional Survey Representative for their consideration and formal approval. Only on approval of the Detailed Property Report will it be transmitted to the PSP who will then commence with the preparation and approval of Land Acquisition Diagrams and the necessary amended Declarations relating to the final road reserve.

q) Submit the necessary design documentation to local and other authorities for approval, if required.
r) Consultation on and incorporation of, where applicable, technical matters with raised by authorities and interested and affected parties.
s) Compilation and submission of a Detailed Design Report and if required a Materials Report.
t) Submission of Economic Feasibility Analysis (where required) and confirm the financial sustainability of the project.

If the project requires only the detail design phase, the Service Provider shall, using the findings of the project assessment and investigations or designs already conducted, identify problem areas, provide comprehensive evidence that their underlying cause is understood and propose appropriate corrective or reparative remedies. The Service Provider shall also identify which elements of the aforesaid publications will be applied and discuss them with the Employer before proceeding with development of the design to finality.

Detail design requires the drafting of a final project specification that will be incorporated into a full tender document adopted from the Employer's pro-forma tender document. A full set of drawings complying with the Employer's latest drawing standards shall be presented for signature. The Service Provider shall be aware of the Employer's procedures for iterative presentations of drawings for approval, signature, archiving and amendment to include the as-built record. The process is also available on the Employer's website www.nra.co.za.

Guidelines for drawings are contained in TMH11: Standard Survey Methods (latest version) published by the Committee of Transport Offices (COTO). This reference contains all the relevant information relating to grid intervals, topographical detailing, symbols, colours, weight, and letter sizes etc. and acts as the standard to be used for draughting drawings for use by a contractor.

C3.4.8 Occupational Health and Safety (OHS) Requirements

The Service Provider shall at all stages of the design development identify elements of the design that are inherently dangerous or hazardous during the construction phase and design in such a manner as to mitigate or eliminate the risk where possible. At the culmination of

each development phase all identified dangers and/or hazards shall be listed and brought to the attention of the Employer and agreed hazards shall be emphasised and given prominence by way of notification on the drawings and separately listed in the respective phase-end reports. They shall appear in the drawings and the tender document for issue to a contractor.

For example, shoring of unstable excavations is the Designer's responsibility to identify and notify of the health and safety risk.

C3.4.9 Environmental Requirements

Throughout the development of the project design the Service Provider shall liaise closely with the appointed EAP as he/she performs the environmental sub-service. It is desirable that the EAP accompanies the Service Provider to the regular progress meetings to ensure accurate reporting on the state of the application for environmental approvals. The compilation of the various Environmental Management Programmes (EMPrs) that the respective relevant authorities require shall be modelled on the Employer's standard Environmental Management Plan with as little deviation from it as possible. Any adaptation or change shall be reported to the Employer for approval and later incorporation into the contract document.

Any cause derived from these EMPrs that require incorporation into the design shall similarly be reported to the Employer for approval.

C3.4.10 Land Requirements

a) Property Report

A comprehensive and detailed Property Report shall be compiled in accordance with the Employer's standard requirements. This Property Report shall deal with all aspects relating to each individual portion of land required for the project, including all material resources and it is emphasised that the procedures as contained in the Land Acquisition Guideline Manual for Consulting Engineers, which is available on the Employer's web page (www.nra.co.za), shall be followed without exception.

With reference to all 'material sources' and where a "Borrow Pit" and/or "Quarry" site is identified for acquisition (permanent or temporary) such site shall be named with reference to its kilometer distance of the road design and pre-fixed with a "L" or "R" e.g. Borrow Pit L29.100.

The Property Report will be considered by the Employer's Project Manager and the Regional Survey Representative. Should the Property Report be found to be incomplete and/or contain erroneous information, it will be returned to the Service Provider for his immediate attention and action. Once the Property Report has been approved by the Employer, it will be sent to the PSP who will conduct checks to discover any errors or omissions.

Although the PSP performs checks on property reports, the responsibility for the completeness and accuracy of property reports lies with the Service Provider. The PSP can identify errors in property reports only insofar as they are reasonably discoverable and will report any such errors found to the Employer's Project Manager and/or Regional Survey Representative as soon as any may be found. The Employer reserves its right to recover the costs of any claims for delays suffered by the Training and Construction Manager in getting access to Site or to portions of the Site that are attributable to the erroneous property reports submitted by the Service Provider. It must be noted that the 9 (nine) month period required to complete the Land Acquisition process to the point where "Site Access" has been achieved cannot commence until a Property Report is complete and correct in all respects. Any delay in correctly completing a Property Report will delay the commencement of the

acquisition process and very often, also delay access to site. Late changes in design have the same effect as submitting incomplete or erroneous Property Reports.

The Service Provider must carefully consider the relevant sections in the LAC Manual that deal specifically with Tribal Land and determine if any land is subject to the authority of a Tribal (Traditional) Authority at the earliest possible time in the Design Process (if this has not already been determined under a previous phase).

Individuals hold informal and community rights over Tribal Land. Consequently, the Service Provider must ensure that he is fully in accordance with the Interim Protection of Informal Land Rights Act, Act 31 of 1996 and the procedures contained therein. These rights are not registered and recorded in the Deeds Office. On-site meetings must therefore be held with the affected communities and their leadership to determine the extent and nature of their rights. The exact impact that the project will have on their rights must be clearly determined in community meetings to avoid conflict at the time that the PSP undertakes the acquisition and determines the compensation due. The Property Report must define each right affected, identify the boundaries and ownership thereof and clearly record all information related to these rights.

The Employer may request the PSP to engage with the Service Provider at an early stage in the Design Process to assist the Service Provider in dealing with complex land rights and to provide specialist input where required. Where the Service Provider is in any doubt concerning how to deal with specific complexities relating to the above, the Service Provider may also discuss these circumstances with the Employer who may then engage the PSP for specialist assistance.

Every 2 (two) months, in each of its Regions, the Employer holds Land Acquisition co-ordination meetings. At these meetings, every project involving Land Acquisition is discussed in detail and problems focused on. The Service Provider shall ensure that a senior representative attends these meetings until the Land Acquisition process has reached the stage where access to site is confirmed.

The Service Provider shall meet with every land property owner whose property or rights therein may be required or impacted upon by the project. Whilst the Service Provider **may not** engage in any negotiations with respect to financial compensation (value) the Service Provider must ensure that each owner is made aware of the extent of land required, and the consequences that the project may have on matters such as the access, boreholes, irrigation system, parking, frontage of buildings and the like, all in accordance with the relevant sections in the LAC Manual. The document that the landowner is required to sign must be carefully completed to minimise any additional issues that may be raised when the PSP engages with the landowner to negotiate the terms of the land acquisition. If the landowner insists on discussing matters relating to compensation, financial loss, legal aspects or any other matter that falls outside of the Service Provider's area of responsibility, the Service Provider must timeously request the Employer for the assistance of the PSP.

Where it is necessary to relocate families and/or individuals situated on land under the control of a Tribal (Traditional) Authority, the Service Provider must engage with the Employer and the PSP as soon as it is possible in the Design Phase to initiate land acquisition in good time. The Service Provider must as soon as possible provide details of notional sites, quitrents and all other details required in the form of Property Reports. The PSP will engage further with the affected families and the Tribal (Traditional) Authority's leadership to conclude a relocation agreement with each family affected. This is most often a lengthy process and consequently poses a material risk to the Employer's programme for the Construction Phase of the project.

The relocation agreement negotiated by the PSP will *inter alia* deal with all aspects relating to the relocation of the occupants of the land including for example:

i) Alternative land.
ii) Acceptance of building plans for the alternative accommodation proposed.
iii) Who will construct the alternative accommodation and by when.
iv) All other relevant matters peculiar to each relocation.

The Employer shall indicate if the occupants of Tribal land are to be relocated under this project, or by another contractor. The Training and Development Works Contract must include the construction of the alternative accommodation, deal with the provision of services, the physical relocation of the family affected and the demolition of the structure(s) from which the occupants are being relocated. The Service Provider is required to supervise such Training and Development Works Contract and attend to all administrative processes associated therewith.

The Service Provider must note that the guidelines contained in the LAC Manual, where applicable to the specific project, constitutes essential information concerning the role and responsibilities of the Service Provider and must be considered by the Service Provider in the pricing of the work.

b) SPLUMA Implications and Duties

i) Introduction

a. The Spatial Planning and Land Use Management Act, Act 16 of 2013 ("SPLUMA Act") commenced from 01 July 2015 and constitutes enabling national legislation.
b. Section 25 of The South African National Roads Agency Limited and National Roads Act, Act No 7 of 1998 (the "SANRAL Act") sets out the powers of the Employer which include:
    i. all strategic planning concerning the South African National Road System; and
    ii. the planning, design, construction, operation, management, control, maintenance and rehabilitation of National Roads for South Africa.

c. In terms of the Constitution of the Republic of South Africa, No. 108 of 1996 (the "Constitution"), the following is relevant:
    i. National Roads do not fall into either Schedule 4 or 5 of the Constitution and are thus a National competency.
    ii. Provincial Planning is an exclusive Provincial competency.
    iii. Municipal Planning is an exclusive Municipal competency.
    iv. Municipalities may enact SPLUMA Planning By-laws (the "Municipal By-laws") to administer Municipal Planning.
    v. Municipal By-laws are binding on **all,** including Organs of State, unless a specific Municipal By-law provides for and expressly stated exemption.

d. With respect to Municipal Planning the following is relevant:
    i. *"Planning, in the context of Municipal affairs, is a term which has assumed a particular, well-established meaning which includes the zoning of land and the establishment of townships. In that context, the term is commonly used to define the control and regulation of the use of land."* ***(Ie Sueur* judgement)** and;
    ii. *"It is, however, true that the functional areas allocated to the various spheres of government are not contained in hermetically sealed compartments. But notwithstanding, they remain distinct from one another. This is the position even in respect of functional areas that share the same wording as roads, planning, sport and others. The distinctiveness lies in the level in which a particular power is exercised."* ***(Gauteng Development Tribunal judgement)***

ii) Impact of SPLUMA on the Employer's Planning Authority

"Land Development" is defined in the SPLUMA Act as the erection of buildings or structures on land or the change of land use. Accordingly, National Road Projects are included in this definition and are subject to the SPLUMA Act.

Section 2 of the SPLUMA Act *inter alia* provides that except as provided for in this Act, no legislation not repealed by this Act may prescribe an alternative or parallel system on Spatial Planning.

Section 33 of the SPLUMA Act provides *inter-alia* that except as provided in this Act, all development applications must be submitted to the Municipality as the authority of first instance; and Section 53 of the SPLUMA Act provides *inter-alia* that the registration of a property resulting from a Land Development Application may not be performed unless the Municipality certifies that all requirements and conditions for approval have been complied with, known as "Municipal Consent".

iii) The need for and Consideration of an Agreement in terms of SPLUMA

Section 30(3): Whilst the relevant Municipality may regard an Authorisation in terms of any other legislation that meets all the requirements set out in the SPLUMA Act or Provincial legislation as an authorisation in terms of SPLUMA, one may argue that the Employer's declaration in terms of Section 40 of the SANRAL Act was an approval in terms of SPLUMA. **This argument may be possible in the context of existing National Roads, but w.r.t new roads, including the upgrading of roads, the widening of roads etc. this is not possible.**

Section 29: A municipality must in terms of this Section consult any Organ of State responsible of administering legislation relating to any aspect of an activity that also requires approval in terms of the SPLUMA Act to co-ordinate activities and give effect to the respective requirements of such legislation and to avoid duplication – Section 29(1).

A municipality, in giving effect to Chapter 3 of the Constitution, may, after consultation with the Organ of the State contemplated in Section 29(1), enter into a written agreement with that Organ of State to avoid duplication in the submission of information or the carrying out of a process relating to any aspect of an activity that also requires authorisation under the SPLUMA Act – Section 29(2); and

After a Municipality has concluded an agreement contemplated in Section 29(2), the relevant Municipal Planning Tribunal ("MPT") may take account of any process authorised under the legislation covered by that agreement as adequate for meeting the requirements of the SPLUMA Act – Section 29(3).

The Employer therefore intends to conclude a Section 29 Agreement in terms of the SPLUMA Act with the Municipalities for its National Road Projects. Accordingly, a draft Proforma Agreement is provided as an Appendix in Part C4.

iv) The Section 29 SPLUMA Agreement

The Employer has, and continues to, engage various state entities including the Department of Rural Development and Land Reform ("DRDLR"), the Department of Co-operative Governance and Traditional Affairs ("CoGTA"), South African Local Government Association ("SALGA") and others to have the draft SPLUMA Agreement adopted as part of the DRDLR's initiative to create National Norms and Standards and Guidelines with respect to the development by the State (in all its forms) of Public Service Infrastructure and in particular Public Service Infrastructure that is in the national interest such as National Roads.

As to the SPLUMA Agreement the following is emphasized:

a. A preamble sets out the context for the agreement.
b. The Agreement deals primarily with the planning impact that the National Road Project (the **"PROJECT"**) will have on the surrounding planning to the proposed **PROJECT**.
c. The statement(s) contained in the SPLUMA Agreement, and which is of material importance is:
    i. where the Municipality expressly confirms that it is satisfied, in as far as such confirmation is required in terms of the SPLUMA Act, Provincial Legislation or the Municipal By-Law, that the Employer's planning and designs for the **PROJECT** in so far as it relates to access and/or acquisitions of severed land and as depicted on the Road Development Plan and Access Plan are adequate and further confirms that no further or additional process(es) relating to the **PROJECT** are required. Such confirmation also extends to land use aspects as contemplated in terms of the SPLUMA Act and the Municipal By-laws;
    ii. further, the Municipality confirms that it is satisfied that the information provided by the Employer in so far as it relates to access and/or acquisitions of severed land and recorded in the SPLUMA Agreement, is/are sufficient for a land development application contemplated in terms of the SPLUMA Act and the Municipal By-Laws.

d. The Agreement then further provides *inter alia* for the incorporation of National Roads into the Municipality Spatial Development Framework and the amendment of the Municipality's Land Use Management Scheme.
e. Further, the agreement expressly provides that the public participation process undertaken by the Employer in terms of National Environmental Management Act, Act No. 107 of 1998 ("NEMA"), is sufficient and satisfactory to satisfy the provisions of the SPLUMA Act and Municipal By-Laws.
f. Records the Employer standing as an Applicant in terms of Section 45(d) of the SPLUMA Act.
g. Deals specifically with a dispute mechanism.
h. Provides for key annexures namely, a Corridor Plan, a Road Development Plan and Access Plan.

v) Service Provider's Obligations w.r.t. the Section 29 SPLUMA Agreement

a. The Service Provider, as an Agent of the Employer, will be required to facilitate the conclusion of the Section 29 SPLUMA Agreement between the Employer and the relevant Municipality(s).
b. The Service Provider will be required to prepare the annexures to the Section 29 SPLUMA Agreement and in this regard, proforma examples are attached as an Appendix in Part C4.
c. The Service Provider will be required to interact with the Employer's PSP with respect to certain key plan(s) relevant to the National Road section being the subject of the **PROJECT**.
d. The above process will entail engagements with all relevant authorities and project Stakeholder(s).
e. The Service Provider will **not** be required to make a formal SPLUMA/Municipal By-law Application **after** the Section 29 SPLUMA Agreement has been concluded.
f. The Section 29 SPLUMA Agreement must be concluded **prior** to the **PROJECT** being tendered for construction.

vi) Process after the Conclusion of the Section 29 SPLUMA Agreement

Whilst the PSP will undertake and submit the formal SPLUMA and/or Municipal By-law application to give effect to the tasks as outlined further below, the Service Provider

may be required to provide certain **PROJECT** related information and plans in support thereof.

a. The PSP will make the requisite application in terms of the SPLUMA Act and the Municipal By-law using Section 29 SPLUMA Agreement as the basis for such application.
b. The PSP will notify the Minister of DRDLR in terms of Section 52 of the SPLUMA Act.
c. Once the MPT has made its decision it may be necessary for the Employer to deal with objections and/or lodge an appeal against the decision of the MPT. In this regard, the Service Provider may be required to provide certain relevant **PROJECT** information and/or evidence in support thereof. The PSP will act for the Employer in such an event.

vii) One or More Section 29 SPLUMA Agreements

Pending the complexities encountered in the design of the **PROJECT(S)**, it may be necessary to conclude more than one Section 29 SPLUMA Agreement.

viii) Design Amendments

It is to be noted that any amendments to the final design of the Road Project will necessitate that an addendum to the Section 29 SPLUMA Agreement be concluded. The Service Provider will be required to facilitate the conclusion of such addendum(s).

ix) Transfer of Access Roads and Declaration through Towns Agreements

The Service Provider is to note that the Section 29 SPLUMA Agreement is to be compiled and concluded in conjunction with the above Agreements.

x) Municipal By-law: Exemption

Certain Municipalities have, and may still introduce, an exemption in their Municipal By-laws for “Public Service Infrastructure” of which National Roads form a part thereof.

In such instances, the nature and context of the Section 29 SPLUMA Agreement may be substantially reduced and where the Section 29 SPLUMA Agreement would simply act as the Road Project Agreement with the Municipality to formalize how the impacts the **PROJECT** on the surrounding areas have been accommodated in the final design.

The Service Provider must accordingly check the Municipality’s By-laws to establish this fact.

C3.4.11 Road Safety Audit

a) The Service Provider shall in terms of the South African Road Safety Audit Manual (Second Edition, May 2012), hereafter referred to as the SARSAM:

i) Develop a Scope of Works for the procurement of the services of a Road Safety Audit Team for **Stages 4** of the Project. The stages and numbering refer to the definitions in SARSAM. Such Scope of Works shall include but are not limited to:
   a. conducting a Project Information Review;
   b. conducting a Site Inspection/s;
   c. producing a Road Safety Audit Report;
   d. issuing the Road Safety Audit Report and discussing the initial findings with the Employer and the Service Provider; and
   e. initiating and conducting a Completion Meeting

   as prescribed in the SARSAM.

ii) Recommend with motivation to the Employer the composition of the Road Safety Audit Team depending on the size and complexity of the project, as prescribed in the SARSAM. Generally, the Road Safety Audit Team will comprise an Audit Team Leader and at least two (2) Audit Team members. The Audit Team Leader is the lead auditor that is responsible for compiling the road safety audit report and representing the audit team in liaising with the Employer and the Service Provider. The Audit Team Member/s is the second auditor that assists in and contributes to the road safety audit. The Audit Team Leader and Member/s must be independent from the Service Provider and must not be under the employ of the Service Provider.

b) The Service Provider must ensure that the minimum requirements of the Audit Team Leader and Members comply with the Employers Road Safety Audit Policy. A copy of the Employer's Road Safety Audit Policy is included in Section C: Appendix I.

c) Once the Road Safety Audit Team is appointed, the Service Provider shall:

i) compile and Issue a Road Safety Audit Brief to the Road Safety Audit Team;
ii) initiate and conduct a Commencement Meeting with the Road Safety Audit Team;
iii) attend a Completion Meeting if requested by the Employer;
iv) review Audit Findings and Recommendations; and
v) compile and issue a Response Report including Risk Assessment of Safety Concerns;

as prescribed in the SARSAM

d) The Service Provider shall implement Design Changes as identified by the Road Safety Audit Team and as agreed to with the Employer, as specified in the Response Report.

e) The Service Provider should provide written feedback on lessons learned and knowledge gained, which should take the form of a short report.

f) With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to identify potential hazardous locations. This will require assessment data to be uploaded into the SARDS portal by Service Provider as per the defined standard format or SARDS interface and then analysed using SARDS, if required for this CD project.

Table C3.4.11: Road Safety Audit Stages

C3.4.12 Project Cost and Feasibility

At the reporting stage of each design development phase a cost estimate of the project, including contract price adjustment (CPA) shall be determined. The cost estimate shall include for the total training and development project and distinguish between the following project components:

a) Theoretical training phase;
b) Practical training phase; and
c) Construction of the Works.

A separate cost estimate shall be compiled for each design option. On completion of the detailed design stage this estimate shall consist of a priced schedule of quantities. This estimate shall include the training and construction manager's probable preliminary and general costs, as well as a provision for contract price adjustment. No allowance is to be made for a contingent sum. However, the inclusion of provisional sums within the schedule of quantities is acceptable.

In addition to a cost estimate of each design being developed, a feasibility analysis shall also be conducted as specified.

C3.4.13 Project Programme and Constructability

At completion of the detailed design phase the Service Provider shall provide a comprehensive logic programme of the theoretical and practical training phases, as well as the construction activities, regardless of the complexity of the project. The programme shall also be used to verify a realistic project implementation and construction period.

The programme shall include the following:

a) A work breakdown structure that identifies all major activities.
b) Scheduled duration for each activity.
c) Linkages between activities that clearly identify sequence, floats and critical path.
d) Simultaneous activities shall be identified as well as priority activities.
e) Time for each activity.
f) A risk assessment schedule with mitigating plans of issues that could prevent the due completion date being met.

Should the Employer require an electronic version of the programme for review purposes, the Service Provider shall supply the programme in a format compatible with the Employer's software.

Throughout the development of the project design the Service Provider shall consider the training and development requirements, as well as the constructability of the design which shall also be reflected in the programme. Typical aspects and/or constraints that should be considered (but not limited to) are Stakeholder and Community engagement, identification and selection of project beneficiaries, training period and requirements, traffic volumes, time of day/year, workspace, weather, safety, environmental issues and land acquisition issues.

C3.4.14 Detailed Design Report

A detailed design report shall be submitted for discussion at the progress meeting. This report shall, as a minimum, cover all the duties as specified under Detail Design including:

a) A skills and resources audit report of the local and/or identified Community's academic and occupational skills and the local Targeted Enterprise availability and capabilities.
b) A detailed training and development programme for the identified Community and local Targeted Enterprises, which is outlined, based on the detailed design.
c) Deviations from standards, e.g. geometric, drainage, road classification, structures, etc.
d) Geometric and capacity improvements.
e) Existing versus proposed X-section.
f) X-section development strategy (20 years).
g) Intersection and/or interchange improvements.
h) Outcome of interaction with project Stakeholders and affected Communities.
i) Relocation of services.
j) Existing pavement condition and accepted pavement design.
k) Materials utilization.
l) Geotechnical improvements.
m) Road furniture improvements.
n) Additional land requirements.
o) Drainage improvements.
p) New structures and any capacity improvements to existing structures (which includes major culverts, lesser culverts, walls, gantries, light masts and buildings).
q) Comprehensive report on Land Acquisition (where the report shall *inter alia* report on the risks associated with gaining timeous access to the land required).

C3.4.15 Phase/Stage Discontinuity

Whenever discontinuity occurs between various design phases within the design development stage, the Service Provider shall review the design of the Service Provider who undertook the previous phase design. The Service Provider shall also take account of any other information and data acquired from its own approved investigations. Should the Service Provider be required to re-design certain portions of the previous phase, the Service Provider shall take full liability for that portion.

Whenever discontinuity between design development stage and/or tender documentation stage and/or contract administration and monitoring of the works stage occurs:

a) The Service Provider shall review the design of the Service Provider who undertook the design development (the Designer) taking account of any other information and data acquired from its own approved investigations. Should the Service Provider be required to re-design certain portions of the original design the Service Provider shall take full liability for that portion.
b) The Designer will be afforded the opportunity to review the final tender documentation compiled by the Service Provider. This is done in recognition of the Designer's ongoing liability for the design and providing the protection to review and comment on the original design and specifications still being appropriate for the prevailing circumstances and/or conditions. In addition, the Designer will be provided with the opportunity to inspect the construction works periodically to ensure his/her professional obligations are not being compromised. Any visit shall be in the company of the Service Provider appointed for construction monitoring. The frequency of any such inspections shall be appropriate to the scope and scale of the Works.

C3.4.16 Measurement and Payment

Item	Description		Unit
3.4.1	**Concept Design**		
	(a)	Road Works	Lump Sum (LS)
	(b)	Structures	Lump Sum (LS)
	(c)	Electrical	Lump Sum (LS)
	(d)	Buildings	Lump Sum (LS)
	(e)	Mechanical	Lump Sum (LS)
	(f)	Other	Lump Sum (LS)

Item	Description		Unit
3.4.2	**Preliminary Design**		
	(a)	Road Works	Lump Sum (LS)
	(b)	Structures	Lump Sum (LS)
	(c)	Electrical	Lump Sum (LS)
	(d)	Buildings	Lump Sum (LS)
	(e)	Mechanical	Lump Sum (LS)
	(f)	Other	Lump Sum (LS)

Item	Description		Unit
3.4.3	**Detail Design**		
	(a)	Road Works	Lump Sum (LS)
	(b)	Structures	Lump Sum (LS)
	(c)	Electrical	Lump Sum (LS)
	(d)	Buildings	Lump Sum (LS)
	(e)	Mechanical	Lump Sum (LS)
	(f)	Other	Lump Sum (LS)

The units of measurement under items 3.4.1 to 3.4.3 shall be the Lump Sum. The Lump Sums tendered shall include full compensation for all duties and requirements associated with the specific design stage as specified in Clauses C3.1.4, C3.4.3 to C3.4.7, C3.4.12 and C3.4.13.

The Service Provider shall be entitled to render interim monthly accounts, based on progress measured against the approved programme, for up to 70% of the Lump Sum for the specific stage. A further 20% of the Lump Sum is claimable upon delivery of the respective draft report. The remaining 10% of the Lump Sum is claimable upon delivery of the approved respective final report.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description		Unit
3.4.4	**Disbursements**		
	(a)	Concept design	Lump Sum (LS)
	(b)	Preliminary design	Lump Sum (LS)
	(c)	Detailed design	Lump Sum (LS)

The unit of measurement under items 3.4.4(a) to (c) shall be the Lump Sum. The Lump Sums tendered shall include full compensation for all disbursements, materials, printing, travel (including toll fees) and subsistence and all other costs associated with the relevant design phase.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description		Unit
3.4.5	**Land Requirements**		
	(a)	Compilation of Property Report for each individual property (or portion thereof) required.	Number
	(b)	Conclusion of SPLUMA Agreements with Municipalities.	Number
	(c)	Conclusion of addenda to SPLUMA Agreements.	Number

The unit of measurement under item 3.4.5 shall be the Number.

The rate tendered under sub-item 3.4.5(a) shall include all costs for sourcing and providing all the information and the compilation of property reports as specified in Clause C3.4.10(a).

The rate tendered under sub-items 3.4.5(b) and (c) shall include all costs for sourcing and providing all information, facilitation with relevant Stakeholders to enable the conclusion of the SPLUMA Agreement(s), or addendums to the SPLUMA Agreement(s).

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.4.6	**Road Safety Audit: Feasibility and/or Preliminary and/or Detail Design**		
	(a)	Road Safety Audit	Prime Cost (PC)
	(b)	Handling costs i.r.o. sub-item 3.4.6(a)	Lump Sum (LS)

The Prime Cost under sub-item 3.4.6(a) shall be paid in accordance with Clause C2.1.8.

The unit of measurement for sub-item 3.4.6(b) shall be the Lump Sum. The Lump Sum tendered shall include for all costs associated with the planning, scheduling, compilation of quotation and/or tender documentation, issuing of up to 20 (twenty) quotation and/or tender documents in electronic format and evaluation for the procurement and management of the sub-service including administrative cost, handling fees and profit.

Contract price adjustment shall be applicable to sub-item 3.4.6(b) in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.4.7	**Road Safety Audit: Construction and/or Pre-opening**		
	(a)	Road Safety Audit	Prime Cost (PC)
	(b)	Handling costs i.r.o. sub-item 3.4.6(a)	Lump Sum (LS)

The Prime Cost under sub-item 3.4.7(a) shall be paid in accordance with Clause C2.1.8.

The unit of measurement for sub-item 3.4.7(b) shall be the Lump Sum. The Lump Sum tendered shall include for all costs associated with the planning, scheduling, compilation of quotation and/or tender documentation, issuing of up to 20 (twenty) quotation and/or tender documents in electronic format and evaluation for the procurement and management of the sub-service including administrative cost, handling fees and profit.

Contract price adjustment shall be applicable to sub-item 3.4.7(b) in accordance with Clause C2.1.6.

Item	Description	Unit
3.4.8	**Occupational Health and Safety Requirements**	**Lump Sum (LS)**

The unit of measurement under pay item 3.4.8 shall be the Lump Sum. The Lump Sum tendered shall include for all costs associated with compliance with the Construction Regulations of the Occupational Health and Safety Act (No. 85 of 1993) as relevant for the design and documentation of the Training and Development Works Contract.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description		Unit
3.4.9	**Training**		
	(a)	Service Provider's staff and Targeted Enterprises.	
		(i) Assistant project Leader (APL	Provisional Sum (PS)
		(ii) Assistant Design Specialist(s) (ADS)	Provisional sum (PS)
		(iii) Disbursements	Prime Cost (PC)
	(b)	Employer's Trainees	
		(i) Candidate engineers	Person Month
		(ii) Students receiving experiential training	Person Month
		(iii) Student stipend	Provisional Sum (PS)

The Provisional Sum under for sub-items 3.4.9(a)(i) and (a)(ii) shall include full compensation for the remuneration of the Assistant Project Leader and Assistant Design Specialist(s) but shall be limited to 25% (twenty-five percent) of Total Annual Cost of Employment (TACE) of the individuals approved as assistants.

The Prime Cost sum under item 3.4.9(a)(iii) is to cover the disbursement cost of the Assistant Project Leader and Assistant Design Specialist(s) to attend meetings.

The units of measurement under sub-item 3.4.9(b)(i) and (b)(ii) shall be the Person Month. The rates tendered shall include full compensation for the Service Provider's costs to provide training to the different categories of trainees inclusive of all costs to communicate with the Employer and any other body or organisation in respect of work assigned to the trainees as specified in Clause C3.1.20. The rate tendered shall also include telephone calls and charges, stationery and information technology hardware, software, connection or license costs and for lost production, profits and all other incidentals.

The rate for sub-item 3.4.9(b)(iii) shall also include all administrative and overhead costs related to stipends to students.

The Provisional Sum under item 3.4.9(b)(iii) is to cover the monthly stipends as prescribed by the Employer to be paid to the students.

The Provisional Sum items shall be paid in accordance with Clause C2.1.8.

Pro-rata payments shall be made for partial months for training provided based on a 23 (twenty-three) working day month.

Contract price adjustment shall be applicable to sub-items 3.4.9(b)(i) and (b)(ii) in accordance with Clause C2.1.6.

Item	Description		Unit
3.4.10	**Phase or Stage Discontinuity**		
	(a)	Review of previous phase or stage.	Lump Sum (LS
	(b)	Review of tender documentation by original Designer.	Prime Cost (PC)
	(c)	Visit to construction site by original Designer	Prime Cost (PC)
	(d)	Handling cost i.r.o. sub-items 3.4.10(b) and 3.4.10(c).	Percentage (%)

The unit of measurement under sub-item 3.4.10(a) shall be the Lump Sum. The Lump Sum tendered shall be full compensation for the time and cost to review the respective documents including all travel and subsistence costs, the costs of all written, telephonic and electronic communications and all other incidentals necessary to read, understand, create and express opinions and decisions from them, regardless of their quantity or complexity. It should also include the submission of a report addressing the full review.

The Prime Cost sum under sub-item 3.4.10(b) is to cover full compensation for the time and cost to review the respective documents including all travel and subsistence costs, the costs of all written, telephonic and electronic communications and all other incidentals necessary to read, understand, create and express opinions and decisions from them, regardless of their quantity or complexity. It should also include the submission of a report addressing the full review.

The Prime Cost sum under sub-item 3.4.10(c) is to cover all costs by the original Designer to visit the site.

The Prime Costs shall be paid in accordance with Clause C2.1.8.

The unit of measurement under sub-item 3.4.10(d) shall be a Percentage (%). The rate tendered (%) is for the mark-up on the disbursement costs incurred by the Service Provider. It shall also include for all costs associated with compliance with the Construction Regulations of the Occupational Health and Safety Act (No. 85 of 1993) as relevant for the design of the Works during the construction phase as well as the Designer's obligations with respect to the relevant professional engineers' legislation.

Contract price adjustment shall be applicable to sub-item 3.4.10(a) in accordance with Clause C2.1.6.

Item	Description		Unit
3.4.11	**Field Work for Identification of Material Sources by Service Provider**		
	(a)	Personnel Cost	Provisional Sum (PS)
	(b)	Disbursements	Prime Cost (PC)
	(c)	Handling costs i.r.o. sub-item 3.4.10(b)	Percentage (%)

The Provisional Sum under sub-item 3.4.11(a) is to cover all fieldwork undertaken by the Service Provider related to the identification of material sources as specified in Clause C3.4.3. Payment under this Provisional Sum will be made in accordance with the hourly rates provided under payment items for additional duties by the Service Provider in Section C3.8.

The Prime Cost sum under sub-item 3.4.11(b) is to cover the disbursement cost of personnel, accommodation, travel and subsistence associated with the undertaking of additional duties. Vehicle travel costs will be reimbursed in accordance with Section C3.8.

The Prime Cost shall be paid in accordance with Clause C2.1.8.

The unit of measurement under sub-item 3.4.11(c) is a percentage (%). The rate tendered (%) is for the mark-up on the disbursement costs incurred by the Service Provider.

Item	**Description**		**Unit**
3.4.12	**Investigation and sampling for roadbed, borrow pits, quarries, structure founding materials and other areas, e.g. cuttings.**		
	(a)	Establishment of personnel and equipment for testing pitting	Lump Sum (LS)
	(b)	Hire and operation of excavator	Prime Cost (PC)
	(c)	Handling costs i.r.o. sub-item 3.4.11(b)	Percentage (%)
	(d)	Test pit excavation by hand	Number
	(e)	Sampling and profiling of test pits	Number
	(f)	DCP	Number
	(g)	Transport of samples to laboratory	
		(i) Large bags	Number
		(ii) Small bags	Number

The unit of measurement under pay item 3.4.12(a) shall be the Lump Sum. The Lump Sum tendered shall cover all costs associated with establishing an appropriately sized team on site to carry out the scheduled investigation.

The unit of measurement under pay item 3.4.12(b) shall be a Prime Cost sum. The Prime Cost item shall be paid in accordance with Clause C2.1.8.

The unit of measurement under pay item 3.4.12(c) shall be a percentage (%). The rate tendered (%) is a percentage of the amount spent under item 3.4.12(b) and shall include full compensation for obtaining quotations from local plant hire companies in accordance with the Employer's standard requirements, for handling fees and profits of the Service Provider.

The unit of measurement under pay item 3.4.12(d) shall be the Number of test pits excavated by hand labour (excluding the sampling and profiling and/or photography) and backfilled at locations identified by the Design Specialist. The rate tendered shall include all costs including travel, labour, accommodation, subsistence, plant, materials, etc. associated with the excavation and safeguarding of test pits and subsequent backfilling thereof as specified.

The unit of measurement under pay items 3.4.12(e) shall be the Number of test pits profiled and/or photographed by the Design Specialist and sampled (either dug by mechanical

means or hand labour) irrespective of the number of horizons encountered. The rate tendered shall include all costs including travel, labour, accommodation, subsistence, plant, materials, sample bags, etc. associated with the profiling and sampling of test pits.

The unit of measurement under pay item 3.4.12(f) shall be the Number of DCP tests at locations identified by the Design Specialist. The rate tendered shall include drilling through any "refusal" layers, completing the test and submission of the DCP analysis to the Design Specialist.

The unit of measurement under pay item 3.4.12(g) shall be the Number of large bags and/or small bags transported. The rate tendered shall include all costs to transport the bags to the laboratory selected to carry out the testing, irrespective of distance.

Contract price adjustment shall be applicable to all sub-items, excluding sub-items 3.3.12(b) and (c), in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.4.13	**Laboratory Testing and Reporting**		
	(a)	Standard tests as listed in the Pricing Schedule	Number
	(b)	Laboratory testing where no schedule is available, or specialised testing.	Prime Cost (PC)
	(c)	Handling costs i.r.o. sub-item 3.4.12(b)	Percentage (%)

The unit of measurement under item 3.4.13(a) shall be the Number of tests prescribed by the Design Specialist and carried out by the laboratory. The rate tendered shall cover all costs associated with completing the individual tests and shall include all calculations and reporting. Any tests proven to be erroneous shall not be paid for.

The unit of measurement under item 3.4.13(b) shall be a Prime Cost sum. The Service Provider shall identify the type and estimated quantity of tests required and shall compile a quotation document in accordance with the Employer's standard requirements and policy for procuring the relevant service. The Prime Cost item shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.4.13(c) is a percentage (%). The rate tendered (%) is a percentage of the amount spent under item 3.4.13(b) and shall include full compensation for all costs of the Service Provider as specified.

Where the prior identification of materials testing requirements is not possible, a Provisional Sum has been included in the Pricing Schedule for the procurement of such services. Where testing is carried out under a Provisional Sum the percentage handling fee tendered in the Pricing Schedule shall include for all the Service Provider's costs associated with:

a) compiling a schedule of all envisaged work;
b) production of a document for procurement purposes (including printing etc.);
c) calling for quotations or tenders;
d) evaluation of quotations or tenders received and recommendations to the Employer;
e) handling fees; and
f) profit.

Procurement of such services shall be in accordance with Clause C3.1.12.

Contract price adjustment shall be applicable to sub-item 3.4.13(a) in accordance with Clause C2.1.6.

Item	Description		Unit
3.4.14	**Protection, removal, re-alignment, relocation and replacement of services prior to Construction Phase**		
	(a)	Services	Prime Cost (PC)
	(b)	Handling costs i.r.o. sub-item 3.4.14(a)	Percentage (%)

The Prime Cost sum under item 3.4.14(a) shall be paid in accordance with the provisions of Clause C2.1.8. The Prime Cost sum is to cover full compensation for the protection, removal, re-alignment, relocation and replacement of services using specialised equipment in urban areas. If the work is to be performed by the service owner, the amount invoiced by the service owner shall be paid and a Works Authorisation submitted.

The unit of measurement under item 3.4.14(b) shall be a percentage (%). The rate tendered (%) shall include full compensation for the handling cost in respect of sub-item 3.4.14(a).

Item	Description	Unit
3.4.15	**Employer's Gateway Review Process**	**Lump Sum (LS)**

The unit of measurement under item 3.4.15 shall be the Lump Sum. The Lump Sum tendered shall include full compensation for time related costs, all disbursements, materials, printing and all other costs associated with presenting the project concept or preliminary alternatives (whichever is applicable) to the Employer's Gateway Review team, before commencing with Detail Design.

C3.5 TENDER DOCUMENTATION

C3.5.1 Scope

This section covers the requirements and process for the compilation of tender documentation and invitation to tender for the Training and Development Works Contract.

C3.5.2 Tender Documentation

a) Nature of the Contract

The Training and Development Works Contract shall predominantly be a training and construction management type of contract. A Training and Construction Manager shall be responsible to provide theoretical and practical training to identified and selected beneficiaries of the Community Development project, after which he shall oversee the construction of the work in a managing and mentoring capacity.

At least 80% to 90% of the construction amount shall be undertaken by Targeted Enterprises (beneficiaries of the project), which shall be sub-contracted to the Training and Construction Manager.

b) Tender Document Volumes

The following documents shall form the Tender Documents for the Training and Development Works Contract:

i) **VOLUME 1:**

The Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (1999), published by the Federation Internationale des Ingenieurs-Conseils (FIDIC) which the Tenderer shall purchase himself.

ii) **VOLUME 2:**

The COTO Standard Specifications for Road and Bridge Works for South African Road Authorities (Draft Standard October 2020 edition), issued by the Committee of Transport Officials which the Tenderer shall obtain himself.

iii) **VOLUME 3:**

The Project Document, containing the tender notice, Conditions of Tender, Tender Data, Returnable Schedules, General and Particular Conditions of Contract, Project Specifications, Pricing Schedule, Form of Offer and Project Information issued by the Employer.

The Conditions of Tender are the Standard Conditions of Tender as contained in Annexure C of the Standard for Uniformity in Engineering and Construction Works Contracts, August 2019: Standard Conditions of Tender, document, which the Tenderer may download from the CIDB website.

This volume may also include the details of the Materials Investigation and Utilisation Information, and the Environmental Management Plan Report, if they can be accommodated in this volume.

iv) **VOLUME 4:** The Road Works Drawings

Volume 4 contains the drawings for roadworks and for other work included in the contract, but it does not contain the structural drawings. SANRAL's standard/typical drawings for roadworks may also be part of this volume if applicable to this CD Project.)

v) **VOLUME 5: The Structural Drawings**

Volume 5 contains the drawings for bridge and other structural works included in the contract. SANRAL's standard/typical drawings for structures may also be part of this volume if applicable to this CD Project.

If a project requires a few drawings of mixed type e.g., roadworks, structures and other elements like fencing, lighting, road signs etc., only one volume is required and shall be numbered Volume 4 or 5, depending on which is the predominant section. The relevant standard detail drawings shall also be included in this single volume.

vi) **VOLUME 6: Materials Investigation and Utilisation**

Volume 6 contains information about the materials investigation undertaken by or on behalf of the Employer, together with directives and recommendations on the utilisation of such materials. This volume shall not be prescriptive. In consultation with the Regional Project Engineer, this volume may be incorporated into Volume 3 depending on the nature of the project and the quantity of information in the volumes.

vii) **VOLUME 7: Environmental Management Plan Report**

Volume 7 contains the Environmental Management Plan, Reports and Approvals for the project.

Due to the nature of the contract, the document shall comprise a hybrid of specifications, with sections that are tailor made for the training and development component of the project and sections based on Volume 2 for the construction of the works.

C3.5.3 Compilation of Final Tender Document

The Service Provider shall adhere to the following process:

a) Compile and submit draft tender documentation for discussion with the Employer.
b) Following the discussion of the draft documentation, the Service Provider shall:
   i) compile final documents incorporating all the amendments arising from the discussion;
   ii) compile and write the requisite number of complete sets of documents on a flash drive with the standard cover detail imprinted on the flash drive.;
   iii) prepare the requisite number of paper copies of the complete set of the tender document;
   iv) deliver the flash drive and paper copies to the Employer's regional office before the tender document availability date specified in the Tender Notice and Invitation to Tender.

If the draft documentation is of sub-standard and/or poor quality, the above-mentioned process will be repeated. In such circumstances, the additional time spent by the Employer shall be paid for by the Service Provider as specified under Additional Duties.

C3.5.4 Tender Advertisement

The Service Provider shall prepare the tender advertisement and submit it to the Employer who will place the tender advertisement on the required platforms.

C3.5.5 Measurement and Payment

Item	Description		Unit
3.5.1	**Tender Documentation**		
	(a)	Preparation of tender documentation.	Lump sum (LS)
	(b)	Disbursements	Lump Sum (LS)
	(c)	Tender Documents on flash drive	Number (No)

The unit of measurement under pay item 3.5.1(a) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for time-related costs associated with the compilation of the draft tender documents, discussion and meetings with the Employer and subsequent finalisation of the tender documentation.

The unit of measurement for pay item 3.5.1(b) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all disbursements, materials, printing and all other costs associated with compilation of the draft tender documents, discussion and meetings with the Employer and subsequent finalisation of the tender documentation.

The unit of measurement under pay item 3.5.1(c) shall be the Number. The rate tendered shall include for all costs associated with the compilation and writing of a flash drive of each full set of final tender documents and shall include for all expenditure on labour and materials, communication, postage and packaging incurred by the Service Provider.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

C3.6 CLARIFICATION MEETING, TENDER PERIOD AND TENDER EVALUATION

C3.6.1 Scope

This section covers the requirements and process for the Training and Construction Managers' clarification meeting, tender period and evaluation of tenders received for the Training and Development Works Contract.

C3.6.2 Clarification Meeting

The Service Provider shall arrange and conduct a compulsory clarification meeting for prospective tenderers for the Training and Development Works Contract in accordance with the Employer's standard requirements, which shall, inter alia, include the following:

a) Acquiring a suitable venue and provision of refreshments.
b) If required, arrange a coach at the venue for the safe transport of prospective tenderers to inspect the site.
c) Preparing the agenda and all necessary visual aids, including sufficient copies of Form A1: Certificate of Attendance at Clarification Meeting.
d) Compiling a clarification meeting information booklet for distribution to tenderers (Volume 8). Where a site inspection is required, sufficient preparation shall be made on the site for easy reference of important aspects of the project, e.g. limits of the contract, location of borrow pits, bridge sites, display of core samples, etc.
e) Providing sufficient attendance register forms.
f) Chairing the meeting.
g) Recording minutes of the meeting.
h) Attending to any queries or points of clarification requested by tenderers during the clarification meeting.
i) The proceedings shall start strictly at the time as advertised. Only then will the Service Provider circulate the Attendance Register for completion. During this time, prospective tenderers may enter the venue. On completion of the attendance register by all present the Service Provider will:
    i) confirm that all present have completed and signed the attendance register;
    ii) ensure that the date of the Inspection or Meeting is recorded on the Attendance Register;
    iii) cross out any unused space below the last entry;
    iv) write his name and sign the Attendance Register in the appropriate places; and
    v) commence with the meeting and inform any late arrivals that their tender submission shall be regarded as non-responsive.
j) The Service Provider shall then allow the Employer’s Project Manager to open the meeting by introducing herself/himself and welcoming all present. The Employer’s Project Manager will introduce the Employer's personnel, other Stakeholders, if any, (for example, a Provincial Government representative) and the Service Provider. He may then hand it over to the Service Provider who will, thereafter, conduct the meeting.
k) Present the Agenda for the meeting and the arrangements for the day.
l) Describe the work with as much detail as is required for specific items or operations.
m) Announce any amendments made to the tender documents.
n) Invite questions.
o) Ensure those present complete and sign the “FORM A: CERTIFICATE OF TENDERER'S VISIT TO THE SITE" and have it signed by the Employer's Project Manager. This form must only be signed after the completion of the site inspection and before the closure of the meeting.
p) The estimate for the cost of the works shall not be divulged.

C3.6.3 Tender Period

The Service Provider shall communicate, through the Employer’s Procurement Department, with all tenderers during the tender period in accordance with the Conditions of Tender for the Training and Development Works Contract. The actions below need to be followed:

a) Compile, for distribution by the Employer's Procurement Department, minutes of the clarification meeting as an addendum at least 5 (five) working days before the date and time of tender closure.
b) Attend to any technical queries or points of clarification requested by tenderers.
c) Compile, for distribution by the Employer's Procurement Department, a confirmation of receipt by all tenderers of any addenda to the Tender Document.
d) Inform and obtain approval from the Employer of any unresolved enquiries, potential alternative proposals of which notice has been received from tenderers and changes to the date for submission of tenders.

C3.6.4 Tender Opening and Tender Evaluation

The Service Provider shall be represented at the opening of tenders for the Training and Development Works Contract that shall take place at the Employer's relevant Regional office. Copies of the Tender Documents shall then be taken (after signing the receipt thereof) by the Service Provider for tender evaluation and the original Tender Documents shall remain with the Employer.

The Service Provider shall evaluate all tenders received and compile a Tender Evaluation Report, including recommendations within 14 (fourteen) calendar days after the date of tender closure. During tender evaluation, the Service Provider shall:

a) Assess all tenders received with respect to responsiveness.
b) Identify and call for any additional information that may be required from tenderers in terms of the Conditions of Tender for the Training and Development Works Contract and ensure that the replies are considered in the evaluation process.
c) Advise tenderers, in terms of Conditions of Tender, of any arithmetical, or other corrections made to errors in the extension of rates and/or totals in their tenders and the effect of such corrections and receive written acceptance of such corrections.
d) Identify imbalanced rates and request acceptable explanations and/or adjustments thereof in terms of Conditions of Tender, which shall be considered in the tender evaluation process.
e) Check and assess the B-BBEE scorecard of all competitive tenderers.
f) Make available to the Employer, 1 (one) electronic copy of the Pricing Schedule of the lowest 2 (two) responsive tenders.

The Service Provider shall, during the tender evaluation, liaise closely with the Employer with respect to any possible disqualification of tenders or issues of a substantive nature identified prior to submission of the Tender Evaluation Report.

The Tender Evaluation Report shall conform to the requirement of the Employer's pro-forma document with respect to content and format. Two (2) hard copies as well as 1 (one) electronic copy of the Tender Evaluation Report shall be submitted to the Employer on or before the date specified in Clause C3.1.9.

C3.6.5 Alternative Tenders

The Employer promotes the submission of appropriate and innovative alternatives for the Training and Development Works Contract. The Service Provider shall liaise closely with the Employer as to the acceptability or otherwise of the principles of any alternative tenders proposed by a tenderer during the tender period.

The Service Provider shall present the analysis of alternative tenders along with recommendations in the Tender Evaluation Report. Assessment and evaluation of alternative tenders pertaining to, for example, alternative seal or asphalt types, changes to contract period or such like shall not be subject to additional payment.

In cases where an alternative tender requires detailed analysis, e.g. design checks, the Service Provider shall submit a motivation, together with a cost estimate, to the Employer for

approval prior to commencing with any additional detailed analysis. A cost estimate shall be based on rates tendered in accordance with Section C3.8.

C3.6.6 Contract Documents for the Works

The Service Provider shall, within 14 (fourteen) days of the date of the Letter of Acceptance, prepare and submit 2 (two) sets of contract documents for signature. These documents shall be prepared in accordance with the requirements listed in the Employer's pro-forma document. One (1) electronic copy in pdf format of a fully signed (by all parties) contract shall also be submitted. The number of additional sets of contract documents for use by the Engineer and his site staff shall be at the discretion of the Service Provider.

The following shall be bound at the back of Volume 3, or bound together as a separate volume together with a table of contents:

a) All addenda issued, together with proof of receipt, completed and signed by the successful tenderer.
b) All letters, statements and documents submitted by the successful tenderer with his tender.
c) All correspondence between the Service Provider and the successful tenderer prior to tender acceptance.
d) The Employer's Letter of Acceptance of tender.
e) The Contractor's Letter of Acceptance, including any conditions.

The contract documents shall comprise all the documents mentioned above, together with Volumes 1 and 2 and the performance guarantee, which shall remain separate documents.

The Engineer shall assess the performance guarantee provided by the Training and Construction Manager for conformance with the pro-forma wording in the tender documentation and if satisfied, shall thereafter submit it to the Employer for safe keeping.

C3.6.7 Measurement and Payment

Item	**Description**		**Unit**
3.6.1	**Clarification Meeting and Tender Period**		
	(a)	Service Provider's cost	Lump Sum (LS)
	(b)	Hiring of venue, providing refreshments and coach (if required)	Prime Cost (PC)
	(c)	Handling costs i.r.o. sub-item 3.6.1(b)	Percentage (%)

The unit of measurement under sub-item 3.6.1(a) shall be the Lump Sum. The Lump Sum tendered shall include all costs (excluding those for which a Prime Cost sum has been provided) incurred by the Service Provider with respect to the duties for the clarification meeting and tender period as specified.

The Prime Cost sum under item 3.6.1(b) shall be paid in accordance with Clause C2.1.8.

The unit of measurement under sub-item 3.6.1(c) shall be a percentage (%). The rate tendered (%) shall include full compensation for the handling costs in respect of sub-item 3.6.1(b).

Contract price adjustment shall be applicable to sub-item 3.6.1(a) in accordance with Clause C2.1.6.

Item	Description		Unit
3.6.2	**Tender Evaluation**		
	(a)	Tender evaluation and report	Lump Sum (LS)
	(b)	Disbursements	Lump Sum (LS)

The unit of measurement under item 3.6.2(a) shall be the Lump Sum. The Lump Sum shall include full compensation for time-related costs associated with the evaluation of the tender and compilation of tender report.

The unit of measurement under item 3.6.2(b) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all disbursements, materials, printing and all other costs associated with the evaluation of the tender and compilation of a tender report and the submission to SANRAL, 1 (one) electronic copy of the Pricing Schedule of the lowest 2 (two) responsive tenders.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description	Unit
3.6.3	**Preparation of Training and Development Works Contract Documents**	**Lump Sum (LS)**

The unit of measurement for pay item 3.6.3 shall be the Lump Sum. The Lump Sum tendered shall be for the preparation of 2 (two) Contract Documents for signature by the Employer and the appointed Training and Construction Manager for the Works in accordance with Clause C3.4.6 and 4 (four) additional sets for use by the Employer (1 off), Training and Construction Manager (1 off) and Engineer (2 off) and provide an electronic copy of the signed Contract Documents on a flash drive.

The Lump Sum tendered shall also include for all expenditure on labour, materials, communication, postage and packing incurred by the Service Provider in the production and delivery of the documents. Payment of the Lump Sum will be made on receipt of 2 (two) copies for signature and 4 (four) additional copies of the Contract Documents and an electronic copy of the signed Contract Documents on a flash drive, as specified, by the Employer. The cost of producing any additional copies for use by the Service Provider shall be deemed to be included in the Lump Sum tendered for this item.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

C3.7 ADMINISTRATION AND MONITORING OF THE TRAINING AND DEVELOPMENT WORKS CONTRACT

C3.7.1 Scope

This section covers the duties and obligations of the Service Provider in the provision of the Engineer and site supervisory staff for the administration, construction monitoring and measurement of the Works carried out by the Training and Construction Manager appointed by the Employer during the original Training and Development Works Contract duration, extended duration and including prolonged site stoppages not under the control of the Employer (i.e. Business Rescue or Community unrest).

C3.7.2 Administration and Monitoring

The appointed Engineer for the project shall be that person listed in the tender as the Contracts Engineer, who shall be authorized by the Service Provider to carry out the work intended by the specifications and the duties required by the FIDIC general conditions of contract and other specifications tailor made for the Training and Development Works Contract.

a) Assistance and Support to the Training and Construction Manager

The Employer, Service Provider and the Training and Construction Manager are co-responsible for successful implementation of the Employer's training and development goals for Targeted Enterprises and the identified Community. The Service Provider shall thus assist and support the Training and Construction Manager by executing the following:

i) Make recommendations to the Construction Manager in the identification and structuring of the work packages to be sub-contracted to Targeted Enterprises and agree to the scope and extent of the work packages;
ii) Approve the Project Database(s) compiled by the Service Provider from which Targeted Enterprises will be selected to participate in the project;
iii) Approve selection procedures, tender procedures, tender documents, tender submission requirements and adjudication processes for the sub-contracting of Targeted Enterprises;
iv) Review all tender adjudication reports and monitor that the criteria and procedures applied by the Construction Manager to sub-contract Targeted Enterprises are executed in a fair and transparent manner and are within the Employer's and Government's Supply Chain Management Policies;
v) Approve sub-contract agreements and ensure that the conditions of sub-contracting with Targeted Enterprises are fair and transparent and within the prescripts of the contract requirements;
vi) Verify that the Project Database(s) compiled by the Service Provider from which Targeted Enterprises' labour will be employed is updated prior to every new labour intake;
vii) Monitor that the criteria and procedures applied by the Construction Manager and the Targeted Enterprises to employ labour are executed in a fair and transparent manner and is within the contract requirements;
viii) Monitor that the conditions of employment of the Construction Manager and the Targeted Enterprises' labour are applied in a fair and transparent manner and within the prescripts of the current and relevant Labour Legislation;

b) Monitoring of the Training and Development Component

For the duration of the theoretical and practical training of project beneficiaries, as well as during the mentoring (construction) phase, the Engineer shall:

i) Visit the classroom, training facility or site at least 2 (two) times a month on separate occasions.

a. The first monthly visit shall be to peruse the training material provided by the Training and Construction Manager to Learners, monitor the progress of Learners, engage with Learners to establish the effectiveness and quality of the learning experience and discuss progress and challenges with the Construction Manager.
b. Once Learners have become sub-contractors to the Construction Manager for the construction of the Works under his mentorship, the first monthly meeting shall also entail a meeting with all the SMME sub-contractors (project beneficiaries).
c. The second monthly visit shall be to meet with the Employer and the Training and Construction Manager to discuss project progress and challenges.

ii) Confirm that the Training and Construction Manager's Practitioners, Assessors and Moderators are accredited and registered with the Construction Education Training Authority (CETA) to present the relevant Unit Standards.
iii) Confirm that the Training and Construction Manager's Mentors and Supervisory staff have the necessary experience and that an adequate number of Mentors and Supervisory staff is available to mentor and oversee the work of the SMME subcontractors.
iv) Monitor and continuously make recommendations to the Construction Manager in the identification of the training requirements of Targeted Enterprises and their labour and approve the proposed training programmes.
v) Monitor the management and mentoring of Targeted Enterprise sub-contracts and ensure that conditions such as the application of penalties, etc. are applied in a fair and transparent manner and within the prescripts of the agreement, including signing off a monthly report agreed with each Targeted Enterprise sub-contractor on mentoring outcomes and further needs identified.
vi) Monitor that training, development and support programmes, which the Construction Manager is committed to, are implemented and executed as intended.
vii) Compile a monthly Training and Development Progress Report, which will outline the progress made in reaching the training and developmental goals set for the CD project.

c) Fulfilling the Functions of the Engineer

The duties of the Engineer shall be in accordance with the Employer's standard requirements and shall, inter alia, include:

i) Conduct meetings with project Stakeholders and affected or the identified Communities and relevant forums, if necessary, to establish communication channels and to determine issues impacting on the Training and Development Works Contract implementation and construction phase.
ii) Appoint suitable, able and competent site staff, together with the administration of such staff (including those of any independent Service Provider/s as approved).
iii) Arrange and attend monthly technical and site meetings and keep minutes of such meetings. Monthly meetings shall also be conducted during the theoretical and practical training phases of the project.
iv) Make arrangements on behalf of the Employer for the provision and reproduction of drawings and documents that may be required by the Training and Construction Manager and site staff for the execution of the Works.
v) Fulfil all functions and obligations stated or implied for the Engineer, and delegated to the Engineer's Representative, in the Employer's Particular Conditions of Contract, Standard Specifications or Scope of Works or any other document applicable to the control and administration of a Training and Development Works Contract.
vi) Issue instructions to the Training and Construction Manager, coordinate and generally inspect the implementation and construction of the Works for compliance with the Contract at such intervals as appropriate for the proper

inspection of the Works, direct site staff and delegate the detailed and day-to-day supervision and inspection of the Works and site administration.

vii) Advise the Employer regarding the inspection and testing of materials and plant as are usually inspected and tested and arrange for inspection and testing to be carried out in accordance with current appropriate codes, manuals and guidelines.

viii) Arrange for the carrying out of performance or acceptance tests and surveys as required by the Employer. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of acceptance testing required for each lot. The data will need to be uploaded into the SARDS portal by Service Provider as per the SARDS interface and then analysed using SARDS, if applicable for this CD project.

ix) Ensure regular inspections by the Design Specialists for all work on the project.

x) Approve all materials and ensure compliance of materials mix designs to the specifications. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS for approval of materials, if applicable for this CD project.

xi) Actively manage, report and assist the Training and Construction Manager on training, development and the empowerment programmes committed to by the Contractor in relation to his tendered Contract Participation Goals. Report and sign off on monthly basis, the mentorship programme for Targeted Enterprises provided by the Training and Construction Manager and ensure that all needs of the Targeted Enterprises are recorded monthly and dealt with as the need arises. The monthly report shall be agreed with the Targeted Enterprises, which shall also be signed by each Targeted Enterprise undergoing mentorship.

xii) Monitor and report monthly on training, empowerment, capacity building, and development of Targeted Enterprises, labour and staff returns, and any such aspects on the Employer's ITIS Project Information Module. Separate allowance for payment for this duty has been made in the Pricing Schedule.

xiii) Monitor and report on conformance to all relevant Occupational Health and Safety legislation including regular internal audits to be conducted by the Service Provider's nominated specialist, arrangement for visits by the Designer at identified critical phases of construction and record and report Section 24 incidents.

xiv) Monitor and report on conformance to all relevant Environmental legislation and requirements.

xv) Check and control quantities measured and agreed by the Training and Construction Manager and the site supervisory staff and settling any disputes that may arise in this regard. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS for controlling quantities measured, if applicable for this CD project.

xvi) Issue certificates for payment to the Training and Construction Manager in accordance with the Conditions of Contract.

xvii) Review and analyse claims and/or disputes or differences that may arise between the Employer and Training and Construction Manager. Present to the Employer the Engineer's review and analysis for discussion and consultation before the Engineer's decision is made known to the Parties. All duties pertaining to disputes will be paid for under Additional Duties.

xviii) Issue Works Authorisations as agreed with, and approved by, the Employer.

xix) Provide the Employer with progress, monthly materials and laboratory and other reports on all aspects of material importance regarding the Works.

xx) Identification of risks to the Employer under the Training and Development Works Contract, as well as communicating mitigation measures to the Employer.

xxi) Provide the Employer within 3 (three) months of issuing the Taking-over Certificate of the Works with such draft construction reports, materials as-built records, as-built plans in PDF format and all other documents normally associated with contract administration. The final reports and records shall be

provided within 1 (one) month of the issue of the Performance Certificate for the Training and Development Works Contract.

xxii) Certain construction monitoring duties may be delegated to the Engineer's Representative (RE).

xxiii) Receive the Training and Construction Manager's proposed programme, analyse it, comment on it and when found acceptable write to the Construction Manager stating that the programme is acceptable.

xxiv) Conduct interim monthly performance evaluations on the Training and Construction Manager and a final written and signed report to be submitted to the CIDB as gazetted.

xxv) Training of Assistant Contract Engineer (if applicable).

xxvi) Declare structures (bridges, culverts, roads, sections of roads, etc.) safe for use in writing, before it is opened for public use.

d) Head Office Administration

The Service Provider shall supply sufficient head office administrative support to the site personnel to ensure efficient and timeous administration of the Training and Development Works Contract.

The Service Provider shall furthermore be responsible for the safe keeping of all original drawings for the Works, as well as all other documentation related to the different phases of the project, for a period of at least 5 (five) years after the defects notification period. No additional payment will be made for this.

e) Occupational Health and Safety Obligations

The Service Provider shall execute the duties of the Employer, as his appointed Agent, as contemplated in the Construction Regulations (2014) to the Occupational Health and Safety Act (Act No. 85 of 1993).

The Service Provider shall arrange, formally and in writing, for the Training and Construction Manager to provide documentary evidence of compliance with all the requirements of the said Act. The Service Provider shall also carry out regular site audits to ensure compliance thereto. Should the Service Provider not have "in-house" capacity to undertake such duties, an externally recognized specialist shall be appointed. This individual shall be registered with the SACPCMP as a Professional Construction Health and Safety Agent or a Construction Health and Safety Manager. Provision for payment for all OH&S obligations during the Training and Development Works Contract implementation and construction phases has been included in the Pricing Schedule.

f) Monthly Technical and Site Meetings

The appointed Engineer for the project shall visit the site at least 2 (two) times per month on separate occasions. One visit shall be scheduled for the Technical Meeting with a thorough site inspection with the Training and Construction Manager and the Engineer's Representative. A second visit shall be scheduled for the monthly Site Meeting with a thorough site inspection with the Construction Manager and the Employer's Representative.

g) Compilation of Monthly Materials and Laboratory Report

The appointed Engineer shall be responsible for the compilation of monthly materials and laboratory reports. These reports shall be in accordance with the Employer's guideline documents. The site laboratory Service Provider must supply the necessary information to be included in the report, but it will be the sole responsibility of the Engineer to ensure that the information provided is true and correct. These reports shall be submitted to the Employer's relevant Project Manager monthly for the duration of the Training and Development Works Contract. The reports shall be

submitted in hard copy format. The reports shall reach the Employer by no later than the 7th of the month. No additional payment will be made for this.

h) Site Visits by Design Specialist(s)

The appointed Design Specialist(s) for the project shall visit the site to comply with the Construction Regulations of the Occupational Health and Safety Act (No 85 of 1993) as relevant for the design of the Works during the construction phase, as well as the Designer's obligations with respect to the relevant professional engineer's legislation. Furthermore, the Design Specialist(s) shall as a minimum attend the construction of trial sections including inter alia, stabilization trials, base construction trials and final surfacing trials.

i) Assistance at Clarification Meeting, Tender Period and Tender Evaluation of Sub-contract Packages

The Service Provider shall be required to assist the Training and Construction Manager with regards to the procurement of subcontractors to comply with the specifications as described in the Training and Development Works Contract.

The specifications for the clarification meeting, tender period and tender evaluation (by an independent person) of sub-contract packages shall be similar to those in Clauses C3.6.2, C3.6.3 and C3.6.4, except for the Employer's procurement department involvement.

Allowance has been made for the requirements in the Pricing Schedule under Additional Duties.

j) Fulfilling the Duties of the Senior Materials Technician or Materials Technician

The duties of the Senior Materials Technician or Materials Technician shall be in accordance with the Employer's standard requirements and shall, inter alia, include:

i) Work in a close relationship with the laboratory including having regular discussions with the laboratory manager about the condition, progress and standard of the laboratory.
ii) Conduct regular laboratory inspections and draft a materials and laboratory report.
iii) Act as liaison between the Engineer's Representative and the laboratory.
iv) Advise the Engineer's Representative where the laboratory does not comply with the contractual and technical requirements.
v) Prepare and sign-off materials mix and seal designs or any other relevant matter for submission to the Engineer's Representative.
vi) Verify the requests for lot approval submitted by the Training and Construction Manager and ensure the tests requested are in line with the lot submitted. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of acceptance testing required for each lot, if applicable to this CD Project.
vii) Ensure the laboratory is granted sufficient time for sampling with regards to every request received.
viii) Keeps track of submission time for laboratory results. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to determine the number and locality of acceptance testing required for each lot received and verify all the test results from the laboratory manager, if applicable to this CD project.
ix) Sign-off test reports and make recommendations for approval or rejection; With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS to approve or reject tests, if applicable to this CD project.
x) Inspect works daily which shall inter alia include materials sources, layer works, structures and any other materials related to items on site.

xi) Do visual inspections on materials in lots submitted for approval.
xii) Inspect all trial sections constructed and complete as well as record trial section checklists.
xiii) Populate progress sheets linking test requests with the position on layer works; With the release of the SARDS, Service Provider will be required to follow the standard workflow within SARDS to identify test locations, if applicable to this CD project.
xiv) Draft the monthly materials and laboratory reports.
xv) Keep as-built data up to date; With the release of the SARDS, Service Provider will be required to follow the standard workflow within SARDS to automatically update as-built data, if applicable to this CD project.

C3.7.3 Establishment of Supervisory Personnel on Site

a) Supervisory Team

The Service Provider shall be required to provide a team on site to monitor, administer and measure the Training and Development Works Contract in accordance with the requirements of the Contract, Employer's standard requirements and industry good practice.

Provision has been made in the Pricing Schedule for the envisaged staffing requirement. The establishment of such staff, however, shall be subject to the approval of the Employer. For the envisaged scope of the Works, the supervisory team will consist of at least the following:

i) Resident Engineer
ii) Assistant Resident Engineer/s
iii) Materials Technician
iv) Trainee Technician
v) Surveyor (full time)
vi) Survey assistant/s
vii) Trainee (student)
viii) Project Liaison Officer
ix) Administrative Assistants (data capture)
x) Independent Targeted Enterprise (TE) Monitor
xi) Mentors or Coaches for Targeted Enterprises (sub-contractors)

The minimum requirements for qualification and experience of the supervisory team are specified in Clause C3.1.11.

Provision has been made in the Pricing Schedule to cover the total annual cost of employment (TACE) of the supervisory staff which shall include the following:

a. Basic salary.
b. Other benefits not reflected in the basic salary, which may include:
    i. normal annual bonus (maximum of one month's salary or part thereof if contract is less than 1 (one) year) but excluding any performance bonuses or merit bonuses;
    ii. consulting firm's contribution to medical aid;
    iii. group life assurance, accident and disability insurance;
    iv. pension or provident fund contributions by the consulting firm;
    v. allowances forming part of the remuneration package which are pensionable (car allowances, etc.);
    vi. computer and cell phone allowance if part of package; and
    vii. other justifiable costs and allowances approved by the Employer.
c. costs payable due to all applicable statutory requirements such as:
    i. Workmen's compensation fund contributions;
    ii. Unemployment insurance contributions; and
    iii. Other applicable statutory levies.

A standardised site staff overhead factor of 1.44 will be applied to the TACE of the supervisory staff (excluding the surveyor and his assistants, trainee (student) and Project Liaison Officer) which is made up as follows:

Table C.3.7.3.a: Site Staff Overhead Factors

Description	**Site Staff Overheads**
Salaries (Technical) TACE.	1.00
Salaries (Non-technical) TACE.	0.24
Telephone and communication.	Tendered item
Rental of premises, electricity, water.	Provided by Client
Transport not recovered from project.	Pay item
Paper, stationary, consumables.	Tendered item
Audit, bank charges, interest, insurance.	0.08
Marketing.	0.02
Office equipment.	Tendered item
Training and development.	0.02
Project direct expenses not recoverable.	0.08
Head Office expenses.	Tendered item
Net Overhead Factor before profit	**1.44**

Provision has also been made in the Pricing Schedule for additional overhead costs related to the employment of the relevant personnel, which may include the following:

(a) overtime by salaried professional and semi-professional staff (qualified Engineers, Technologists and Technicians) and all such other staff for which overtime is not payable in terms of the Labour Act;
(b) ordinary leave and sick leave (one month);
(c) administration related to salaries, legislation, etc.; and
(d) other overhead expenses and profit.

Replacement of staff due to an extended period of leave or sick leave outside the normal Contractor's year end break shall be to the approval of the Employer.

Three (3) months prior to the commencement of the Training and Development Works Contract the Service Provider shall submit for consideration and approval to the Employer a detailed proposal in the Employer's prescribed format which shall include a CV of appropriate experience and qualifications as well as a cost estimate (including salary adjustments and increases) for each required and/or proposed person on the Employer's E1K and E2K forms. In addition, the Service Provider shall complete Returnable Schedule Forms B1 and B2 for at least the Resident Engineer (RE), the Senior Materials Technician (SMT) and the Materials Technician (MT) for evaluation. Amongst other evaluation criteria to be used, shall be the individual threshold of 75 %, for each of the abovementioned site staff.

The annual salaries for those approved staff shall be substantiated by an auditor's certificate at the start of the project and whenever salary or staff changes occur thereafter. Prior approval is required for any salary adjustments or increases which shall be in line with CPI.

Survey services may be required on either a full time or part time basis as appropriate for the scope of the Works.

Where provision has been made in the Pricing Schedule, the surveyor shall be appointed as a sub-service provider and procured directly by the Service Provider in terms of Clause C3.1.7. The Service Provider shall enter into a sub-service agreement with the surveyor. The terms of reference regarding the survey service on site shall be based on the requirement of the Employer as set out in Chapter 10 of Technical Methods for Highways TMH11: Standard Survey Methods.

The Employer shall be entitled to instruct the Service Provider to remove forthwith from the Works any person employed by the Service Provider on or about the execution of the Works who, in the opinion of the Employer, misconducts himself or is incompetent or negligent in the proper performance of his duties, or whose presence on site is otherwise considered by the Employer, on reasonable grounds, to be undesirable.

b) Relocation of Site Staff

Provision has been made in the Pricing Schedule for the costs to relocate the supervisory team to site.

c) Accommodation

Appropriate housing for the supervisory team will be required to be provided by the Service Provider. A provisional sum has been allowed in the Pricing Schedule for this purpose. Accommodation of the site staff shall be located as near to the Works as practically possible.

If the contract period does not justify full relocation of staff and families, the Employer may approve temporary accommodation such as a bed & breakfast establishment in lieu of rented housing. In such approved instances, only the basic accommodation costs (excluding meals) will be payable under the Training and Development Works Contract. Any allowances for services, etc. shall be approved beforehand by the Employer.

Where site staff elect to occupy their own housing and approved by Employer, payment will be made in accordance with the table below.

Table C3.7.3.b: Monthly Accommodation Allowance Rates

ANNUAL BASIC SALARY	AREA IN WHICH HOUSING UNIT IS LOCATED	
	OTHER	METROPOLITAN AREAS
Up to – R100 000	R 2 849	R 3 282
R100 000 – R200 000	R 3 610	R 4 314
R200 000 – R400 000	R 4 425	R 5 545
R400 000 and over	R 5 286	R 6 272

Note:
The amounts in this table are fixed for 1 (one) year only (01 April to 31 March of each year) regardless of the Stage of the Project. The Employer will publish revised amounts on a yearly basis.

d) Establishment of Site Office

Provision for the erection and maintenance of a site office building and all related services will be made under the Training and Development Works Contract. The Service Provider shall, however, provide sufficient office equipment to perform all required duties for the monitoring of the Training and Development Works Contract. This shall, inter alia, include the following:

i) all cell phones,
ii) safety equipment in accordance with the OHS requirements, e.g. safety jackets, rotating amber lights, safety boots, etc.
iii) photo copiers, fax machines, modems, personal computers and printers (including all hardware and software),
iv) consumables and stationery, and
v) digital camera

One (1) landline, including rental, call and data costs for work-related office and fax usage shall be provided through the Training and Development Works Contract. Should fixed connectivity not be available mobile connectivity with data shall be provided through the Training and Development Works Contract.

Provision has been made in the Pricing Schedule for supplying the equipment as well as the monthly operational costs thereof.

In addition, the Resident Engineer as his/her assistants shall be equipped with mobile phones for the Employer's ITIS mobile application, with the following minimum specification:

a.	Operating system:	Android or higher.
b.	Camera resolution:	5 Meg pixels or greater, 8MP recommended.
c.	Screen resolution:	480 x 800 pixels or greater.
d.	GPS facility:	Yes, with geo-tagging for images.
e.	Data connection:	3G or greater.

C3.7.4 Monitoring of the Training and Development Works Contract

The Service Provider shall ensure that all the work required under the Training and Development Works Contract is carried out in accordance with the requirements of the Contract and current best practice and shall include effective financial control. Construction monitoring shall be carried out in a proactive manner and in accordance with the Employer's standard requirements and current best practice.

The Service Provider shall be responsible for the normal duties associated with the management and supervision of a Training and Development Works Contract, which duties shall, *inter alia*, include:

a) Monitor and report on the Training and Construction Manager's programme.
b) Implement Engineer's quality control plan.
c) Monitor the Training and Construction Manager's quality control plan.
d) Site audits, inspection, quality control testing, approval, rejection of work. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS with regard to quality control, if applicable for this CD project.
e) Measurement and certification of completed work inclusive of cash flow forecasts.
f) Management of ITIS software which includes the following modules:
    i) Contract Module: Contract Management

ii) Project Information Module: Uploading data including personnel and employment data.
iii) Structures Module: Update inventory report of the structures.

g) Provide a final cost estimate for the work contract, monthly, including estimated costs of claims.
h) Regular Site Meetings with Training and Construction Manager and Employer.
i) Monitor third-party claims.
j) Monitor and report on Training and Construction Manager's CPG commitments through ITIS.
k) Supervision of traffic accommodation arrangements.
l) Statutory control functions, which may include investigations into the legality of services and accesses without formal wayleave agreements and assist with the application for approval where required.
m) Attend PLC meetings, and all other meetings relating to Targeted Enterprises and Labour.
n) Monitor and report on the project's EMP and NEMA requirements.
o) Implement the Engineers requirements in terms of compliance with the OH&S Act.
p) Monitor the Training and Construction Manager's compliance with the OH&S Act.
q) Compile all reports and as-built data in accordance with the Employer's standard requirements. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS regarding as-built data capture, if applicable for this CD project.

Separate allowances have been made for the duties during an extended Training and Development Works Contract duration or during prolonged site stoppages (i.e. Business Rescue or Community unrest).

C3.7.5 Transport for Site Supervisory Staff and Additional Services

The Service Provider shall provide sufficient appropriate vehicles on site to carry out the duties as specified in clause C3.7.4 and C3.7.6. Only travel in the execution of these duties, as well as any other travel necessary due to additional duties as ordered by the Employer, shall be claimable. Estimated travel costs due to weekend travel by site staff to their place of permanent residence shall be approved beforehand by the Employer.

Travel log sheets for each vehicle utilised shall be certified by the Engineer and included under cover of the payment certificates submitted to the Employer. The kilometre rate for all travel more than 3 000 kilometres per vehicle per calendar month shall be reduced and paid for at 60% of the rate.

The vehicle type for all supervisory staff (including PLO) shall be limited to a Category A and B vehicle with a 1 800cc Engine Volume in accordance with the table below, except for the surveyor, who shall be limited to a 2 501cc Engine Volume. In exceptional cases, the Employer may consider a different category vehicle and/or engine volume.

Table C3.7.5: Schedule of Travel Tariffs (cents per kilometre)

ENGINE VOL (cc)	A	B	C	D
Up to 1400	279 + 7.24 x PP	204 + 9.8 x PP	-	-
1401-1600	314 + 7.88 x PP	230 + 9.8 x PP	-	-
1601 – 1800	363 + 7.88 x PP	230 + 9.8 x PP	-	363 + 7.88 x PP
1801 – 2000	421 + 8.77 x PP	311 + 9.8 x PP	311 + 9.8 x PP	372 + 8.77 x PP
2001 – 2501	469 + 10.56 x PP	315 + 13.1 x PP	413 + 13.1 x PP	469 + 10.56 x PP
Over 2501	482 + 10.98 x PP	415 + 13.8 x PP	456+ 13.8 x PP	482 + 10.98 x PP

Notes:

1. The formulas in this table are fixed for 1 (one) year only (01 April to 31 March of each year) regardless of the Stage of the Project. The Employer will publish revised formulas on a yearly basis.
2. "PP" is the lowest octane rating petrol price in Rand, for the month, in the city of the respective Regional Office. The "PP" rate can be downloaded from the AA website www.aa.co.za monthly.

Vehicle Classes:

A Passenger motor car, station wagons and 4x2 double cabs.
B Two-wheel drive light delivery vehicle, panel vans and other similar goods vehicles with a carrying capacity up to one metric ton.
C Four-wheel drive light delivery vehicle (single and double cab).
D Mini busses (up to 15-seater).

C3.7.6 Project Liaison Officer (PLO)

The PLO shall facilitate and coordinate communication between the Employer, its Service Providers and the PLC to address the day-to-day project, Stakeholder, and Community matters that impact on the parties to the project.

The SANRAL Project Liaison Committee Guidelines requires of the PLO to execute specific duties during each stage of the project, i.e. from project initiation to project completion. Some of these duties overlap project stages and hence, a detailed description is provided here.

The PLO shall execute the following duties:

a) General Duties

i) Except for taking the minutes of PLC meetings, which is a duty of the Engineer or his representative, the PLO shall provide a secretariat function to the PLC which includes, amongst others, the following:
   a. Schedule meetings.
   b. Compile meeting agendas.
   c. Compile document packages for meetings.
   d. Distribute minutes of meetings.
   e. Assist the PLC to formulate their communication in writing.
   f. Distribute written communication to and from the Employer and its Service Providers and the PLC.
   g. Keep records of all the above and any other PLC documentation.
   h. Provide any other reasonable secretariat function pertaining to the PLC.

ii) Attending all PLC meetings to report on the day-to-day project, Stakeholder and Community matters that impact on the parties to the project.

iii) Attend any other meetings related to the project and in which any of the project Stakeholders and/or affected Communities are involved.

iv) Other than the document records to be kept as mentioned above, keep a record of all other documents and processes pertaining to the employment of Labour and any other records that may be of relevance to the functions of the PLC.

v) Produce and submit a monthly report to the Employer, its Service Providers and the PLC of PLC meetings, other meetings attended by the PLO, Labour employment, and project Stakeholder, affected Community and any other project matters that impact on the parties to the project.

b) Project Initiation and Design Stages

i) Typical information to be disseminated by the PLO to Stakeholders and the affected Communities includes:

a. basic Scope of the Works and how it will affect the Community;
b. project programme and regular progress updates;
c. anticipated employment and subcontracting opportunities;
d. project programme as it pertains to the employment and/or subcontracting of project participants and/or beneficiaries;
e. Occupational Health and Safety precautions; and
f. any other information relevant to project Stakeholders and the affected Communities.

ii) Assist Service Providers in their resources and skills audits by providing a coordinating function between the Service Providers, project Stakeholders, and the affected Communities.

iii) Ensure that Labour databases, compiled from the resources and skills audits, are based on the agreed eligibility and selection criteria and that they are updated as and when required.

c) Project Implementation and Construction Stages

i) Attending all monthly site meetings to report on the day-to-day project, Stakeholder and Community matters that impact on the parties to the project.

ii) 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 project.

iii) Maintain a full-time presence on site to assist the Employer and its Service Providers in the day-to-day liaison with project Stakeholders and affected Communities.

iv) Be well acquainted with the contractual requirements as it pertains to Labour employment and training requirements.

v) Assist the Employer's Service Providers and the PLC to establish and agree the eligibility and selection criteria to be followed for the employment of Labour.

vi) Coordinate the selection and employment of Labour, based on the agreed eligibility and selection criteria and based on Service Providers' labour requirements.

vii) Ensure that each Labourer enters an employment contract which adheres to current and relevant Labour legislation.

viii) Ensure that each Labourer understands the conditions of his/her employment with an emphasis on the employment start date, end date and wages payable.

ix) Identify and inform the Employer and its Service Providers of any relevant training required by the Labour.

x) Attend all disciplinary proceedings to ensure that hearings are fair and conducted in accordance with the current and relevant Labour legislation.

xi) Be proactive in identifying PLC, project Stakeholder, affected Communities (including project participants and beneficiaries), requirements, disputes, unrest, strikes, etc. and bring it to the attention of the Employer and its Service Providers.

xii) Assist the Employer and its Service Providers to liaise with the PLC, project Stakeholders and the affected Communities to resolve any disputes, which occur due to the project.

C3.7.7 Measurement and Payment

Item	Description		Unit
3.7.1	**Administration and Monitoring of the Works Contract**		
	(a)	Roads works	Lump Sum (LS)
	(b)	Structures	Lump Sum (LS)
	(c)	Electrical	Lump Sum (LS)

	(d)	Buildings	Lump Sum (LS)
	(e)	Mechanical	Lump Sum (LS)
	(f)	Other	Lump Sum (LS)
	(g)	Disbursements	Month
	(h)	Administration and Monitoring of the Works Contract for extended Works Contract period from the original Employer's estimate.	Month
	(i)	Administration and Monitoring of the Works Contract for prolonged site stoppages not under the control of the Employer.	Month
	(j)	Training of Service Provider's staff and Targeted Enterprises:	
		(i) Assistant Contract Engineer	Provisional Sum (PS)
		(ii) Disbursements	Prime Cost (PC)

The units of measurement under items 3.7.1(a) to (f) shall be the Lump Sum. The Lump Sums tendered shall include full compensation for all duties and requirements associated with the administration and monitoring of the Training and Development Works Contract as specified in Clauses C3.1.4, C3.7.2, C3.7.3 and C3.7.4. It shall further include for all costs, disbursements, overheads and profit but excluding the costs, disbursement and profit related to the transport and subsistence of the Engineer and Design Specialist(s).

The unit of measurement under item 3.7.1(g) shall be the Month (pro rata for part of a month). The tendered rate shall include full compensation for the transport and subsistence of the Engineer and Design Specialist(s) as well as all related costs, disbursements and profit.

The unit of measurement under items 3.7.1(h) and (i) shall be the Month (pro-rata for part of a month). The rate tendered shall include full compensation for all duties and requirements associated with the administration and monitoring of the Training and Development Works Contract as specified in Clauses C3.1.4, C3.7.2, C3.7.3 and C3.7.4 during an extended Works Contract duration or prolonged site stoppages not under the control of the Employer. It shall further include for all costs, disbursements, overheads and profit, but excluding the costs, disbursements and profit related to the transport and subsistence of the Engineer and Design Specialist(s) during an extended Training and Development Works Contract duration or prolonged site stoppages not under the control of the Employer.

The Provisional Sum under item 3.7.1(j)(i) shall include full compensation for the remuneration of the Assistant Contract Engineer but shall be limited to 25% (twenty percent) of the Total Annual Cost of Employment of the individual approved as assistant.

The Prime Cost sum under pay item 3.7.1(j)(ii) is to cover the disbursement cost of the Assistant Contract Engineer for attending monthly meetings.

Contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.7.2	**Occupational health and Safety Obligations**		
	(a)	Continuous compliance and monthly internal audits	Month

	(b)	External site audits	Provisional Sum (PS)
	(c)	Handling costs i.r.o. sub-item 3.7.2(b)	Percentage (%)

The unit of measurement under item 3.7.2(a) shall be the Month (pro rata for part of a month). The tendered rate shall include full compensation for all costs, including personnel, transport, accommodation and subsistence of the Occupational Health and Safety Specialist for fulfilling the Service Provider's obligations as the Employer's agent with respect to the requirements of the Construction Regulations of the Occupational Health and Safety Act (Act 85 of 1993).

The Provisional Sum under item 3.7.2(b) shall be for the services of an independent auditor whom the Service Provider shall procure and to be approved by the Employer. The Provisional Sum shall cover all the independent auditor's costs for travel, accommodation and fulfilment of the service (including reports) and shall be paid for in accordance with Clause C2.18.

The minimum requirement for qualification and experience for the OHS Specialist are specified in Clause C3.1.11.

The unit of measurement under item 3.7.2(c) shall be a Percentage (%). The rate tendered (%) shall include all costs associated with the planning, scheduling, compilation of quotations, issuing of quotations in electronic and/or paper format and evaluation for the procurement of the sub-service, as well as handling fees.

Payment under these pay items may only be claimed from the date of official handover of the Works to the Training and Construction Manager up to and including 1 (one) month after the issue of the Taking-Over Certificate.

Contract price adjustment shall be applicable to 3.7.2(a) in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.7.3	**Establishment of Supervisory Personnel on Site**		
	(a)	Relocation costs of individual site personnel	Prime cost (PC)
	(b)	Handling costs i.r.o. sub-item 3.7.3(a)	Percentage (%)
	(c)	Establishment of office equipment	Lump Sum (LS)

The Prime Cost sum under item 3.7.3(a) shall be for all costs related to establishing the individual supervisory personnel on site and their removal after completion of the Works, as approved by the Employer. The Prime Cost shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.7.3(b) shall be a percentage (%). The rate tendered (%) shall be made on the amount spent on item 3.7.3(a) and shall include full compensation for the handling costs of the Service Provider.

The unit of measurement under item 3.7.3(c) shall be the Lump Sum. The Lump Sum tendered shall be for establishing and de-establishing of all office equipment on site and shall include for all associated costs. Payment shall only be made once all office equipment has been established on site.

Contract price adjustment shall be applicable to item 3.7.3(c) in accordance with Clause C2.1.6.

Item	Description		Unit
3.7.4	**Provision of Supervisory Staff and Equipment**		
	(a)	Site supervisory staff	Provisional Sum (PS)
	(b)	Mark-up i.r.o. sub-item 3.7.4(a)	Percentage (%)
	(c)	Surveyor and assistants	Prime Cost (PC)
	(d)	Mark-up i.r.o. sub-item 3.7.4(c)	Percentage (%)
	(e)	Provision and monthly cost of office equipment	Month
	(f)	Project Liaison Officer (PLO)	Provisional Sum (PS)
	(g)	Mark-up i.r.o. sub-item 3.7.4(f)	Percentage (%)
	(h)	Accommodation for supervisory staff	Provisional Sum (PS)
	(i)	Mark-up i.r.o. sub-item 3.7.4(h)	Percentage (%)

The Provisional Sum under item 3.7.4(a) is to cover the monthly (pro rata for part of a month) Total Annual Cost of Employment (TACE) (including a 1.44 site staff overhead factor) of the supervision staff (excluding surveyor and his assistants, trainee (student) and Project Liaison Officer (PLO)) as listed in Clause C.3.7.4 and approved by the Employer.

Payment under this pay item shall only be applicable for the period established on site and shall in no instance be prior to the date of official hand-over of the Training and Works Contract to the Training and Construction Manager or after 28 days of the date of the Taking-Over Certificate for the Training and Development Works Contract. The TACE shall be verified by means of an audited statement.

The unit of measurement for pay item 3.7.4(b) shall be a percentage (%). The rate tendered (%) shall include full compensation for all additional overhead costs related to the employment of the relevant personnel as specified in Clause C3.7.4(a).

The Prime Cost sum under item 3.7.4(c) shall cover all costs related to establishing a surveyor, survey assistants and all equipment on site and their removal after completion of the Works, as approved by the Employer. It shall further include for the full survey services including accommodation. Transport for this service shall be paid under item 3.7.6.

The unit of measurement under item 3.7.4 (d) shall be a Percentage (%). The rate tendered (%) shall include all administrative costs and handling fees.

The unit of measurement under item 3.7.4(e) shall be the Month (pro rata for part of a month). The rate tendered for office equipment shall include full compensation for supplying and maintaining all office equipment as specified in Clause C3.7.4(d), including all incidentals, all monthly charges such as cell phone and mobile data costs and insurance to operate the equipment.

The Provisional Sum under item 3.7.4(f) is to cover the Total Annual Cost of Employment (TACE) of a PLO on site as specified in Clause C3.7.7.

The unit of measurement under item 3.7.4(g) shall be a percentage (%). The rate tendered (%) shall include for all costs associated with the sourcing, employment and mentoring of the PLO.

The Provisional Sum under item 3.7.4(h) is to cover the cost of accommodation for supervisory staff.

The unit of measurement under pay item 3.7.4(i) shall be a Percentage (%). The rate tendered (%) shall include all costs associated with the reimbursement by the Service Provider for rented accommodation, as well as handling fees and profit.

The provisional and prime cost sum items shall be paid for in accordance with Clause C2.1.8.

Contract price adjustment shall be applicable to sub-item 3.7.4(e) in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.7.5	**Training**		
	(a)	Employer's candidate engineers	Person Month
	(b)	Students (engineering or surveying) receiving experiential training.	Person Month
	(c)	Student stipend	Provisional Sum (PS)

The units of measurement under items 3.7.5(a) and (b) shall be the Person Month. The rates tendered shall include full compensation for the Service Provider's costs to provide training to the different categories of trainee inclusive of all costs to communicate with the Employer and any other body or organisation in respect of work assigned to the trainees as specified in Clause C3.1.19. The rate tendered shall also include telephone calls and charges, stationery and information technology hardware, software, connection or licence costs and for lost production, profits and all other incidentals as well as all administrative and overhead costs.

Pro-rata payments shall be made for partial months of training provided based on a 23-workday month.

The Provisional Sum under item 3.7.5(c) is to cover the monthly stipends as prescribed by the Employer to be paid to the students. The Provisional Sum item shall be paid in accordance with Clause C2.1.8.

Contract price adjustment shall be applicable to sub-items 3.7.5(a) and (b) in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.7.6	**Transport for Site Supervisory Staff and for Additional Services**		
	(a)	Travelling to perform duties	Provisional Sum (PS)
	(b)	Mark-up i.r.o. item 3.7.6(a)	Percentage (%)
	(c)	Toll fees	Prime Cost (PC)

The Provisional Sum under item 3.7.6(a) is to cover the cost of travelling to perform the duties as specified in Clause C3.7.6 and any additional duties as may be ordered by the Employer. The rate for transport more than 3 000km per vehicle, per month shall, however, be reduced and paid for at 60% of the rate. Completed log sheets for each vehicle shall be

certified by the Engineer and included in the monthly payment certificate. The provisional sum item shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.7.6(b) shall be a Percentage (%). The rate tendered (%) shall include for all administration, handling cost and profit incurred by the Service Provider.

The Prime Cost sum under item 3.7.6(c) is to cover the cost of toll fees for site supervisory staff performing their duties. Payment will only be made for E-tag transactions upon proof of an official statement via the Employer's Transaction Cleaning House (TCH), which is the integrated fee collection and information management process for Electronic Tag Collection (ETC) accounts.

Item	**Description**		**Unit**
3.7.7	**Assistance at Clarification Meeting, Tender Period and Tender Evaluation of sub-contract packages**		
	(a)	Service Provider's cost	Number
	(b)	Tender Evaluation	Number
	(c)	Evaluation Report	Number

The unit of measurement under item 3.7.7(a) shall be the Number of clarification meetings held. The rate tendered shall include all costs incurred by the Service Provider with respect to the duties for assisting the Training and Construction Manager at the clarification meeting and tender period as specified.

The unit of measurement under item 3.7.7(b) shall be the Number of sub-contract and/or work packages evaluated by an independent person. The rate tendered shall include full compensation for time-related costs associated with the evaluation of each sub-contract and/or work package and the compilation of a Tender Report.

The unit of measurement under item 3.7.7(c) shall be the number of evaluation reports compiled by an independent person. The rate tendered shall include full compensation for all disbursements, material, printing and other costs associated with the evaluation and compilation of the Tender Evaluation Reports.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	**Description**		**Unit**
3.7.8	**Environmental Services during Construction Phase**		
	(a)	Environmental services	Prime Cost (PC)
	(b)	Cost for procuring and managing sub-service provider under item 2.7.8(a).	Lump Sum (LS)

The Prime Cost sum under item 3.7.8(a) shall cover the cost for the environmental sub-service provider to provide the environmental service. The Prime Cost item shall be paid in accordance with Clause C2.1.8.

The Lump Sum under item 3.7.8(b) shall include all costs associated with the planning, scheduling, compilation of quotation or tender documentation, issuing of up to 10 (ten) quotation or tender documents in electronic and/or paper format and evaluation for the

procurement and management of the sub-service, including administrative cost and handling fees.

Contract price adjustment shall be applicable to sub-item 3.7.8(b) in accordance with Clause C2.1.6.

C3.8 ADDITIONAL DUTIES, SPECIAL SERVICES AND SPECIALIST ADVICE

C3.8.1 Scope

This section covers additional work, other special services and specialist advice, reporting and other duties, including a dispute process, etc. that the Service Provider may be required to undertake over and above the normal duties and obligations as specified. It also covers the cost of structured engagement with the Project Liaison Committee (PLC), project Stakeholders and the affected and/or identified Community, including the development and ongoing maintenance and updating of a Targeted Enterprise and Labour Databases.

C3.8.2 Additional Duties, Special Services and Specialist Advice

a) By the Service Provider

The Employer may order additional duties, special services and specialist advice that fall outside the specified scope. Such additional duties, special services and specialist advice may involve, but shall not be limited to:

i) additional design requirements;
ii) evaluation of alternative tenders as specified in Clause C3.6.5;
iii) additional investigations during the Defects Notification Period;
iv) special services and specialist advice as specified in Clause C3.3.6;
v) diverse other services, etc.;
vi) establishment and liaison with the PLC during all project phases;
vii) establishment and maintenance of databases; and
viii) disputes.

Allowance is made in the Pricing Schedule for payment on a time basis for any such work that may be required. The level of expertise necessary for any such work shall be concomitant with the issues to be addressed.

Any additional duties, special services and specialist advice shall be fully scheduled and submitted to the Employer for approval prior to commencement therewith.

b) By the Employer

Additional duties performed by the Employer may involve, but shall not be limited to:

i) re-evaluation of any replacement personnel by the Tender Evaluation Panel; and
ii) reviewing of draft documentation submitted more than once.

Allowance is made in the Pricing Schedule for payment on a time basis for any such service performed more than once.

C3.8.3 Payment and Monthly Reporting

When submitting interim certificates for payment, the Service Provider shall use the Employer's standard forms and formats. No payment can be made before the Service Provider is registered as a vendor on the Employer's system.

The Service Provider shall submit payment certificates for all work rendered in the Employer's financial year within the specific year.

The Service Provider shall submit and update, monthly, a cash flow forecast for the remuneration of the full service to be rendered.

The Service Provider shall use the ITIS platform and modules to perform certain duties and to provide required information as listed in C3.1.21.

This includes using the Employer's different ITIS platforms:

a) ITIS Web
b) ITIS Desktop
c) ITIS Mobile

The current modules applicable to this contract (modules can be running on any of the above platforms) and their description are as follows:

i) Contract Module – management of contracts
ii) Project Information Module – uploading of employment and training data
iii) Structures Module – uploading of structures details

The Service Provider shall use the South African Road Design System (SARDS) platform and modules to perform certain duties and to provide required information. The South African Road Design System provides a comprehensive framework to facilitate the process of pavement design. The process is initiated with the registration of projects at the road authority for tender purposes. Projects listed for tender are open to view by accredited users and these projects are populated with available network level data. The SARDS portal provides convenient viewing capability for Design Engineers to gain insight into the design requirements of the project.

Once appointed for the design of a specific project, the Design Engineer is supported with an array of tools through the SARDS portal that incorporates the latest pavement engineering technology.

a. Design Investigation

A data management system that allows for capturing, viewing and processing of vast volumes of data associated with the design investigation process. Data views are presented in a linear viewer format that is easy to navigate. State-of-the-art data analysis procedures including:

i. Classification of visual condition data using the deduct point system.
ii. Comprehensive deflection bowl analysis.
iii. Dynamic homogenous section demarcation using automated change-point detection.
iv. Point-by-point back-calculation of effective layer stiffness moduli using the latest multi-layer and numerical optimisation routines.
v. A materials information system that:
    (a) Allows for capturing materials test results from existing pavement layers as well as potential external material sources including borrow-pits and commercial sources.
    (b) Prepares the necessary materials related input for the performance simulation component of the SARDS.

b. Performance Simulation

Combined simulation of structural and functional pavement deterioration using mechanistic-empirical techniques. This also includes Economic assessment of different pavement design alternatives with consideration of road authority and road user cost.

c. Construction Quality Assurance

i. Quality assurance material test units based on TMH1 and the latest SANS 3001 test methods
ii. Quality assurance adjudication schemes based on COLTO 8200 and 8300
iii. Automated quality assurance and as-built reporting

Allowance has been made for these requirements in the Pricing Schedule under payment item 3.8.5: Payment of Monthly Reporting Costs. Failure to fully comply with the duties as listed above may result in payments being withheld and/or termination in terms of Clause 8.4 of the Conditions of Contract.

C3.8.4 Measurement and Payment

Item	Description		Unit
3.8.1	**Additional Duties by the Service Provider**		
	(a)	Personnel cost	
		(i) Category A	Hour (hr)
		(ii) Category B	Hour (hr)
		(iii) Category C	Hour (hr)
		(iv) Category D	Hour (hr)
	(b)	Disbursements	Prime Cost (PC)
	(c)	Handling cost i.r.o. sub-item 3.8.1(b)	Percentage (%)

The unit of measurement under item 3.8.1(a) shall be the Hour. The hourly rates provided under the different categories are deemed to include full compensation for all work related to the provision of additional duties extra-over the normal duties as specified and as ordered by the Employer.

The Prime Cost sum under item 3.8.1(b) is to cover the disbursement cost of personnel accommodation, travel and subsistence associated with the undertaking of additional duties. Transport by private vehicle, if required, shall be paid at the rates under Section C3.7.

The Prime Cost shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.8.1(c) shall be a Percentage (%). The rate tendered (%) shall include all administrative costs and handling fees.

Contract price adjustment shall be applicable to sub-items 3.8.1(a) and (c) in accordance with Clause C2.1.6.

Item	Description	Unit
3.8.2	**Additional Duties by the Employer**	**Hour (hr)**

The unit of measurement under item 3.8.2 shall be the Hour. The negative hourly rates provided shall be for additional duties carried out by the Employer's personnel as specified in Clauses C3.1.11, C3.5.3 and C3.8.2(b).

The minimum time will always be 2 (two) hours per Key Person re-evaluated and actual hours will be charged for reviewing draft documentation submitted more than once. The value shall be deducted from the Service Provider's interim monthly account immediately after being informed by the Employer.

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description		Unit
3.8.3	**Special Service and Specialist Advice**		
	(a)	Special service and special advice provided by Service Provider	
		(i) Category A	Hour (hr)
		(ii) Category B	Hour (hr)
		(iii) Category C	Hour (hr)
		(iv) Category D	Hour (hr)
	(b)	Special service and special advice procured by Service Provider	Prime Cost (PC)
	(c)	Handling cost i.r.o. sub-item 3.8.3(b)	Percentage (%)

The unit of measurement under item 3.8.3(a) shall be the Hour (hr). The hourly rates provided under the different categories are deemed to include full compensation for all work related to the provision of the special service or specialist advice as specified in Clause C3.3.6.

The Prime Cost sum under item 3.8.3(b) shall cover the cost for service or advice procured by the Service Provider. The Prime Cost item shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.8.3(c) shall be a Percentage (%). The rate tendered (%) shall include full compensation for all costs associated with the planning, scheduling, compilation of quotation or tender documentation, issuing of up to 10 (ten) quotation or tender documents in electronic format and evaluation for the procurement and management of the sub-service including administrative cost and handling fees.

Contract price adjustment shall be applicable to sub-item 3.8.3(a) in accordance with Clause C2.1.6.

Item	Description	Unit
3.8.4	**Training of Targeted Enterprise Understudy**	**Provisional Sum (PS)**

The Provisional Sum under item 3.8.4 shall include full compensation for the Service Provider's cost of training of Targeted Enterprises as understudy to the Contract Engineer (CE) including for all personnel and other costs, disbursements, overheads and profit.

The Provisional Sum shall be paid in accordance with Clause C2.1.8.

Item	Description	Unit
3.8.5	**Payment and Monthly Reporting Cost**	**Month**

The unit of measurement under item 3.8.5 shall be the Month. The rate tendered shall include full compensation for registering on the Employer's ITIS Project Information Module

and for the management of the ITIS Software Modules (Contract, Information and Structures Modules) as specified in Clause C3.1.21.

It shall also include full compensation for capturing and submitting the required information regarding training, empowerment, capacity building, Targeted Enterprise development, labour and staff returns during the design and construction stage for both the Training and Construction Manager and the Consulting Engineer. It shall further include for all personnel and other costs, disbursements, overheads and profit.

Contract price adjustment shall be applicable in accordance with Clause C2.1.6.

Item	Description		Unit
3.8.6	**Engagement with Project Liaison Committee (PLC), project Stakeholders and affected Communities**		
	(a)	Establishment of PLC	Lump Sum (LS)
	(b)	Liaison and meetings with the PLC during all project phases	Provisional Sum (PS)
	(c)	PLC stipends	Provisional Sum (PS)
	(d)	Handling cost i.r.o. item 3.8.6(c)	Percentage (%)
	(e)	Training of PLC members	Provisional Sum (PS)
	(f)	Handling cost i.r.o. item 3.8.6(e)	Percentage (%)

The unit of measurement under item 3.8.6(a) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all costs associated with the establishment of the PLC.

The Provisional Sum under item 3.8.6(b) is to cover all costs associated with liaison and attending meetings with the established PLC during all project phases.

The Provisional Sum under item 3.8.6(c) is to cover the monthly payments to PLC members as prescribed by the Employer.

The unit of measurement under item 3.8.6(d) shall be a Percentage (%). The rate tendered (%) is for the mark-up or other incidental costs incurred by the Service Provider.

The Provisional Sum under item 3.8.6(e) is to cover all costs associated with training PLC members in their duties and responsibilities.

The unit of measurement under item 3.8.6(f) shall be a Percentage (%). The rate tendered (%) shall include full compensation for all cost associated with producing a schedule of training requirements, compiling a quotation or tender document, evaluation of quotations or tenders received and for the procurement of a training Service Provider on approval by the Employer.

The Provisional Sums shall be paid in accordance with Clause C2.1.8.

Item	Description		Unit
3.8.7	**Skills and Resources Audit, Market Analysis and Compilation of Databases**		
	(a)	Skills and Resources Audit and Market Analysis	Lump Sum (LS)

	(b)	Establish and maintain Targeted Enterprise database(s)	Lump Sum (LS)
	(c)	Establish and maintain Labour database(s)	Lump Sum (LS)

The unit of measurement under item 3.8.7(a) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all costs associated with the skills and resources audit and market analysis in terms of CIDB guidelines for undertaking a feasibility study (CIDB grading, CSD, etc.).

The units of measurement under item 3.8.7(b) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all costs associated with the compilation and maintenance of a Targeted Enterprise database during all project phases.

The units of measurement under item 3.8.7(c) shall be the Lump Sum. The Lump Sum tendered shall include full compensation for all costs associated with the compilation and maintenance of a Labour database during the Construction Phase.

Item	**Description**		**Unit**
3.8.8	**Provision of Social Facilitation Services**		
	(a)	Social Facilitator	Provisional Sum (PS)
	(b)	Mark-up costs i.t.o. item 3.8.8(a)	Percentage (%)

The Provisional Sum under item 3.8.8(a) is to cover the monthly (or pro-rata of a month) Total Annual Cost of Employment (TACE) for the provision of social facilitation service as specified in Clause C3.1.7(k).

The provisional sum shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.8.8(b) shall be a Percentage (%). The rate tendered (%) shall include all costs associated with the sourcing and employment of a Social Facilitator.

C3.9 QUALITY CONTROL OF THE TRAINING AND DEVELOPMENT WORKS CONTRACT

C3.9.1 Materials

a) Scope

This section covers the requirements for the provision and quality management of a site laboratory established or commercial laboratory to carry out the necessary materials testing and construction quality of the Works.

b) Standards

The Service Provider shall procure a fully operational laboratory and administer the laboratory to undertake the relevant investigative testing as well as process and acceptance control testing in accordance with specified requirements of the Training and Development Works Contract as well as the Employer's standard requirements. A provisional sum has been allowed in the Pricing Schedule for this service. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS regarding administration of the laboratory, if applicable to this CD project.

The laboratory shall be a SANAS accredited laboratory or operate under the umbrella of a SANAS accredited main laboratory that shall be responsible for ensuring that all sampling and testing is carried out accurately and strictly in accordance with the relevant test methods as well as the SANAS accreditation requirements.

c) Duties and Responsibilities

i) Establishment and Operation of the Laboratory

Where a site laboratory is required, provision for the erection of a laboratory building, together with workbenches, services, furniture etc. will be made under the Training and Development Works Contract, the planning and documentation for which shall be included in the tender documentation stage.

The Service Provider shall procure the services of a sub-service provider for laboratory services via a tender process in accordance with Clause C3.1.12. The successful sub-service provider shall be SANAS accredited and able to provide laboratory equipment and competent staff for the operation of the laboratory. The requirements in terms of the laboratory shall be specified in the sub-contract based on the Employer’s pro-forma document. The appointment of the appropriate laboratory shall be approved by the Employer.

The Service Provider shall ensure the supply of such laboratory equipment as necessary to carry out the required testing relevant to the scope of the Works. All equipment shall conform strictly to SANAS accreditation requirements and/or the specifications as listed in the relevant test methods. With the release of the SARDS, the Service Provider will be required to follow the standard workflow within SARDS regarding administration of the laboratory, if applicable to this CD project.

ii) Testing of Materials Off-site

Any testing which may be of such a low frequency as to not warrant the establishment of the relevant equipment and staff on site, or being of a specialised nature, shall be carried out in an off-site SANAS accredited commercial laboratory or the National Reference Laboratory. A provisional sum has been allowed for the costs of this testing.

C3.9.2 Survey

a) Scope

This section summarises the requirements for the provision of a site survey service to carry out the necessary survey quality control on the Works as specified in Technical Methods for Highways TMH11: Standard Survey Methods.

The purpose of this service is to ensure that the works are constructed as designed and specified and the relevant records are kept up to date. In this regard, the service shall provide for, *inter alia:*

i) The verification of existing control or the establishment of new control and the supply of the data.
ii) The verification of all relevant setting out work carried out by the Training and Construction Manager.
iii) The verification that the works are constructed within tolerances specified.
iv) The verification of relevant quantities for measurement purposes.
v) The checking of designs from a setting out point of view.
vi) The verification of construction records (as-built data).
vii) To undertake any survey work as required by the Engineer.

A provisional sum has been allowed in the Pricing Schedule for this service under pay item 3.7.4.

b) Standards

The service shall be undertaken in accordance with TMH11 requirements, COTO Standard Specifications and Project Specifications.

c) Staking of Road Reserve Fence Positions

Before any fence is erected or replaced under the contract, the correct position of the fence must be verified by the Employer's PSP.

All requests for verification of the road reserve must be made via the Regional survey representative. Such a request must include the following information:

i) Route and section.
ii) Start and end as per blue marker boards.
iii) Anticipated date when work will commence.
iv) Contact the person on site and his/her contact details.

d) Procurement of the Survey Service

The Service Provider shall procure the services of a sub-service provider for survey in accordance with Clause C3.1.17. A prime cost sum has been allowed in the Pricing Schedule for this service under pay item 3.7.4.

e) Independent Survey Audits

A site supervision survey is a specialised function. The Employer may wish to appoint an independent audit surveyor for each site, or the audit surveyor may be assigned several sites under his supervision.

The audit surveyor shall liaise with the Resident Engineer and conduct monthly audits with the surveyor to:

i) satisfy the audit team that all the required functions have been attended to;
ii) check suitable equipment is used to undertake this function;
iii) check that the equipment claimed for as part of the quality control function is on site and in good working condition;

iv) check survey procedures and methodology utilised on site;
v) check the processing of survey data;
vi) check frequency of checks undertaken and the results obtained;
vii) check the efficiency of the data submitted for control purposes;
viii) evaluate the standard of recommendations made to the Resident Engineer with regards to all phases of the checked work;
ix) check all records and the back-up of records;
x) check the signing off of records and the pointing out of non-conformance;
xi) determine how the supervisory surveyor is utilised by the Resident Engineer and whether the Employer gets value for the money spent;
xii) provide experiential training specifications, programs and compliance requirements as defined by the relevant academic qualification criteria;
xiii) provide registration procedures and programs to ensure that trainees are able to achieve registration status with the South African Geomatics Council;
xiv) attend to training and the implementation of new procedures on site;
xv) check training material and report on the quality of training; and
xvi) interview trainees and report on progress.

The audit surveyor will do a monthly audit report that shall be submitted to the Engineer and the Employer.

C3.9.3 Measurement and Payment

Item	Description		Unit
3.9.1	**Laboratory Testing**		
	(a)	Provision of a fully operational laboratory	Prime Cost (PC)
	(b)	Handling cost i.r.o. sub-item 3.9.1(a)	Percentage (%)
	(c)	Off-site materials testing	Prime Cost (PC)
	(d)	Handling cost i.r.o. sub-item 3.9.1(c)	Percentage (%)

The Prime Cost sums under items 3.9.1(a) and (c) shall be for the laboratory testing service provided by a SANAS accredit laboratory.

The prime cost sum shall be paid in accordance with Clause C2.1.8.

The unit of measurement under item 3.9.1(b) shall be a Percentage (%). The rate tendered (%) shall include full compensation associated with the planning, scheduling, compilation of tender documentation, issuing of 10 (ten) tenders in electronic and/or paper format and evaluation for the procurement of the laboratory service, as well as handling fees.

The unit of measurement under item 3.9.1(d) shall be a Percentage (%). The rate tendered (%) shall include full compensation for procurement of the off-site laboratory testing in terms of the Employer's requirements, as well as handling fees.

C3.10 PROJECT CLOSE OUT

C3.10.1 Scope

This section covers the fulfilling and completion of the project close-out including necessary documentation to facilitate effective completion, hand-over and operation of the project.

The Service Provider shall administer the Training and Development Works Contract during the period after the issuing of the Taking-Over Certificate of the Works up to and including the issuing of the Performance Certificate to the Training and Construction Manager and conclusion of the final payment certificate.

C3.10.2 Taking-over Certificate

Upon a request from the Training and Construction Manager for the Taking-over Certificate (TOC) to be issued in terms of the Conditions of Contract, the Engineer shall establish compliance with the Training and Development Works Contract for a TOC to be issued.

The Service Provider shall undertake a full inspection of the Works (which shall include the health and safety aspects as far as reasonably practicable) to identify any outstanding minor works, defects and/or damages for the compilation of a snag list. The inspection shall be undertaken by the Engineer and his representative for the Works.

After the inspection, and only when the Engineer is of the opinion that a TOC can be issued, the Service Provider shall arrange an on-site meeting and further inspection with representatives of the Employer, Training and Construction Manager and RRM Service Provider. At this meeting, parties will be presented with the snag list for consideration. There-after an inspection will follow with all the parties involved to add additional items to the snag list.

After the above meeting the Engineer shall re-establish compliance with the Training and Development Works Contract with involvement of the Employer for a TOC to be issued, failing which the whole process is to be repeated.

The TOC shall declare the structure (bridges, culverts, roads, sections of roads, etc.) safe for use as required in terms of Construction Regulation 6.1(j).

The Engineer's Representative shall be present on the site during the period required to complete the items on the snag list and monitor the completion thereof, unless otherwise agreed with the Employer.

C3.10.3 Training and Construction Manager's CIDB Performance Evaluation

The Service Provider shall undertake the required performance evaluation of the Training and Construction Manager according to the CIDB's requirements as soon as the Construction Manager requests the issuing of the TOC. The Service Provider shall submit the above to the Employer at the date of issuing of the TOC.

C3.10.4 Construction Records (As-builts) and Contract Report(s)

The Service Provider shall prepare and submit, in accordance with the Employer's standard requirements, draft construction records reflecting the Works as constructed, as well as any deviations from the designs, as well as a draft contract report(s) providing information on how the Contract was executed. Once reviewed and accepted by the Employer the Service Provider shall prepare and submit the final construction records and report(s).

C3.10.5 Performance Certificate

The Service Provider shall undertake a full inspection of the Works to identify any defects and/or damage before the end of the defects notification period. The inspections shall be

undertaken by the Engineer and his representative for the Works Contract. Should both not be available, the Service Provider shall propose a person having sufficient knowledge of assessing the Works for approval by the Employer.

After the inspection, the Service Provider shall arrange an on-site meeting and further inspection with representatives of the Employer, the Training and Construction Manager and RRM Service Provider. At this meeting, the parties will be informed of the defects and/or damages identified during the inspection. Thereafter an inspection will follow with all the parties involved to identify any further defects and/or damage.

Once identified defects and/or damages are addressed, the Engineer shall notify the Employer that the Performance Certificate can be issued.

C3.10.6 Co-ordinate and Monitor Remedying of Defects

The Service Provider shall co-ordinate and monitor the remedying of any defects and/or damages identified during the defects notification period.

Prior to the provision of any service under this sub-clause the Service Provider shall submit to the Employer for approval a schedule of personnel necessary to undertake the additional services including a cost estimate. Payment for this service shall be made in terms of Clause C.3.8.

C3.10.7 Final Payment Certificate

Prior to the compilation of the final payment certificate, the Engineer shall ensure that all items on the Employer's checklist are complied with. The signed-off checklist shall be submitted with the final payment certificate.

The Engineer shall only compile and submit the final payment certificate once the Performance Certificate has been issued by the Employer and all unfulfilled financial obligations have been resolved.

C3.10.8 Extended Guarantees

Where the Service Provider is required to perform services (e.g. inspections after the completion date of the Training and Development Works Contract) relating to extended guarantees for the Works Contract (e.g. Product Performance Guarantees), separate arrangements for remuneration will be made by the Employer under Additional Duties.

C3.10.9 Measurement and Payment

Item	**Description**		**Unit**
3.10.1	**Close Out**		
	(a)	Road Works	Lump Sum (LS)
	(b)	Structures	Lump Sum (LS)
	(c)	Electrical	Lump Sum (LS)
	(d)	Buildings	Lump Sum (LS)
	(e)	Mechanical	Lump Sum (LS)
	(f)	Other	Lump Sum (LS)

The unit of measurement under items 3.10.1(a) to (f) shall be the Lump Sum. The rate tendered under each item shall include full compensation for all duties and requirements associated with the close out stage. It shall further include for all costs, disbursement and profit as well as the transport and subsistence costs of the Engineer and any personnel required.

The Service Provider shall be entitled to render an interim account on submissions of the draft construction records and draft contract report(s), for up to 50% of the Lump Sum for this stage. The balance of the Lump Sum is claimable upon the submission of, and approval by, the Employer of the final construction records and final contract report(s).

The contract price adjustment shall be applicable in accordance with Clause C2.1.6.

PART C4: SITE INFORMATION

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C.4.1 LOCATION OF THE PROJECT

The project is located in the Mpumalanga Province and the Thembisile Hani Local Municipality, *IN AND AROUND MOLOTO, NEAR NATIONAL ROAD R573, SECTION 2 FROM KM -0.500 TO KM8.600.*

C.4.2 GENERAL ROAD MAINTENANCE INFORMATION

The Access Roads, adjacent to R.573, Section 2 fall under the jurisdiction of the Thembisile Hani Local Municipality.

C.4.3 BACKGROUND

The upgrade of access roads forms part of the larger overarching objective of the Employer, which is to improve mobility and road safety along the R573. The R573 will be upgraded to a four-lane single carriageway road divided by a median barrier.

As a result, most of the existing informal access to the R573 will be closed and with formalized road intersection constructed, linking the adjacent access road network to the R573 through a combination of roundabouts, butterfly intersections and left-in left-out intersections, in accordance with the approved Access Management Plan (AMP). Hence, upgrades are required to the adjacent access road network, where direct access from properties to the R573 will be affected.

C.4.4 GENERAL DESCRIPTION OF THE PROJECT

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

The route traverses flat to rolling terrain, mostly through built-up areas, both formal and informal. The open land between the built-up areas is used mainly for informal farming, except at km 29.5 (Klipspruit Experimental Farm), where no formal agricultural activities are currently undertaken.

For this contract, the scope of works primarily will include the training and skills development of members of the Community, as well as Trainee Targeted Enterprises selected from the Community, from within the Target Area, who will become the Contractors Targeted Enterprise subcontractors and whom the Contractor shall manage and mentor for the construction works related to the upgrading of access roads in and around Moloto, near the R573 between KM -0.50 to KM 8.60.

Alignments for the access road upgrades largely follow existing road alignments (predominantly gravel tracks), where possible, although new alignments are also required, where spatial constraints exist, due to historical informal township urbanization.

The upgrades will consist of a combination of 3m wide gravel access roads, 4m wide interlocking block paving roads and 6m wide interlocking block paving roads, along with associated road stormwater drainage infrastructure, consisting primarily of open systems discharging at surface or tying into the existing municipal network, where possible. Ancillary works include the erection of road signs and stone pitching.

The works also comprises of the construction of a concrete lined trapezoidal bulk stormwater channel at Site 6. This also includes the construction of an associated inlet, outlet and road crossings.

Existing services within the project area is unknown, thus prior to any work commencing, the Contractor will need to verify any services in the vicinity of the works (type and position). The Contractor will therefore need to obtain all necessary approvals from the Service Provider for all work related to the protection and/or relocation of existing services, forming part of the works.

Materials investigations along the alignments for the access roads upgrades are not available. Therefore, the in-situ material will need to be tested on site and approved by the Engineer, prior to incorporation into the works. Further no borrow-pits have been secured by the Employer within proximity to the site. The Contractor may identify his own compliant and licensed fill material sources, subject to testing and approval by the Engineer. Subbase and base road layer material is to be sourced commercially, from either source identified by the Employer, or other compliant commercial or private / non-commercial material sources identified by the Contractor or alternatively the Contractor's own sources, subject to testing and approval by the Engineer.

The pavement designs are summarized below.

Table 4.1

LAYERWORKS FOR GRAVEL ROADS	
LAYER No.	**DESCRIPTION**
1	100mm thick Gravel Wearing Course (Rural and urban roads as per COTO Table A4.1.5-11, Requirements for gravel wearing course material other than calcrete) compacted to 95% of MDD, CBR ≥ 15% at 95%, PI on the P0.425 fraction 6-12)
2	G7 Fill, constructed in layers no greater than 200mm and no less than 100mm thick roadbed, compacted to 93% of MDD, CBR ≥ 15% at 93%
3	150mm thick rip and recompact in-situ material (G9 or better), compacted to 93% of MDD, CBR ≥ 7% at 93%

Table 4.2

LAYER WORKS FOR 60mm BLOCK PAVING	
LAYER No.	**DESCRIPTION**
A	60mm thick Block Paving (Class 30/2.0 SANS1058, Type S-A, laid in herringbone pattern
B	20mm thick Bedding Sand (Bedding and jointing sand to be in accordance with A6.2.5 Materials of the standard specification
C	150mm thick C4 stabilized natural gravel, compacted to 95% of MDD (Minimum UCS (MPa) at 100% of MDD – 0,75 & minimum ITS (kPa at 100% of MDD – 200)
D	G7 Fill, constructed in layers no greater than 200mm and no less than 100mm thick roadbed, compacted to 93% of MDD, CBR ≥ 15% at 93%
E	150mm thick rip and recompact in-situ material (G9 or better), compacted to 93% of MDD, CBR ≥ 7% at 93%

Table 4.3

LAYER WORKS FOR 80mm BLOCK PAVING	
LAYER No.	**DESCRIPTION**
A	80mm thick Block Paving (Class 30/2.0 SANS1058, Type S-A, laid in herringbone pattern

B	20mm thick Bedding Sand (Bedding and jointing sand to be in accordance with A6.2.5 Materials of the standard specification
C	150mm thick C4 stabilized natural gravel, compacted to 95% of MDD (Minimum UCS (MPa) at 100% of MDD – 0,75 & minimum ITS (kPa at 100% of MDD – 200)
D	G7 Fill, constructed in layers no greater than 200mm and no less than 100mm thick roadbed, compacted to 93% of MDD, CBR ≥ 15% at 93%
E	150mm thick rip and recompact in-situ material (G9 or better), compacted to 93% of MDD, CBR ≥ 7% at 93%

ACCESS ROADS DIMENSIONS (LENGTH AND WIDTH)

The upgrades will consist of a combination of 3m wide gravel access roads, 4m wide interlocking block paving roads and 6m wide interlocking block paving roads.

Table 4.4

Type	Chainage (m)		Length (m)	Width (m)
	From	To		
Surfaced Road	0	200	200	4
Surfaced Road	0	60	60	4
Gravel Road	0	35	35	3
Surfaced Road	0	182	182	4
Surfaced Road	0	264	264	4
Surfaced Road	0	137	137	4
Surfaced Road	0	196	196	4
Gravel Road	0	196	196	4
Surfaced Road	0	58	58	3
Surfaced Road	0	108	108	4
Surfaced Road	0	451	451	4
Gravel Road	0	101	101	3
Surfaced Road	0	147	147	4
Surfaced Road	0	32	32	4
Surfaced Road	0	116	116	4
Surfaced Road	0	52	52	6
Surfaced Road	0	179	179	4
Surfaced Road	0	138	138	4
Gravel Road	0	146	146	3
Surfaced Road	0	295	295	4
Surfaced Road	0	84	84	4
Surfaced Road	0	252	252	4
Total Length			**3429**	

The total road length for this project is **~3.5 km**.

C.4.5 CLIMATE

The weather station at Marble Hall is the closest station to the site. The climate here is classified as BSk by the Köppen-Geiger system. The average annual temperature is 20.2°C and the average yearly rainfall is 793 mm.

C.4.6 EXTENT OF CONSTRUCTION WORKS

A key objective of the project is to undertake as much of the construction activities using labour enhanced techniques. The extent of the access road upgrades, broadly includes the following components:

- Contractor's establishment on site and general obligations;
- The identification, protection and/or relocation of services;
- Accommodation of the Engineers site personnel;
- Construction and maintenance of temporary access road deviations;
- Accommodation of traffic;
- Clear and grubbing;
- Excavation of open and side drains where required;
- Installation of new pipe and box culverts, including inlet and outlet structures;
- Installation of subsoil drainage, where required;
- Installation of cable ducts, where required;
- Construction of pipe and box culverts, including inlet and outlet structures, where required;
- Construction of concrete drifts, where required;
- Testing of in-situ material;
- Roadbed preparation and treatment, which may include:
    - Ripping and recompacting of in-situ material;
    - In-situ treatment by drilling and splitting hard material using non-explosive, rock-breaking products;
    - - Construction of a pioneer layer in soft and saturated material; and
    - - Removal and replacement of unsuitable material.
- Sourcing of material from compliant borrow areas and commercial sources;
- Construction of road pavement layers:
    - Gravel roads:
        - Construction of G7 fill; and
        - Construction of gravel wearing course.
    - Block Paving roads:
        - Construction of G7 fill;
        - Construction and removal of trial section for stabilised C4 subbase layer, including mix design;
        - Construction of stabilised C4 subbase layer, including curing by covering with damp hessian, canvas or gunny bags
        - Application of herbicide and ant poison; and
        - Construction of block paving, including bedding layer and jointing sand
- Testing of all constructed road pavement layers; acceptance control testing will be done by an external site lab - provision under items in consultant document C3.9.1(c) - off-site testing and Contractor document PC20.1.2.2 special tests requested by the engineer (a) Acceptance

- Construction of concrete lined side drains, down-chutes and concrete kerbing and/or channelling;
- Construction of grouted stone pitching in areas identified, where drainage improvements are required;
- Construction of trapezoidal concrete lined bulk stormwater channel and associated inlets, outlets and road crossings;
- Finishing-off fill slopes; and
- Erection of road signage.

C.4.7 SUB-SERVICE PROVIDERS

The following sub-service will be required on this project: (***Note to Tenderer**: The List is not exhaustive, but the Employer will make necessary provisions in the Bill for all sub-services which may be required)*

a) Survey
b) Peer review
c) Environmental Compliance Officer
d) External OHS Auditor
e) Specialist technical sub-services

C.4.8 PRICING AND PAYMENT

The Service Provider, when pricing the fee he intends to receive for the provision of the services, should take account of the ECSA fee scale guidelines provided in Appendix E. The fee offered should be exclusive of costs to conduct visual condition surveys and produce construction tender documentation.

C.4.9 APPENDICES

Appendix A:	Locality Plan
Appendix B:	Traffic Information
Appendix C:	Pavement Information
Appendix D:	Occupational Health and Safety
Appendix E:	ECSA fee scale guideline
Appendix F:	Pro-forma report formats
Appendix G:	Request for Survey work
Appendix H:	Memorandums of Agreement
Appendix I:	Road Safety Audit Policy
Appendix J:	2nd Tier Procurement Procedures

Appendix K: Integrated Transport Information System

Appendix L: Gateway Review Template

Appendix A: Locality Plan

Available in SARDS online

Appendix B: Traffic Information

Not Applicable

Appendix C: Pavement Information

Not Available

Appendix D: Occupational Health and Safety

D1 : Health and Safety Specification for Service Providers during Construction
D2 : Health and Safety Specification for Contractors during Construction
D3 : OHS Audit Questionnaire

D1: Health and Safety specification for Service Provider during Construction

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS for SERVICE PROVIDER

CONTRACT SANRAL C.002-0.26-2018/1S

SCOPE OF WORKS: CONSULTING ENGINEERING SERVICES FOR THE TRAINING AND CONSTRUCTION MANAGEMENT SERVICES OF A COMMUNITY DEVELOPMENT PROJECT TO UPGRADE ACCESS ROADS AND STORMWATER SYSTEM IN AND AROUND MOLOTO, NEAR NATIONAL ROAD R573, SECTION 2 FROM KM -0.500 TO KM8.600

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Service Provider

1. NOTE TO CONSULTING ENGINEERS

a) The Occupational Health and Safety Act, Act 85 of 1993 and its Regulations together with SANS Codes set out minimum standards with regards to Occupational Health and Safety. The South African National Roads Agency SOC Limited (SANRAL), has developed this Occupational Health and Safety Specifications with these minimum standards in mind and in certain stages the requirements of SANRAL exceeds the minimum legal requirements to follow best practices and to ensure a healthy and safe workplace for all.
b) SANRAL in no way assumes the Service Providers legal liabilities and responsibilities. The Service Provider is and remains accountable for the quality and execution of his health and safety programme for his employees. This Health and Safety Specification reflects minimum legal and SANRAL requirements and should not be construed as all encompassing.
c) It is very important for the Service Provider to note that when the Service Provider carry out any type of construction work, as per the definition, the Service Provider will be regarded as a Contractor, as per the definition and must then comply with the requirements of the Construction Regulations and in particular Section 7.
d) It is realized that the Service Provider may have its own Health and Safety Management system and safe work practices. The intention of this Health and Safety Specification is not to change the Service Providers Health and Safety management system, but for the Service Provider to use its current Health and Safety management system to draw up a project specific Health and Safety plan according to these specifications as well as to legally comply with the Construction Regulations, GNR.84 of 2014.
e) It is the responsibility of the Service Provider to make themselves conversant and comply with the requirements and conditions contained in the various legislation pertaining to their profession and scope of works at all times.
f) This document is not exhaustive of all duties imposed by the Occupational Health and Safety Act, Act 85 of 1993 and its Regulations, governing the duties and obligations of a Service Provider / Designer performing duties in terms of an agreement with the client (SANRAL). These duties are fully described in the Occupational Health and Safety Act, Act 85 of 1993 and its Regulations and it is the duty of every Service Provider / Designer to acquaint themselves therewith before commencing work.
g) Words used herein in the singular shall be deemed to include the plural and male shall include female and vice versa, unless the context otherwise requires.

2. PURPOSE

This document is compiled to ensure that the Professional Service Provider are aware of the Occupational Health and Safety requirements when working on a SANRAL contract, as well as to make them aware of their legal liabilities and responsibilities as per the Occupational Health & Safety Act, Act 85 of 1993, and its Regulations.

3. DEFINITIONS AND ABBREVIATIONS

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

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

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

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

CIDB – Construction Industry Development Board

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

Communicate – The process of two way dialogue which is understood by both parties.

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

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

Consequence – Outcome or impact of an event.

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

Contractor – An employer as defined in section 1 of the OHS Act, who performs construction work

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

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

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

Contractor – An employer who performs construction work.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MSDS – Material Safety Data Sheet

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

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

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

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

PPE – Personal Protective Equipment

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

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

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

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

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

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

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

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

SACPCMP – South African Council for Project and Construction Management Professions

SANRAL - South African National Roads Agency SOC Limited

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

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

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

WAH – Acronym for Working at Heights

4. HEALTH AND SAFETY POLICY

Service Providers are expected to have their own written Health and Safety Policy. The policy should declare their attitude and approach to the health, safety and welfare of their employees and others. Provision must be made to review the policy regularly and the CEO or Managing Director must sign and date the policy to indicate his commitment to ensuring the health and safety of his employees.

5. ROLES & RESPONSIBILITIES

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

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

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

6. HSE TRAINING AND COMPETENCE

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

All employees that forms part of the construction work must be trained and competent. Employees formally appointed to perform a certain duty must be in possession of a training certificate, received from a registered training provider. All Service Provider employees must as a minimum have received site specific safety induction training as well as task specific risk assessment training from the Principal Contractor.

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

Basic Safe Work Training (Induction Training) – Every Service Provider shall ensure that his employees are inducted into his own company Health and Safety System and must ensure that his employees receive site specific safety induction and task specific risk assessment training from the Principal Contractor. The Service Provider must have evidence that his employees have been trained on the relevant procedures prior to and during the project duration.

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

The Service Provider shall ensure that his employees, have received appropriate training for the type of work that will be performed, e.g. Working at Heights, Risk Assessment training etc.

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

7. NOTIFICATION OF CONSTRUCTION WORK

Construction Regulation, 2014 Section 4 requires that the provincial director of the Department of Labour is notified at least 7 days prior to the execution of excavation work, elevated work where there is a risk of falling (working at heights), demolition work or work where explosives are used. Therefore, if the Service Provider needs to e.g. dig test pits, or do a bridge inspection and the risk of falling exists, the Service Provider needs to notify the provincial director in writing on a form similar to Annexure 2 in the Construction Regulations.

8. DUTIES

The Service Provider is the Designer of the structures to be build. As a Designer, the Service Provider need to comply and adhere to the requirements of Section 6 of the Construction Regulations. The Service Provider needs to take health and safety into consideration when designing the structure as well as for future maintenance on the structure.

When the Service Provider carry out any type of construction work, as per the definition, the Service Provider will be regarded as a Contractor, as per the definition, and must then comply with the requirements of the Construction Regulations and in particular Section 7.

The Service Provider is the Clients managing agent, who will manage the construction work on behalf of the client.

9. DESIGNING FOR HEALTH, SAFETY AND THE ENVIRONMENT

Designing for safety is a process aimed at minimizing injury, death, property damage or destruction and harm to the environment, by utilizing an approach to identify and eliminate or control hazardous areas. The Service Provider / Designer must implement a process that ensures safety is incorporated in the design process, which includes temporary works as contemplated in the Construction Regulations, 2014 Section 12.

The Service Provider must communicate the anticipated risks and hazards resulting from the design to the Client and the Client Construction Health and Safety Agent who will ensure that such anticipated risks and hazards reflects in the tender documentation for Contractors.

10. MANAGEMENT AND SUPERVISION

The Service Provider will manage the construction project on behalf of SANRAL and must ensure that the construction work is carried out safely and legal compliance is adhered to at all times. As the managing agent, the Service Provider must appoint a competent person in writing as agent to act as the Clients representative in terms of health and safety on the project.

11. RISK MANAGEMENT

When the Service Provider carry out any type of construction work, Section 9 of the Construction Regulations must be adhered to. A formal risk-based approach must be followed to ensure hazard control measures are implemented to an acceptable reasonable practical level. The Service Provider and his employees shall be responsible to ensure all hazards pertaining to his scope of activity are proactively identified, the risks assessed and appropriately eliminated or minimized and managed on an ongoing basis. Risk assessments shall also identify possible and potential environmental, health and hygiene issues pertaining to each hazard with potential exposures and limits.

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

i. Development of Risk Assessments

The Service Provider shall, before carrying out any type of construction work and during such work, conduct a risk assessment by a competent person, appointed in writing. The baseline risk assessment as provided by the client may be used to draw up a in-depth task specific risk assessment that can be used on site. Please note that the risk assessment must be site specific.

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

- The task and task step
- the identification of the risks and hazards to which persons may be exposed to during the task or task step;
- 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 of safe work procedures, to mitigate, reduce or control those residual risks that have been identified as unacceptably high, by means of the rating system;
- a monitoring plan;
- a review plan, inclusive of dates to be adhered to; and
- ergonomic related risks are to be analysed, evaluated and addressed as part of the process.

b) Risk Assessment Monitoring

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

c) Review of Risk Assessment

The Service Provider shall review the hazard identification, risk assessments and standard safe working procedures prior to any construction related work activity and shall ensure that the risk assessment is site specific.

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

Risk assessments must be fully communicated to all relevant personnel and must be considered when establishing training, awareness and competency requirements.

11.1 Baseline Risk Assessment

Based on the baseline risk assessment as per 20.1 below, SANRAL has developed this health and safety specification which shall act as a set of OH&S rules that shall be applied to regulate the OH&S aspects of the Service Providers construction work to be carried out. The baseline risk assessment must be used by the Service Provider to develop task specific risk assessments before any construction related work commences.

The Baseline Risk Assessment will not identify risks or control measures, this must be identified by Service Provider when preparing the Issue Based Risk Assessments. The Baseline Risk Assessment will highlight all work for which the Service Provider must prepare safe work procedures and or work method statements.

11.2 Continuous Risk Assessment

The Service Provider shall continuously assess the risks of the activities that are carried out. Risk assessments must be in writing, site specific and must be reviewed continuously to ensure it is current and it address all the relevant hazards and risks associated with the specific activity at the specific site.

The Risk assessment must be discussed with the whole work crew before the activity starts and the work crew must acknowledge in writing having discussed the risk assessment and that they understand it. This acknowledgement must be on site and must be available to the client for audit purposes.

12. LEGAL COMPLIANCE AND DOCUMENT CONTROL

The Service Provider is required to implement systems and procedures to ensure legal compliance through:

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

The Service Provider shall, as a minimum, comply with:

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

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

12.1 Legal Appointments

All legal appointments of the Service Provider regarding the Health and Safety of his employees who are to carry out construction work on the project are addressed and governed by the OHS Act and applicable Regulations.

i. Overall Supervision and Responsibility for OH&S

The client will appoint the Service Provider who shall be the managing agent of the client on the project once construction works start. A Mandatory agreement as per Section 37.2 of the OHS Act, shall be signed between the client and the Service Provider.
It is a requirement that the Service Provider, when he appoints sub Service Providers, includes a Mandatary agreement in his agreement with such sub Service Providers

ii. Specific Supervision Responsibilities for OH&S

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

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

Appointment	**Legal Reference**
Assistant to CEO	OHS Act 16(2)
Construction Health & Safety Agent	CR 5(5)(6)
Risk Assessor	CR 9(1)
Fall Protection Plan Developer	CR 10(1)(a)
Structure Inspector	CR 11(2)(a)
Temporary Works Designer	CR 12(1)
Excavation Supervisor	CR 13(1)(a)
Incident investigator	GAR 9(2)
Ladder inspector	GSR 13(a)
First Aider GSR	GSR 3(4)

13. OPERATIONAL INTEGRITY

The operational integrity of plant, equipment, structures and protective systems must be monitored and assured on an ongoing basis throughout the project cycle. Hazards must be identified, assessed and as far as reasonably practicable, eliminated or the risks treated to as low as reasonably practicable (ALARP).

13.1 Plant & Equipment Integrity

13.1.1 Construction Plant & Equipment

The Service Provider shall maintain all his items of plant and equipment necessary to perform the required construction work in a safe condition.

The client reserves the right to inspect items of plant and equipment brought to site and used on site by the Service Provider. Should it be found that any item is inadequate, faulty, unsafe or in any other way unsuitable for the safe and satisfactory execution of the work for which it is intended, the Service Provider will be advised of such observation / inspection, and the Service Provider shall be required to repair, make safe or remove such item from operation and replace it with a safe and adequate substitute.

The Service Provider shall ensure that all plant, equipment, and power tools that he brings onto and use on site for construction work purposes are:

- Appropriate for the type of work to be performed
- Placed on a register and inspected by a competent person or the authorized operator before use, daily or monthly dependent on Legislation and project requirements.
- Record inspection findings on a register that must be kept on site.
- The inspection register shall reflect the serial number of the plant, equipment or power tool.
- Maintained and used in accordance with the manufacturers recommendations
- Have adequate machine guarding fitted to all exposed rotating or moving parts, as reasonably practicable, that have the potential to cause harm
- All electrical power supply units are protected with operational earth leakage devices.
- Any defective, damaged or sub-standard equipment must be marked as unsafe for use and removed from operation as soon as possible

13.1.2 Standards and Registers

For construction work purposes, the Service Provider is expected to:

- Set up an initial set of registers as per the requirements of the OHS Act and Regulations.
- Complete the registers for each piece of plant, tool and equipment brought on and used on site by the Service Provider or his employees.
- Maintain a complete, continuous and comprehensive inspection and service history in these registers or checklists
- Ensure daily, weekly, monthly inspections are done and recorded for all plant, tools & equipment by a competent person as required by the OHS Act and Regulations.

14. OCCUPATION HEALTH AND HYGIENE

14.1 Medical Fitness for Duty

All Service Provider employees that carry out construction work activities, shall undergo medical examinations and be certified fit for duty by an Occupational Health Practitioner before they are allowed to work on site.
The medical certificate must be in the form of Annexure 3 of the Construction Regulations and stipulate the possible exposures the employee might be exposed to during the execution of the construction work.

It is recommended and in the best interest of the Service Provider to implement pre-employment as well as exit medical surveillance, especially with regards to Section 8 of the Noise Induced Hearing Loss Regulation.

14.2 First Aid

According to GSR 3(4), where more than 10 employees are employed at a workplace/worksite, the Service Provider shall ensure that there is at least one trained first aider for every group of 50 employees at the workplace/site. First Aid boxes must be provided where more than 5 employees are employed and must be readily available and accessible for the treatment of injured persons at the workplace.

To ensure immediate treatment of an injured person, it is recommended that all work crews have at least one trained first aider, with a fully stocked first aid box, irrespective of the number of people in the work crew. This is especially important when Service Providers work at great distances from the nearest emergency facility or town. These persons shall be appointed in writing as the first aiders with their certificates attached as proof of competency.

The minimum contents of the first aid box shall be as per the supplied list in the General Safety Regulations.
All treatments done must be recorded on a register and kept with the first aid box. A trained and appointed first aider must be responsible for the first aid box and its content. Used content must be replenished as soon as possible.

In order to ensure prompt response at the emergency facility it is recommended that the W.Cl 2 forms be partially completed with the employers' details, for medical treatment cases.

14.3 Workers Compensation Registration

The Service Provider shall ensure that his employees are covered for any occupational injuries and illnesses in terms of the Occupational Injuries and Diseases Act 130 of 1993, which cover shall remain in place and up to date for the duration of the project.

14.4 Hygiene Facilities

The Service Provider shall ensure compliance to Section 30 of the Construction Regulations with regards to facilities on the construction site as well as where accommodation is provided to employees on remote sites. The Service Provider shall ensure that the facilities are kept clean at all times, either through a Service Provider or self-employed persons.

15. WASTE MANAGEMENT

The Service Provider shall comply with all applicable and relevant Waste management legislation, as well as municipal bylaws applicable to waste management.

It is recommended that the Service Provider have a waste management plan which must be implemented on the construction site and which will have the objective to ensure that waste is managed according to the Waste Management Hierarchy:

- Reduce what you can. If you cannot reduce then,
- Re-use what you can. If you cannot re-use then,
- Recycle what you can. What you cannot recycle,
- Convert into energy sources. If it cannot be converted to an energy source,
- Dispose of in a landfill – this is only to be done as a last resort and disposed without endangering human health and without using processes or methods which could harm the environment.

16. HAZARDOUS SUBSTANCE MANAGEMENT

The Service Provider shall ensure that hazardous substances brought onto site are easily identifiable and stored according to the requirements of the General Safety Regulations, GNR. 1031 of 1986, Section 4.

Where flammable liquids are being used or stored, this must be done in a manner which would not cause a fire or explosion hazard.

The Service Provider shall have Material Safety Data Sheets (MSDS) readily available for flammable, hazardous and toxic chemical substances and materials brought onto site and shall ensure that his employees are trained in these MSDS's.

Flammable, hazardous or toxic chemical substances may not be stored in empty food or drink containers. Empty flammable, hazardous and toxic containers must be disposed of in a safe manner, which will prevent further use of such a container.

Asbestos

A survey of the construction site must be done during site establishment, to locate any asbestos. Should asbestos be located, the conditions of the Asbestos Regulations, GNR. 155 of 2002 must be followed and complied with.

17. OPERATIONAL PROCEDURES

Each construction activity shall be assessed by the Service Provider 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 Service Provider:

- to be conversant with all relevant Regulations;
- to comply with their provisions;
- to include them in his OH&S plan where relevant

18. HSE NON-COMPLIANCE

The Client has a legal duty in terms of Construction Regulation 5(1)(q) to stop any unsafe work on the construction site. Any unsafe construction related activity that the Service Provider performs will be stopped until such time as the Service Provider has rectified the non-compliance or unsafe act/condition.

The Service Provider as managing agent for the Client has a legal duty according to the Construction Regulation 5(1)(q) to stop a contractor from executing any activity which poses a threat to the health and safety of persons. Depending on the seriousness of the non-compliance only the specific activity may be stopped until the non-compliance is rectified or the whole operation may be stopped.

It is also the duty of every employee to take reasonable care of his own health and safety and of other persons who may be affected by his acts as per OHS Act, Section 14(a). Keeping this in mind, it is required of the Service Provider to ensure his employees has the right to remove themselves from any unsafe situation or work activity, without any negative consequence to them until such time as the Service Provider has made the unsafe situation or activity as safe as practicable possible.

18.1 Contracting Philosophy

Any site-specific hazards and safety management expectations will be made known to the Service Provider prior to the work commencing on site. Legal OHS requirements contained in the OHS Act and Regulations as well as SANS Codes are the minimum requirements the Service Provider must apply during this contract with regards to Occupational Health and Safety. The Service Provider shall apply, implement and enforce the minimum OHS Act & Regulations and SANS Codes requirements.

18.2 Indemnity by Service Provider

The Service Provider 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:
    i. Unsafe acts caused by all or any of the Service Providers employees;
    ii. Unsafe conditions which resulted from the failure to carry out any legal obligation by all or any of the Service Providers employees;
(b) any unlawful, riotous or disorderly conduct by or amongst the Service Providers employees.

18.3 Service Provider Conduct

Guidelines to the most important rules that shall be implemented and maintained by the Service Provider:

- Complete compliance to the OH&S Act and Regulations
- Hazard identification and Risk Assessments for all construction related activities
- DSTI talk before construction work commences
- Safe access and egress to and from work areas.
- Compulsory use of lifelines, Safety Harnesses and Fall Arrestors (Lanyards to be attached at all times) when working in elevated positions
- Good housekeeping
- Securing of tools, equipment and material at heights
- Wearing of appropriate personal protective equipment as identified in the risk assessment

Personal Conduct

No person shall act in a manner that endangers or is likely to endanger, the safety of any other person, or cause harm to any other person.

An employee who observes any dangerous situation, shall as soon as possible inform the person who is responsible for that section of the site.

Any employee who becomes aware of any person disregarding any safety rules, shall remind that person of the rules. If he persists in disregarding the rules, the matter must be reported to his supervisor.
No person shall damage, alter, remove, render ineffective or interfere with anything that has been provided for the protection of the site, or for the health and safety of persons.

No person shall interfere with or use firefighting equipment without authority and training.

No person in a state of intoxication or condition that render him incapable of controlling himself shall enter or be allowed to enter the site.

No alcohol or illegal drugs shall be taken onto the site.

All safety and warning signs shall be obeyed.

Always be alert of construction vehicles as well as traffic. Never turn your back to oncoming traffic or construction vehicles / mobile plant, always have a line of sight.

18.4 Sub Service Providers

The Service Provider shall establish, maintain and ensure that all his Sub Service Providers establish and maintain HSE standards and systems as necessary and to comply with the Legal requirements as well as these HSE specifications.

18.5 Public Health and Safety

The Service Provider 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. During the construction phase of the project, this can be done through the Principal Contractors HSE Officer.

This includes:

- Non- employees entering the site for whatever reason
- The surrounding community
- Passers-by to the site

19. INCIDENT MANAGEMENT

The Service Provider shall ensure that a culture exists within his company that promotes the recognition, response, reporting and investigation of incidents, including near misses (near hits). The Service Provider must implement a procedure for reporting and investigating accidents, incidents and near misses as prescribed in the General Administrative Regulation, Section 8. The Service Provider should have a clear objective and target to obtain zero injuries for the duration of the project and such an objective must be communicated to all employees.

Appropriate corrective actions must be implemented and the applicable learnings must be shared within the Service Providers business to prevent a recurrence of the incident or to prevent the minor incidents from becoming serious incidents in future.

19.1 Incidents and Accidents

The Service Provider shall investigate all accidents/incidents where employees were injured to the extent that he had to be referred for medical treatment by a doctor, hospital or clinic. The results of the investigation shall be entered into an accident/incident register, which must be updated with each accident/indent.

The Service Provider shall notify the relevant SANRAL Project Manager and or SANRAL OHS Specialist of any incident / accident within the Service Providers area of responsibility in writing as soon as possible.

Although the accident / incident is reported to the client, the Service Provider has a responsibility and is required by law to report any Section 24 accidents and incidents to the Department of Labour. Any road traffic accident must be reported to the relevant authorities.

It is essential that the Service Provider demonstrate that corrective and preventative action has been taken to prevent a similar incident in future and that it is communicated to all affected employees. A copy of the investigation, corrective and preventative action taken as well as the attendance register of the employees who attended the discussion of the incident and the action implemented to prevent a similar incident, must be forwarded to the SANRAL Project Manager and or the SANRAL OHS Specialist.

In addition to medical treatment cases it is recommended that Near Miss incidents and First Aid cases are also investigated to establish root causes and implement preventative measures.

20. PROJECT SPECIFIC CONSTRUCTION REQUIREMENTS

20.1 Baseline Risk Assessment

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

Risks in connection with:

a) Excavation – locating existing underground services, digging test pits
b) Manual handling – setting up surveying equipment
c) Ergonomic risks
d) High & Low voltage power lines – overhead & underground
e) Uneven ground surfaces
f) Personal safety & security risks
g) Traffic Control (Ensure Correct Signage at Correct Distances)
h) Exposure to noise
i) Working in close proximity to traffic
j) Working with hot materials
k) Radio Active equipment
l) Hazardous Chemical Substances
m) Flammable Materials
n) Driving to and from site
o) Biological risks e.g. bees, snakes, spiders, etc.
p) Environmental risks
q) Bad weather conditions,
    a. rain,

b. lightning,
c. wind,

r) poor visibility
s) heat exposure – dehydration
c) cold environments

During the construction phase of the project, the employees of the Service Provider must be inducted and trained on the risk assessments and Safe Operating Procedures of the Principal Contractor before entering the site and record of such induction / training must be kept on file, e.g.

i) Work in close proximity of Mobile Plant (e.g. Bomag Roller, Pneumatic roller, etc)
ii) Falling Objects
iii) Suspended Loads
iv) Crane Operations
v) Asphalting

20.2 Site Attendance Register

All site visitors shall report to security / reception upon arrival at site. All visitors need to sign an attendance register when visiting the site. Visitors include all persons which are not permanently working on the site, but excludes temporary site workers. Visitors must undergo site induction training before they are allowed on site to make them aware of the site dangers. During the construction stage of the project, the HSE Officer of the Principal Contractor should conduct the site induction with visitors before they are allowed on the construction site.

20.3 Personal Protective Equipment

Comply with General Safety Regulations, Section 2

The Service Provider shall identify the hazards in the workplace and remove them or, where impracticable, take steps to protect employees and make it possible for them to work safely and without risk to health under the hazardous conditions.

Personal protective equipment (PPE) should, however, be the last resort. The hierarchy of hazard elimination must be followed before the option of personal protective equipment is considered. The following hierarchy of controls must be followed:

- Elimination
- Passive Controls
  - Substitution – Using a cherry picker or man-lift instead of a ladder.
  - Engineering Controls – Installing barrier railings; Installing stairs instead of using vertical ladders.
- Active Controls
  - Administrative policies and procedures
  - Personal protective equipment

Where it is not possible to create an absolutely safe and healthy workplace the Service Provider shall inform employees regarding this and issue, free of charge, suitable equipment to protect them from any hazards being present and that allows them to work safely and without risk to health in the hazardous environment.

It is a further requirement that the Service Provider maintain the said equipment, that he instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

Employees do not have the right to refuse the use/wear of 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 Service Provider shall ensure that all his personnel, excluding those who are permanently office bound, are equipped with reflective safety jackets and that these are worn at all times when working on site. Any person found not wearing a reflective jacket on site must be removed from the site until such

time as he is in possession of and wearing a reflective jacket. Reflective safety jackets shall be kept in good condition and any jackets that are ineffective must immediately be replaced by the Service Provider.

20.4 Site Security

Certain areas where work must be carried out, is recognized unsafe areas and certain other areas may from time to time become unsafe, due to 3rd party actions. The Service Provider must as far as reasonably possible anticipate unsafe areas and must ensure that his site staff is safe from 3rd party actions, which include but is not limited to:

- Unrests,
- Violent Demonstrations,
- Theft,
- Injury from 3rd parties at all times.

The Service Provider must, when work is to be carried out in the above-mentioned areas, make provision for security services to accompany site staff during the execution of their work, as the Service Provider is responsible for the Health, Safety and Security of his own staff. The provision for security services must form part of the Service Providers tender.

20.5 Working in Elevated Positions

Comply with Construction Regulation, Section 10

The Service Provider shall ensure that a fall protection plan, developed by a competent person who is designated as the Fall Protection Plan Developer, is available on site and understood by all employees who will be working in elevated positions.

All employees working in elevated positions shall protect themselves from falls by wearing a full body harness and the lanyard shall be attached as far as possible above the head of the employee to a life line or other approved and tested anchor point.

In addition to obvious elevated work activities, work activities which include:

- Working on the edge of an excavation where there is a risk of falling into the excavation;
- Work on the edge of a vertical drop where there is a risk of falling;
- Work on top of trucks and tanks;

Shall be considered work in elevated positions and Section 10 of the Construction Regulations must be adhered to at all times. The hierarchy of controls must be implemented when such activities are carried out. As a minimum the employee must wear PPE, which shall include a full body harness attached to a restraint.

Only suitable ladders that have been inspected and has been certified “safe for use” may be used for elevated work. The top two rungs on the ladder may not be used for elevation, as this will render the ladder unstable. A second person should hold the ladder stable whenever working from it.

20.6 Excavations

Comply with Construction Regulations, Section 13

The Service Provider shall ensure that all excavations are carried out under the supervision of a competent person who has been appointed in writing as Excavation Supervisor.

The Service Provider must evaluate the stability of the ground before excavation work begins as well as during excavation work.

Excavations must be barricaded to prevent unauthorized access.

Material removed from excavations, as well as heavy machinery and construction vehicles, must not be closer than 1 meter of the edge of the excavation, to prevent additional loads on the excavation edge, which could cause cave-ins, to prevent construction vehicles from falling into the excavation and to prevent the accumulation of carbon monoxide gas inside the excavation.

People working in the excavation must be adequately protected from cave-ins, by means of protection systems such as shoring and bracing and must have a safe means of access into the excavation and egress from the excavation.

20.7 Construction Vehicles

Comply with Construction Regulation, Section 23, National Road Traffic Act, 1996

Construction vehicle operators must have received training to operate the class of construction vehicle or mobile plant and must be in possession of an operator's card as proof of competency. Construction vehicle operators must be authorised in writing and have a medical certificate of fitness issued by an occupational health practitioner to operate the construction vehicle and/or mobile plant.

20.8 Electrical Equipment

Comply with Construction Regulations, Section 24

The Service Provider shall take adequate steps to ascertain the presence of and guard against danger to workers from electrical cables or apparatus which is under, over or on the site.

The exact location of underground electric power cables must be determined before any excavators are used for excavation purposes.

The location of overhead electrical cables must be assessed when working with equipment that has booms that can extent. Injury may be possible from touching the electrical cables with the equipment boom, or from arching when the equipment boom comes too close to the electrical cable.

Electrical machinery and extension cords must be in a serviceable condition and must be inspected before use on the construction site by the authorised operator and the inspection checklist must be kept on the construction site.

20.9 Temporary Storage of Flammable Liquids

Comply with Construction Regulation, Section 25 and General Safety Regulations, Section 4

The Service Provider must ensure storage areas of flammable liquids are well ventilated and "No Smoking" signs are placed at the entrances and ventilation ducts of the storage areas. Firefighting equipment must be available in suitable positions around the storage areas.

The Service Provider must ensure that good housekeeping is practiced in and around the flammable storage areas.

20.10 Water Environments

Comply with Construction Regulation, Section 26

The Service Provider must ensure that a lifejacket forms part of the employees PPE and is worn when the employee is exposed to the risk of drowning, by falling into water.

The risk assessment must make provision for the rescuing of persons in danger of drowning and for preventing employees from falling into the water.

When working over water environments, Section 10 of the Construction Regulations – Fall Protection will also apply.

20.11 Manual Handling / Ergonomic Risks

The Service Provider must ensure that the health of his employees are not affected through the handling of heavy equipment and safe lifting techniques are applied by his employees. Manual handling and ergonomic risks must be included in the risk assessments of the Service Provider and employees must be aware of it and trained in it.

20.12 Traffic Control

When the Service Provider carries out construction related activities on site, during the design stage of the project, sufficient and adequate traffic control must be implemented. Traffic control signage must be displayed and employees must be aware of approaching traffic, facing oncoming traffic at all times.

20.13 Radioactive Equipment

The Service Provider, when working with radioactive equipment, must ensure that all appropriate safety measure are implemented, employees are made aware of the dangers of the equipment and the equipment is used according to the manufacturer's instructions.

20.14 Intoxicating Liquor and Drugs

Comply with General Safety Regulations, Section 2A

The site limit for intoxication is set to zero to complement a vision of zero tolerance

Any person found to be intoxicated, or consuming intoxicating liquor or illegal drugs, must not be allowed onto the premises and/or must be removed from the premises.

The Service Provider has the right to test any person entering the premises for intoxicating liquor or illegal drugs and may refuse entrance on the basis of the outcome of the test.

The Service Provider shall ensure that employees taking prescription medicine informs the Service Provider of such and shall ensure that the side effect of such medicine does not constitute a hazard to the employee himself or people working in close proximity to the employee.

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LIMITED

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS

CONTRACT SANRAL C.002-026-2026/1S

SCOPE OF WORKS: CONSULTING ENGINEERING SERVICES THE TRAINING AND CONSTRUCTION MANAGEMENT SERVICES OF A COMMUNITY DEVELOPMENT PROJECT TO UPGRADE ACCESS ROADS AND STORMWATER SYSTEM IN AND AROUND MOLOTO, NEAR NATIONAL ROAD R573, SECTION 2 FROM KM -0.500 TO KM8.600.

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2. NOTE TO PRINCIPAL CONTRACTORS AND CONTRACTORS

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

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

It is realized that the Contractor have its own Health and Safety Management system and safe work practices. The intention of this Health and Safety Specification is not to change the Contractors Health and Safety management system, but for the Contractor to use its current Health and Safety management system to draw up a project specific Health and Safety plan according to these specifications as well as to legally comply with the Construction Regulations, GNR.84 of 2014.

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

This document is not exhaustive of all duties imposed by the Occupational Health and Safety Act, Act 85 of 1993 and its Regulations, governing the duties and obligations, of a Designer, Principal Contractor and Contractor performing duties in terms of an agreement with the client (SANRAL). These duties are fully described in the Occupational Health and Safety Act, Act 85 of 1993 and its Regulations and it is the duty of every Designer, Principal Contractor and Contractor to acquaint themselves therewith before commencing work.

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

3. PURPOSE

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

4. DEFINITIONS AND ABBREVIATIONS

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

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

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

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

CIDB – Construction Industry Development Board

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

Communicate – The process of two way dialogue which is understood by both parties.

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

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

Consequence – Outcome or impact of an event.

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

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

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

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

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

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

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

Designer –
a) competent person who:
- Prepares a design
- Checks and approves a design
- Arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or
- Designs temporary work, including its components

b) an architect or engineer contributing to, or having overall responsibility for a design
c) a building services engineer designing details for fixed plant
d) a surveyor specifying articles or drawing up specifications;
e) a contractor carrying out design work as part of a design and building project; or
f) an interior designer, shop fitter or landscape architect

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MSDS – Material Safety Data Sheet

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

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

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

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

PPE – Personal Protective Equipment

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

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

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

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

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

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

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

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

SACPCMP – South African Council for Project and Construction Management Professions

SANRAL - South African National Roads Agency SOC Limited

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

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

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

WAH – Acronym for Working at Heights

5. HEALTH AND SAFETY POLICY

Contractors are expected to have their own written Health and Safety Policy. The policy should declare their attitude and approach to the health, safety and welfare of their employees and others. Provision must be made to review the policy regularly and the CEO or Managing Director must sign and date the policy to indicate his commitment to ensuring the health and safety of his employees.

6. ROLES & RESPONSIBILITIES

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

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

The contractor shall ensure that where required by the OHS Act and Regulations, competent employees are appointed in writing. These appointments must be project / contract specific and specific to the tasks that will be performed. Every appointment must display the duties of the person appointed and training certificates from a registered training provider must be attached to such appointment (where applicable). A list of possible appointments can be found in section 11.1 below.

7. HSE TRAINING AND COMPETENCE

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

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

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

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

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

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

The contractor shall have evidence that employees have been trained on the relevant procedures prior to and during the project duration.

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

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

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

8. APPLICATION FOR CONSTRUCTION WORK PERMIT

Construction Regulation, 2014 Section 3 requires that the client apply for a construction work permit at least 30 days before construction work is started, if the intended construction work is of a value exceeding forty million rand or CIDB grading level 8 and will start on or after 7 February 2017. If approved, the provincial director will issue a construction work permit in writing to perform construction work within 30 days of receiving the application and assign a site-specific number for the construction site. It is the intention of SANRAL to apply for a construction work permit as soon as the Contractor is appointed and his Health and Safety Plan is received, in order to minimize construction delays.

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

9. DUTIES

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

10. MANAGEMENT AND SUPERVISION

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

A full-time competent person must be appointed as a Construction Manager to manage all construction work, including health and safety compliance. The construction manager may not be appointed to manage more than one single construction site.

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

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

11. RISK MANAGEMENT

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

a) <u>Hazard Identification and Risk Assessment (Construction Regulation 9)</u>

i. 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, appointed in writing and the risk assessment so produced shall form part of the OH&S plan and be implemented and maintained as contemplated in Construction Regulation 9(1). Competence is a factor of training, knowledge, experience and/or appropriate qualifications.

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

- The task or task step
- the identification of the risks and hazards to which persons may be exposed during the task or task step;
- 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 of safe work procedures, to mitigate, reduce or control those residual risks that have been identified as unacceptably high, by means of the rating system;
- a monitoring plan;
- a review plan, inclusive of dates to be adhered to; and
- ergonomic related risks are to be analysed, evaluated and addressed as part of the process.

Based on the risk assessments, the contractor shall develop a set of site-specific OH&S rules that shall be applied to regulate the OH&S aspects of the construction. The risk assessments, together with the site-specific OH&S rules shall be submitted to the Employer before construction on site commences. SANRAL has conducted a Baseline Risk Assessment as per 11.1 below, which must be used by the contractor to develop task specific risk assessments before work commences. This does not mean that all possible Risk Assessments must be attended to before work commences, but that all relevant Risk Assessments receive the necessary attention as the contract progresses, and this is the responsibility of the contractor.
All variations to the scope of work shall similarly be subjected to a risk assessment process.

b) Risk Assessment Monitoring

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

c) Review of Risk Assessment

The contractor shall review the hazard identification, risk assessments and standard safe working procedures prior to any work activity commencement and 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, sub-contractors and all other concerned parties with copies of any changes, alterations or amendments as contemplated above.

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

Risk assessments must be fully communicated to all relevant personnel and must be considered when establishing training, awareness and competency requirements.

d) Baseline Risk Assessment

SANRAL will prepare a Baseline Risk Assessment from which the Health and Safety Specifications for the project will be prepared. The Baseline Risk Assessment will highlight all work for which the Contractor must prepare safe work procedures and or work method statements. In this case the Baseline Risk Assessment will not identify risks or control measures, this must be identified by Contractor when preparing the Issue Based Risk Assessments.

The Baseline Risk Assessment for this Project can be found on page 17 section 19.1 of this document.

e) Continuous Risk Assessment

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

The Risk assessment must be discussed with the whole work crew before the activity starts and the work crew must acknowledge in writing having discussed the risk assessment and that they understand it. This acknowledgement must be on site and must be available to the client for audit purposes.

12. LEGAL COMPLIANCE & DOCUMENT CONTROL

The contractor is required to implement systems and procedures to ensure legal compliance through:
- Identification of all relevant HSE legislation, standards and codes applicable to its operations.
- Have available copies of all relevant HSE legislation, standards and codes for reference purposes.
- Update legislation, standards and codes with any changes
- Communicate to all employees any changes that may affect their accountabilities and conformances
- Incorporate any legal requirements into their HSE management system
- Monitor and review their HSE management system for effectiveness.

The contractor shall, as a minimum, comply with:

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

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

11.1 Legal Appointments

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

i. Overall Supervision and Responsibility for OH&S

SANRAL will appoint the Principal Contractor in terms of Construction Regulation 5(1)(k). A Mandatory agreement as per Section 37.2 of the OHS Act, shall be signed between SANRAL and the Principal Contractor.
It is a requirement that the Principal Contractor, when he appoints other contractors in terms of Construction Regulations 7(1)(c), 7(1)(d), 7(1)(f) and 7(3) includes in his agreement with such Contractors the following:

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

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

ii. Specific Supervision Responsibilities for OH&S

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

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

Appointment	**Legal Reference**
Assistant to CEO	OHS Act 16(2)

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

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

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

iii. Designation of OH&S Representatives (Section 17 of the OH&S Act)

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

must be experienced, permanently employed by the contractor or his sub-contractors, trained and able to move freely within their designated area of responsibility.

iv) 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 perform their functions in respect of the workplace or section of the workplace for which they have been appointed. These functions include: conduct continuous monitoring and monthly 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. The complete list of functions can be found in Section 18 of the OHS Act.

v) 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, where two or more Health and Safety Representatives have been appointed. OH&S representatives must be appointed as OH&S committee members. The number of management appointed members may not exceed the number of OH&S representatives on the committee.

13. OPERATIONAL INTEGRITY

The operational integrity of plant, equipment, structures and protective systems must be monitored and assured on an ongoing basis throughout the project cycle. Hazards must be identified, assessed and as far as reasonably practicable, eliminated or the risks treated to as low as reasonable practicable (ALARP).

12.1 Plant & Equipment Integrity

12.12.1 Construction Plant & Equipment

The Contractor shall maintain all items of plant and equipment necessary to perform the work in a safe condition.

SANRAL reserves the right to inspect items of plant and equipment brought to site and used on site by the contractor. Should it be found that any item is inadequate, faulty, unsafe or in any other way unsuitable for the safe and satisfactory execution of the work for which it is intended, the contractor will be advised of such observation / inspection, and the contractor shall be required to repair, make safe or remove such item from operation and replace it with a safe and adequate substitute.

The contractor shall ensure that all plant, equipment, and power tools that are brought onto and used on site are:

- Appropriate for the type of work to be performed
- Placed on a register and inspected by a competent person or the authorized operator before use, daily or monthly dependent on Legislation and project requirements.
- Record inspection findings on a register that must be kept on site.
- The inspection register shall reflect the serial number of the plant, equipment or power tool.
- Maintained and used in accordance with the manufacturers recommendations
- Have adequate machine guarding fitted to all exposed rotating or moving parts, as reasonably practicable, that have the potential to cause harm
- All electrical power supply units are protected with operational earth leakage devices.
- Any defective, damaged or sub-standard equipment must be marked as unsafe for use and removed from operation as soon as possible

12.12.2 Standards and Registers

As standard project procedures, the contractor is expected to:

- Set up an initial set of registers as per the requirements of the OHS Act and Regulations.
- Complete the registers for each piece of plant, tool and equipment brought on and used on site
- Maintain a complete, continuous and comprehensive inspection and service history in these registers or checklists

- Ensure daily, weekly, monthly inspections are done and recorded for all plant, tools & equipment by a competent person as required by the OHS Act and Regulations.
- Have the inspection and maintenance records available for audit purposes.

14. OCCUPATION HEALTH & HYGIENE

13.1 Medical Fitness for Duty

All contractor employees shall undergo medical examinations and be certified fit for duty by an Occupational Health Practitioner before they are allowed to work on site.

The medical certificate must be in the form of Annexure 3 of the Construction Regulations and stipulate the possible exposures the employee might be exposed to during the execution of the project.

It is recommended and in the best interest of the Contractor to implement pre-employment as well as exit medical surveillance, especially with regards to Section 8 of the Noise Induced Hearing Loss Regulation.

13.2 First Aid

According to GSR 3(4), where more than 10 employees are employed at a workplace/worksite, the Contractor shall ensure that there is at least one trained first aider for every group of 50 employees at the workplace/site. First Aid boxes must be provided where more than 5 employees are employed and must be readily available and accessible for the treatment of injured persons at the workplace.

To ensure immediate treatment of an injured person, it is recommended that all work crews have at least one trained first aider, with a fully stocked first aid box, irrespective of the number of people in the work crew. This is especially important when contractors work at great distances from the nearest emergency facility or town. These persons shall be appointed in writing as the first aiders with their certificates attached as proof of competency.

The minimum contents of the first aid box shall be as per the supplied list in the General Safety Regulations.

All treatments done must be recorded on a register and kept with the first aid box. A trained and appointed first aider must be responsible for the first aid box and its content. Used content must be replenished as soon as possible.

In order to ensure prompt response at the emergency facility it is recommended that the W.Cl 2 forms be partially completed with the employers' details.

13.3 Hygiene Facilities

The Contractor shall ensure compliance to Section 30 of the Construction Regulations with regards to facilities on the construction site as well as where accommodation is provided to employees on remote sites. The contractor shall ensure that the facilities are kept clean at all times, either through a Service Provider or self-employed persons.

15. WASTE MANAGEMENT

The contractor shall comply with all applicable and relevant Waste management legislation, as well as municipal bylaws applicable to waste management.

The contractor shall remove all waste generated at the construction site on a daily basis or as soon as possible after generation to ensure good housekeeping at all times. The contractor shall have a waste management plan which must be implemented on the construction site and which will have the objective to ensure that waste is managed according to the Waste Management Hierarchy:
- Reduce what you can. If you cannot reduce then,
- Re-use what you can. If you cannot re-use then,
- Recycle what you can. What you cannot recycle,
- Convert into energy sources. If it cannot be converted to an energy source,

- Dispose of in a landfill – this is only to be done as a last resort and disposed without endangering human health and without using processes or methods which could harm the environment.

16. HAZARDOUS SUBSTANCE MANAGEMENT

The contractor shall ensure that hazardous substances brought onto site are easily identifiable and stored according to the requirements of the General Safety Regulations, GNR. 1031 of 1986, Section 4. Where flammable liquids are being used or stored, this must be done in a manner which would not cause a fire or explosion hazard.

The contractor shall have Material Safety Data Sheets (MSDS) readily available for flammable, hazardous and toxic chemical substances and materials brought onto site and shall ensure that his employees are trained in these MSDS's.

Flammable, hazardous or toxic chemical substances may not be stored in empty food or drink containers. Empty flammable, hazardous and toxic containers must be disposed of in a safe manner, which will prevent further use of such a container.

Asbestos

A survey of the construction site must be done during site establishment, to locate any asbestos. Should asbestos be located, the conditions of the Asbestos Regulations, GNR. 155 of 2002 must be followed and complied with.

17. CONTRACTORS

16.1 Consultations, Communications 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. 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 sub-contractors e.g. design changes agreed with the Employer and the designer, instructions by the Employer and/or his/her agent, exchange of information between sub-contractors, the reporting of hazardous/dangerous conditions/situations, etc. The contractors' most senior manager on site shall be required to attend all OH&S meetings.

16.2 Operational Procedures

Each construction activity shall be assessed by the contractor 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;
- to include them in his OH&S plan where relevant

16.3 Checking, Reporting and Corrective Actions

i. Monthly Audit by Employer (Construction Regulation 5(1)(o)

The Employer will conduct monthly health and safety and document verification audits in compliance with Construction Regulation 5(1)(o) in order to ensure that the contractor has implemented and is maintaining the agreed and approved OH&S plan.

ii. Other Audits and Inspections by the Employer

The Employer reserves the right to conduct other ad-hoc audits and inspections as deemed necessary. This will include site safety walks.

iii. 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. The contractor shall furthermore ensure that each sub-contractor`s health & safety plan is being implemented by conducting periodic audits at intervals mutually agreed between the contractor and sub-contractors, but at least once per month.

iv. Inspections by OH&S Representatives 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.

v. Recording and Review of Inspection Results

All the results of the above-mentioned 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.

16.4 Project Health and Safety Management Plan

As per Section 5(1)(l) and Section 7(1)(a) of the Construction Regulations of 2014, the contractor shall develop, implement and administer a Health and Safety Management Plan. The plan shall be in writing and shall be negotiated between the Contractor and SANRAL or designated OHS Agent and must be approved by SANRAL or the designated OHS Agent **prior** to the commencement of work on site. The plan shall demonstrate management's commitment to ensure employee health and safety as their primary objective during the contract. As a suggestion, the following elements may be used to develop the H&S plan:

Introduction
- Mission
- Purpose & Scope
- Health, Safety and Environmental Policy
- Health, Safety and Environmental Goals
- Plan Objectives

Leadership and Commitment
- Values supporting commitment
- Roles, Responsibilities and Accountability

Hazard and Risk Management Process
- Effective Consultation
- Planning

Contractor HSE Alignment
- Sub-Contractors
- On-Site

Learning and Competency
- Project HSE Training and Competency Requirements
- Contractor & Sub-Contractor Duties
- Minimum Training Requirements
- Medical and Induction
- Employee details
- Visitors to site
- Induction

Involvement, Communication and Motivation
- Safety Meetings
- Health & Safety Behaviour
- Information and Learning

Hazard and Risk Management on site
- Hazardous Activities
- Hazardous Areas
- Hierarchy of Hazard Control
- Hazard and Risk Identification
- Risk Analysis and Evaluation
- Documented safe work procedures for hazardous activities
- Hazard and Risk monitoring plan
- Hazard and Risk review plan

Occupational Health and Hygiene
- Fitness for Work
- Hazardous Substances
- Airborne Chemical Substances
- Noise and Vibration
- Personal Hygiene
- Protection of Outdoor Workers
- Occupational Health Services on Site

Performance Tracking and Accountability
- Positive Performance Indicators
- Workplace Observations and Audits
- Reporting

Incident Management
- Emergency Preparedness and Response
- Incident Management
- Injury Management

Waste Management
- Hazardous Waste
- Non Hazardous Waste - Recyclable
- Non Hazardous Waste – Non recyclable

16.5 Project Health and Safety File

The contractor shall compile a project specific Health and Safety File that consist of all the relevant project specific documentation. The Health and Safety file may consist of multiple files, which when combined should contain all the required documentation.

It is recommended that the project specific Health and Safety file contain at least the following:

- Scope and summary of the project as well as any scope changes.
- Notification of Construction Work to DoL / Copy of Work Permit
- Proof of COID registration (Letter of Good Standing)
- Contractor Health and Safety Policy statement signed by management
- Mandatory Agreement – OH&S Act 37.2 (Between Employer and Principal Contractor)
- Signed Client Health and Safety specification
- Latest copy of the OHS Act and Regulations
- Company Organogram depicting Health and Safety Responsibilities, including sub-contractors
- Employee list including copy of IDs and medicals
- Project specific Health and Safety Management Plan agreed with the Employer – See point 16.4 above
- Relevant OH&S Legal appointments which includes duties and responsibilities as well as competencies (training certificate)
- Copies of minutes of meetings - OH&S committee and other relevant OH&S meeting minutes
- Designs/drawings (Construction Regulation 7(1)(e)
- Site specific Fall Protection Plan (if applicable)
- Risk Assessments
- Contractor Induction material
- Waste management Plan
- Emergency preparedness (first aid, firefighting, emergency plan, etc.)

- Emergency Contact Telephone numbers
- HIV awareness program
- List of hazardous chemical substances used on site
- Material Safety Data Sheets of hazardous chemicals on site
- List of plant & equipment to be used on site
- Inspection Checklists/Registers of plant & equipment and emergency equipment
- List of Sub-contractors including type of work
- Sub-contractor 37.2 Mandatary Agreements
- Sub-contractor appointments which shall include the type of work the contractor is appointed for.

16.6 Contracting Philosophy

Any site-specific hazards and safety management expectations will be made known to the Contractor prior to the work commencing on site. Legal OHS requirements contained in the OHS Act and Regulations as well as SANS Codes are the minimum requirements the Contractor must apply during this contract with regards to Occupational Health and Safety. The Contractor shall apply, implement and enforce the minimum OHS Act & Regulations and SANS Codes requirements.

16.7 Workers Compensation Registration

The Contractor shall ensure that his employees are covered for any occupational injuries and illnesses in terms of the Occupational Injuries and Diseases Act 130 of 1993, which cover shall remain in place and up to date for the duration of the project.

16.8 HSE Non-Compliance

It is a legal duty of the client according to the Construction Regulation 5(1)(q) that a contractor is stopped from executing any activity which poses a threat to the health and safety of persons. Depending on the seriousness of the non-compliance only the specific activity may be stopped until the non-compliance is rectified or the whole operation may be stopped.

It is also the duty of every employee to take reasonable care of his own health and safety and of other persons who may be affected by his acts as per OHS Act, Section 14(a). Keeping this in mind, it is required of the contractor to ensure his employees has the right to remove themselves from any unsafe situation or work activity, without any negative consequence to them until such time as the contractor has made the unsafe situation or activity as safe as practicable possible.

16.9 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:
    i. 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
    ii. 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."

16.10 Contractor Conduct

Guidelines to the most important rules that shall be implemented and maintained by the Contractor:

- Complete compliance to the OH&S Act and Regulations
- Hazard identification and Risk Assessments for all activities
- Daily communication of DSTI talk before work commences
- Safe access and egress to and from work areas.
- Compulsory use of lifelines, Safety Harnesses and Fall Arrestors (Lanyards to be attached at all times)
- Scaffold shall comply with Legal and SANS standards at all times
- Good housekeeping and stacking practices
- Safe lifting, rigging and slinging practices
- Complying to Legal standards for lifting machinery & equipment

- No lifting in wind conditions exceeding 30km/h (This is a guide and is dependent on risk assessments)
- Securing of tools, equipment and material at heights
- Wearing of appropriate personal protective equipment as identified in the risk assessment

Personal Conduct

Supervisors in charge are responsible for ensuring that the employees are aware of the hazards / risks involved in the work they will be doing / are doing and shall ensure the safety rules are obeyed.

No person shall act in a manner that endangers or is likely to endanger, the safety of any other person, or cause harm to any other person.

An employee who observes any dangerous situation, shall as soon as possible inform the person who is responsible for that section of the site.

Any employee who becomes aware of any person disregarding any safety rules, shall remind that person of the rules. If he persists in disregarding the rules, the matter must be reported to his supervisor.

No person shall damage, alter, remove, render ineffective or interfere with anything that has been provided for the protection of the site, or for the health and safety of persons.

No person shall interfere with or use firefighting equipment without authority and training.

No person in a state of intoxication or condition that render him incapable of controlling himself shall enter or be allowed to enter the site.

No alcohol or illegal drugs shall be taken onto the site.

All safety and warning signs shall be obeyed.

Always be alert of construction vehicles as well as traffic. Never turn your back to oncoming traffic, always have a line of sight.

16.11 Contractor and Sub-Contractor Management

The Principal Contractor shall establish, maintain and ensure that all his contractors establish and maintain HSE standards and systems as necessary and to comply with the Legal requirements as well as these HSE specifications.

The Contractor shall be solely responsible for carrying out work on the project, having the highest regard for the health and safety of his employees and people in the vicinity of his work area.

16.12 Public Health and Safety

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
- Passers-by to the site

18. DESIGNING FOR HEALTH, SAFETY AND THE ENVIRONMENT

Designing for safety is a process aimed at minimizing injury, death, property damage or destruction and harm to the environment, by utilizing an approach to identify and eliminate or control hazardous areas. The project Designer and Contractor must implement a process that ensures safety is incorporated in the design process, which includes temporary works as contemplated in the Construction Regulations, 2014 Section 12.

The Contractor must communicate the anticipated risks and hazards resulting from the design to his employees and establish safe work procedures for the temporary works.

19. INCIDENT MANAGEMENT

The Contractor shall ensure that a culture exists within his company that promotes the recognition, response, reporting and investigation of incidents, including near misses (near hits). The Contractor must implement a procedure for reporting and investigating accidents, incidents and near misses. The Contractor should have a clear objective and target to obtain zero injuries for the duration of the project and such an objective must be communicated to all employees.

Appropriate corrective actions must be implemented and the applicable learnings must be shared within the Contractors business to prevent a recurrence of the incident or to prevent the near miss from becoming an incident in future.

18.1 Incidents and Accidents

The contractor and his subcontractors shall coordinate their investigation of all accidents/incidents where employees and non-employees were injured to the extent that he had to be referred for medical treatment by a doctor, hospital or clinic. The results of the investigation shall be entered into an accident/incident register, which must be updated with each accident/indent.

The Contractor shall notify the relevant SANRAL Project Manager and or SANRAL OHS Specialist of any incident/accident within the Contractors or his Sub-Contractors area of responsibility in writing as soon as possible.

Although the accident / incident is reported to the client, the Contractor has a responsibility and is required by law to report any Section 24 accidents and incidents to the Department of Labour. Any road traffic accident must be reported to the relevant authorities.

It is essential that the Contractor demonstrate that corrective and preventative action has been taken to prevent a similar incident in future and that it is communicated to all the Contractors affected staff. A copy of the investigation, corrective and preventative action taken as well as the attendance register of the employees who attended the discussion of the incident and the action implemented to prevent a similar incident, must be forwarded to the SANRAL Project Manager and or the SANRAL OHS Specialist.

Investigations must be completed for:
- Near Miss Incidents (To prevent it from becoming an incident)
- First Aid case Incidents
- Medical treatment case Incidents
- Fatalities

18.2 Incident 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. In addition, the contractor shall update monthly the Disabling Injury Frequency Ratio (DIFR) and display this information on a signboard at the site office.

The Contractor is responsible for collecting, recording, calculating and reporting his and his sub-contractors Health & Safety statistics to the SANRAL OHS Specialist.

The statistics should contain at least the following for all employees of all contractors working on the project:
- Total Number of workers
- Total Number of hours worked (on the SANRAL project)
- Total Number of Near Miss Incidents
- Total Number of First Aid case Incidents
- Total Number of Medical Treatment case Incidents (Excluding Section 24 type incidents)
- Total Number of Section 24 type Incidents
- Preventative actions taken on incidents that have occurred
- Communication to employees and contractors of incidents and preventative actions.

20. PROJECT SPECIFIC CONSTRUCTION REQUIREMENTS

Section 1 to 18 of this document is generic and is applicable to all projects carried out on behalf of the South African National Roads Agency, SOC Ltd.

The following section contains specific requirements for Contract No: SANRAL C.002-026-2026/1S, which must be adhered to in addition to minimum legislative requirements.

19.1 Baseline Risk Assessment

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

Risks in connection with:

~~a)~~ Personal health risks in connection with ablution facilities, eating areas, drinking water.
b) Secure/safe storage of materials, plant and equipment
c) Secure/safe storage and use of hazardous and/or flammable materials
d) Maintenance workshop - onsite repairs to construction vehicles, mobile plant & equipment.
e) Possibility of asbestos in existing structures
f) Existing services, e.g. gas, telecommunications, electrical supply and similar
~~g)~~ Temporary electrical installations
h) Adjacent land uses/surrounding property exposures
i) Boundary and access control/public liability exposures (NB: The Employer is also responsible for the OH&S of non-employees affected by his/her work activities)
~~j)~~ Biological hazards, e.g. bees, snakes, spiders
~~k)~~ Environmental risks, e.g. lighting, strong winds, heavy rains, dark environments, hot/cold and wet environments
l) Exposure to a water environment
m) Exposure to noise
n) Exposure to vibration
o) HIV/Aids and other diseases such as silicosis or asbestosis, where applicable
p) Use of portable electrical equipment including, but not limited to:
q) Angle grinder
r) Electrical drilling machine
s) Circular saw
t) Generator
u) Excavations including, but not limited to:
v) Ground/soil conditions
w) Trenching
x) Shoring
y) Drainage of trenches
z) Welding including, but not limited to:
aa) Arc welding
bb) Gas welding
cc) Flame cutting
dd) Use of LP gas torches and appliances
ee) Loading and off-loading of trucks, including material deliveries
ff) Manual and mechanical handling
gg) Lifting and lowering operations
hh) Driving and operation of construction vehicles and mobile plant including:
ii) Trenching machine
jj) Excavator
kk) Bomag roller
ll) Plate compactor
mm) Front end loader
nn) Mobile cranes and the ancillary lifting tackle
oo) Grader
pp) Parking of vehicles and mobile plant
qq) Towing of vehicles and mobile plant
rr) Layering and bedding
ss) Installation of pipes in trenches
tt) Pressure testing of pipelines

uu) Backfilling of trenches
vv) Protection against flooding
ww) Gabion work
xx) Use of explosives
yy) Overhead Electrical Cables
zz) Work adjacent or in proximity of railway lines
aaa) Work adjacent or in proximity of traffic
bbb) Working in elevated positions
ccc) Working in confined spaces – tunnelling
ddd) Formwork and support work (temporary works) including scaffolding
eee) Demolition work, where applicable
fff) Bulk mixing plant, where applicable
ggg) Environmental impacts such as pollution of water, air or soil

19.2 Daily Site Attendance Register

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

All site visitors and any new contractors shall report to security / reception upon arrival at site. The Contractor will only be granted first time access to work on the site if all required documentation has been provided and approved.

All visitors need to sign an attendance register when visiting the site. Visitors include all persons which are not permanently working on the site, but excludes temporary site workers. Visitors must undergo site induction training before they are allowed on site to make them aware of the site dangers.

19.3 Emergency Numbers / Emergency Evacuation

A list with emergency numbers must be readily available to first aiders and supervisors. Emergency numbers must be site specific and must display the nearest emergency facilities.

The contractor shall identify and formulate emergency procedures in the event an incident does occur. The emergency procedures thus identified shall also be included in the contractor's OH&S plan and communicated as part of induction training. It is the responsibility of the first aid worker, together with the construction supervisor, to make an assessment regarding the severity of injuries and which actions are appropriate. For example: transfer to a medical facility by ambulance or helicopter.

The Contractor must implement an emergency evacuation procedure on site to ensure that in case of an emergency, all staff will leave their place of work when the emergency siren is sound and proceed to the demarcated emergency assembly point. The emergency assembly point must display the sign "Emergency Assembly Point".

An evacuation route diagram must be displayed and visible at strategic points in buildings and on notice boards.

All staff working on site must be given awareness training on the emergency evacuation procedure and evacuation drills must be exercised to ensure all staff know the correct procedure to follow in case of an emergency.

19.4 Site Security

Certain areas where work must be carried out, is recognized unsafe areas and certain other areas may from time to time become unsafe, due to 3rd party actions. The Contractor must as far as reasonably possible anticipate unsafe areas and must ensure that his site staff is safe from 3rd party actions, which include but is not limited to:

- Unrests,
- Violent Demonstrations,
- Theft,
- Injury from 3rd parties at all times.

The Contractor must, when work is to be carried out in the above-mentioned areas, make provision for security services to accompany site staff during the execution of their work, as the Contractor is responsible for the Health, Safety and Security of his own staff. The provision for security services must form part of the Contractors tender.

19.5 Personal Protective Equipment

Comply with General Safety Regulations, Section 2

The contractor shall identify the hazards in the workplace and deal with them. He must either remove them or, where impracticable, take steps to protect workers and make it possible for them to work safely and without risk to health under the 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. The hierarchy of hazard elimination must be followed before the option of personal protective equipment is considered. The following hierarchy of controls must be followed:

- Elimination
- Passive Controls
    - Substitution – Using a cherry picker or man-lift instead of a ladder.
    - Engineering Controls – Installing barrier railings; Installing stairs instead of using vertical ladders.
- Active Controls
    - Administrative policies and procedures
    - Personal protective equipment

Where it is not possible to create an absolutely safe and healthy workplace the contractor shall inform employees regarding this and issue, free of charge, suitable equipment to protect them from any hazards being present and that allows them to work safely and without risk to health in the hazardous environment.

It is a further requirement that the contractor maintain the said equipment, that he instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

Employees do not have the right to refuse to use/wear the equipment prescribed by the Employer and, if it is impossible for an employee to use or wear prescribed protective equipment through health or any other reason, the employee cannot be allowed to continue working under the hazardous condition/s for which the equipment was prescribed but an alternative solution has to be found that may include relocating the employee.

The 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.

The contractor shall ensure that all his personnel, excluding those who are permanently office bound, are equipped with reflective safety jackets and that these are worn at all times when working on site. Any person found not wearing a reflective jacket on site must be removed from the site until such time as he is in possession of and wearing a reflective jacket. Reflective safety jackets shall be kept in good condition and any jackets that are ineffective must immediately be replaced by the contractor.

19.6 Site Supervision

Comply with Construction Regulation, Section 8

The Contractor shall appoint a competent Construction Manager who shall be responsible for the construction activities and for ensuring occupational health and safety compliance on the construction site.

19.7 Working in Elevated Positions

Comply with Construction Regulation, Section 10

The contractor shall ensure that a fall protection plan, developed by a competent person who is designated as the Fall Protection Plan Developer, is available on site and understood by all employees who will be working in elevated positions.

All employees working in elevated positions shall protected themselves from falls by wearing a full body harness and the lanyard shall be attached as far as possible above the head of the worker to a life line or other approved and tested anchor point.

In addition to obvious elevated work activities, work activities which include:
- Working on the edge of an excavation where there is a risk of falling into the excavation;
- Work on the edge of a vertical drop where there is a risk of falling;
- Work on top of tanker trucks and tanks;

Shall be considered work in elevated positions and Section 10 of the Construction Regulations must be adhered to at all times. The hierarchy of controls must be implemented when such activities are carried out. As a minimum the employee must wear PPE, which shall include a full body harness attached to a restraint.

19.8 Structures

Comply with Construction Regulations, Section 11.

The contractor shall ensure that all practicable measures are taken to prevent the uncontrolled collapse of new or existing structures or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work. No structure may be loaded in a manner which would render it unsafe.
When a structure is of temporary nature, all conditions as required by the Construction Regulations Section 12 - Temporary Works, must also be complied with.

19.9 Excavations

Comply with Construction Regulations, Section 13

The Contractor shall ensure that all excavations are carried out under the supervision of a competent person who has been appointed in writing as Excavation Supervisor.

The Contractor must evaluate the stability of the ground before excavation work begins as well as during excavation work.

Excavations must be barricaded to prevent unauthorized access.

Material removed from excavations, as well as heavy machinery and construction vehicles, must not be closer than 1 meter of the edge of the excavation, to prevent additional loads on the excavation edge, which could cause cave-ins, to prevent construction vehicles from falling into the excavation and to prevent the accumulation of carbon monoxide gas inside the excavation.

People working in the excavation must be adequately protected from cave-ins, by means of protection systems such as trench boxed and shielding and must have a safe means of access into the excavation and egress from the excavation.

19.10 Scaffolding

Comply with Construction Regulations, Section 16, General Safety Regulations, Section 6 and SANS 10085 – The Design, erection, use and inspection of access scaffolding

The Contractor shall appoint a competent person in writing as scaffolding Supervisor. Scaffolding Inspectors and Scaffolding Erectors must be trained and found competent to carry out scaffolding work. It is important to note that only competent scaffold erectors are allowed to build the scaffolding. The scaffold inspector is not allowed to build the scaffold with the scaffold erector team.

Scaffolding shall be erected according to SANS 10085 and shall be tagged “safe for use” after inspection indicated that the scaffold is safe to use. The inspection of the scaffold shall be in writing and proof thereof shall be available for any user of the scaffold as well as for audit purposes.

Scaffold left erected while the Contractor is not in attendance, must be tagged with a “Not Safe for Use” tag and all reasonably practicable measures must be taken to prevent unauthorised access to the scaffold.

Scaffold must be inspected by the competent scaffold inspector on completion of the scaffold build, weekly thereafter or following severe weather conditions.

Hazards such as overhead power lines must be identified before the scaffold is build and must be reflected in the risk assessment.

When using mobile scaffold, employees and materials must be removed from scaffold before moving the mobile scaffold. Hazards such as overhead power lines must be identified before moving mobile scaffold and must reflect in the risk assessment.

19.11 Suspended Platforms

Comply with Construction Regulation, Section 17, SANS 10295-2 - Suspended access equipment Part 2: Temporary suspended platforms (TSPs)

All suspended platform work must be carried out under the supervision of a competent appointed Suspended Platform Supervisor. Suspended platform erectors, operators and inspectors must be competent.

The contractor must be in possession of a certificate of design for the use of the suspended platform system.

19.12 Cranes

Comply with Construction Regulation, Section 22, General Machinery Regulation, Section 18.

Crane operators must be competent to carry out their work safely and must be in possession of a valid medical certificate of fitness, issued by an occupational health practitioner.

19.13 Construction Vehicles & Mobile Plant

Comply with Construction Regulation, Section 23, National Road Traffic Act, 1996

Construction vehicle operators must have received training to operate the class of construction vehicle or mobile plant and must be in possession of an operator’s card as proof of competency. Construction vehicle operators must be authorised in writing and have a medical certificate of fitness issued by an occupational health practitioner to operate the construction vehicle and/or mobile plant.

19.14 Electrical Equipment

Comply with Construction Regulations, Section 24

The contractor shall take adequate steps to ascertain the presence of and guard against danger to workers from electrical cables or apparatus which is under, over or on the site.

The exact location of underground electric power cables must be determined before any excavators are used for excavation purposes.

The location of overhead electrical cables must be assessed when working with cranes and lifting equipment. Injury may be possible from touching the electrical cables with the crane boom, or from arching when the crane boom comes too close to the electrical cable.

All temporary electrical installations must be inspected at least once a week by a competent person and the records of the inspections must be recorded in a register which must be kept on site.

Electrical machinery and extension cords must be is a serviceable condition and must be inspected on a daily basis before use on a construction site by the authorised operator and the inspection checklist must be kept on the construction site.

Electrical Installations

Comply with Electrical Installation Regulations

All electrical installations shall be inspected and approved by an accredited electrical inspector and a valid Certificate of Compliance must be issued for the installation.

All electrical installations carried out on site (permanent and temporary) must be in accordance and comply with the Electrical Installation Regulations.

All power supplies and generating units must be fitted with a functional earth leakage device.

19.15 Temporary Storage of Flammable Liquids

Comply with Construction Regulation, Section 25 and General Safety Regulations, Section 4

The Contractor must ensure storage areas of flammable liquids are well ventilated and “No Smoking” signs are placed at the entrances and ventilation ducts of the storage areas. Firefighting equipment must be available in suitable positions around the storage areas.

The Contractor must ensure that good housekeeping is practiced in and around the flammable storage areas.

19.16 Water Environments

Comply with Construction Regulation, Section 26

The Contractor must ensure that a lifejacket forms part of the employees PPE and is worn when the employee is exposed to the risk of drowning, by falling into water.

The risk assessment must make provision for the rescuing of persons in danger of drowning and for preventing employees from falling into the water.

When working over water environments, Section 10 of the Construction Regulations – Fall Protection will also apply.

19.17 House-keeping

Comply with Construction Regulation, Section 27, Environmental Regulations for Workplaces, Section 6(3)

The Contractor shall ensure that suitable and acceptable housekeeping is continuously implemented and maintained on the construction site. Off-cuts and waste must be removed by the end of the shift or as soon as practicable.

19.18 Stacking & Storage of Material & Equipment

Comply with Construction Regulations, Section 28 and General Safety Regulations, Section 8

The Contractor shall appoint a competent person in writing with the duty of supervising all stacking and storage operations on site.

Stacking shall only take place in areas specifically demarcated for this purpose. Circular items must be secured with wedges or chocks.

Items removed from a stack shall only take place from the top most layer of the stack.

Stacks shall not obstruct any fire extinguishing equipment, first aid equipment, electrical switchgear (DB Boxes) and ventilation or lighting installations.

Unstable stacks must be broken down immediately.

19.19 Fire Precautions

Comply with Construction Regulation, Section 29.

The Contractor must provide his own firefighting equipment that is within the service date and safe for use. Firefighting equipment must be on a register and inspected by a competent person who has been appointed in writing.

Suitable and sufficient fire extinguishing equipment must be placed at strategic locations and a sufficient number of firefighters must be available, which must be trained in the use of it.

19.20 Intoxicating Liquor and Drugs

Comply with General Safety Regulations, Section 2A

The site limit for intoxication is set to zero to complement a vision of zero tolerance

Any person found to be intoxicated, or consuming intoxicating liquor or illegal drugs, will not be allowed onto the premises and/or will be removed from the premises.

The Contractor has the right to test any person entering the premises for intoxicating liquor or illegal drugs and may refuse entrance on the basis of the outcome of the test.

The Contractor shall ensure that employees taking prescription medicine informs the Contractor of such and shall ensure that the side effect of such medicine does not constitute a hazard to the employee himself or people working in close vicinity to the employee.

19.21 Confined Space Work & Tunnelling

Comply with Construction Regulation, Section 15 and General Safety Regulations, Section 5

The Contractor shall ensure that only authorized persons enter confined spaces.

An entrance log must be kept to ensure people are not left inside the confined space. Adequate air monitoring must be carried out before entering the confined space. When air monitoring indicated the oxygen to be less than 20% by volume, the confined space must be purged and ventilated to obtain a safe atmosphere or self-contained breathing apparatus must be used.

19.22 Site Services

The Contractor shall provide and maintain on the Site adequate and suitable sanitary services 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

Drinking Water

The Contractor must ensure that an adequate supply of potable drinking water is available 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. Employees working in hot conditions must consume enough water per hour to prevent dehydration.

Where water is unsafe for human consumption, it must be so indicated by means of adequate signage.

Accommodation

The Contractor shall comply with the requirements of Construction Regulation 30 with regards to employee's facilities and accommodation. Reasonable and suitable living accommodation must be provided to employees who are far removed from their homes.

I _____, duly authorised to sign this Health and Safety Specification on behalf of _____ (the Contractor), do hereby declare that I acknowledge having read and understand this Health and Safety Specifications.

Signed at _____ on this ____ day of _____ 20_____.

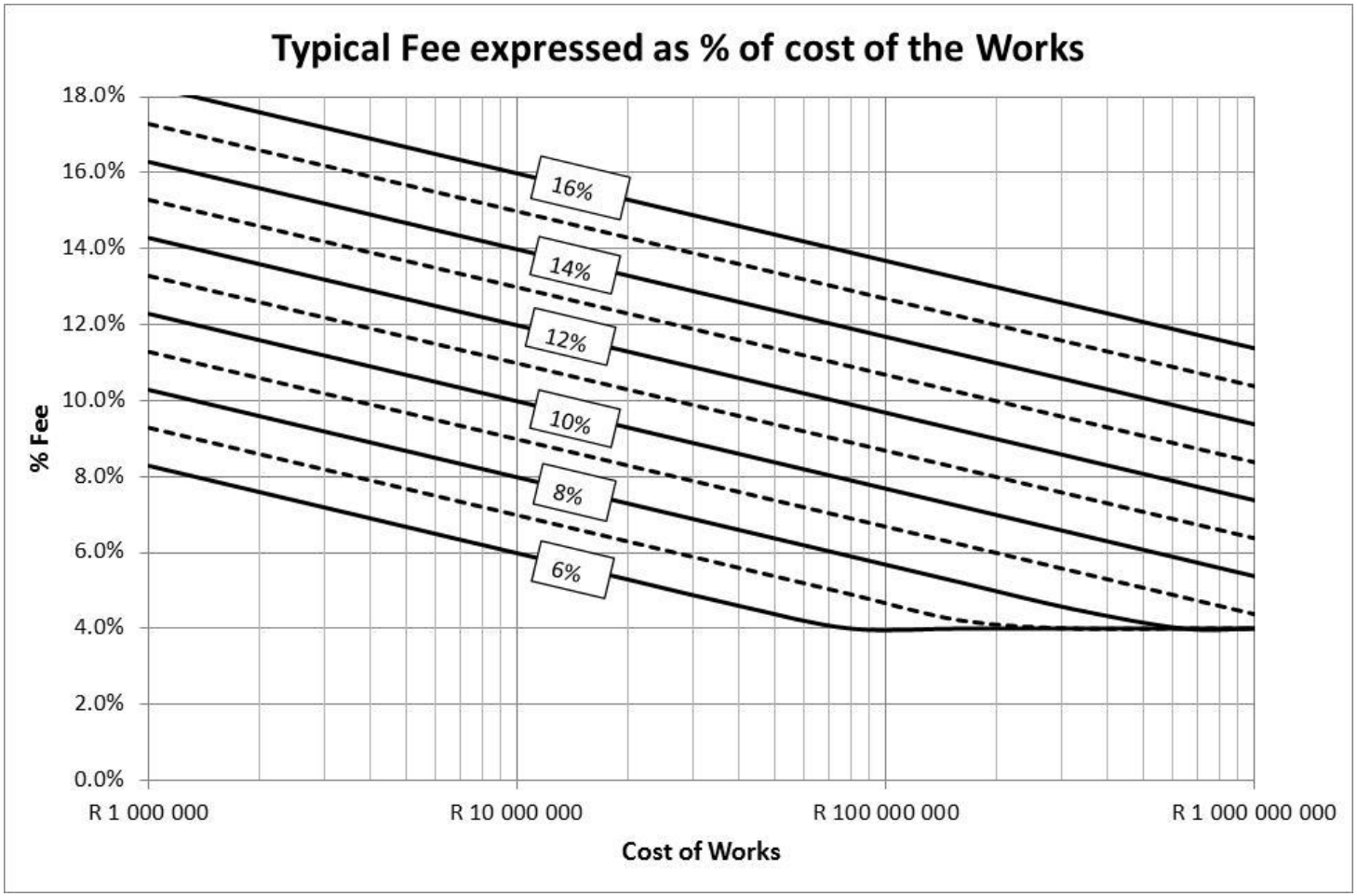
_____	_____	_____
Contractor Representative Name	Signature	Date

D3: OHS Audit Questionnaire

Appendix E: ECSA fee scale guidelines

PROJECT COST BASED FEES

Project Type	Fee	Typical Lower Limit		Typical Upper Limit		Less Effort	More Effort
	Category	Based on a R10m Cost of the Works					
Road Rehabilitation	A	6%		8%		Relatively uniform condition and minimal road furniture and drainage improvements	Variable condition with many requirements iro road furniture and drainage improvements
Rural Road Expansion	B	7%		9%		Flat topography, few intersections and minimal obstructions and interfaces	Difficult topography with many accesses, intersections, interchanges and interfaces with existing infrastructure and utilities
New paved Rural Roads	A	6%		8%		Flat topography, few intersections and minimal obstructions and interfaces	Difficult topography with many accesses, intersections and interfaces with existing infrastructure and utilities
New and Improved Urban Roads	C	8%		10%			
New Rural Freeways	B	7%		9%		Flat topography, few interchanges and minimal obstructions and interfaces	Difficult topography with many accesses, intersections, interchanges and interfaces with existing infrastructure and utilities
New Urban Freeways	D	9%		11%			
Reinforced Concrete and Structural Steel:							
Minor Structures	C	8%		10%		Uniform foundations straight and rectangular	Variable foundations, complex geometry and load calculations
Storm-water structures and Canals	C	8%		10%			
Overpass and Freeway Bridges	E	10%		13%		Few load cases, uniform foundations, short, straight and rectangular spans	Many Load cases, seismic loads, variable foundations and complex geometry
River Bridges	F	11%		14%			
Unique Structures	E	10%		13%		Uniform foundations straight and rectangular	Variable foundations, seismic loads and complex geometry and load calculations
Street lighting	D	9%		11%		Uniform geometry and use of proprietary systems	Complex site with specialised lighting purpose designed from first principles
Communications, data and IT cabling systems	E	10%		13%		Use of proprietary systems with performance specification	Complex systems purpose designed


Typical Fee expressed as % of cost of the Works
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
% Fee
16%
14%
12%
10%
8%
6%
R 1 000 000
R 10 000 000
R 100 000 000
R 1 000 000 000
Cost of Works

Appendix F: Pro-forma report formats

The content and format of the report shall be in accordance with the Employer's standard requirements and shall include, but not necessarily be limited to, the following, as may be relevant:

a) Locality Plan

b) Executive Summary

c) Introduction
Terms of reference
General description of the Project
Objectives and strategies
Scope of the investigations

d) Road Cross-Section
Standard Cross-Section
- National Road
- Provincial Road
- Municipal Road

Batter Slopes

e) Existing pavement
Pavement history
Maintenance history

f) Existing pavement evaluation
Visual condition survey
Instrument/mechanical surveys
Test pit information (Refer to SANRAL's Draft M1 (2004) Manual for Design Specialist's (Pavement and Materials Engineer) professional responsibilities and modus operandi)
Core profiles (Refer to SANRAL's Draft M1 (2004) Manual for Design Specialist's (Pavement and Materials Engineer) professional responsibilities and modus operandi)
DCP analysis

g) Traffic information
Available data
Past traffic loading
Future traffic growth
Recommended design loading
Traffic accommodation considerations

h) Structural analysis
Analysis of deflections
Assessment of deflection bowl parameters
Overlay structural analysis

i) Geometric Design
- National Road
- Provincial Road
- Municipal Road

j) Structures (refer to specific requirements of Bridge Report in Structures in Code of Procedure)

k) Hydraulic Capacity of Bridges and Major Culverts (refer to SANRAL's Drainage Manual 6th Edition) (latest version)

l) Traffic Accommodation
All traffic deviations etc to accommodate existing traffic during the construction to be included in this chapter

m) Ancillary works

All ancillary works over and above the main focus of the project should be included in this chapter e.g. sub-soil drainage, surface drainage, shoulder make up, road signs etc.

n) Environmental and OHS obligations and considerations

o) Summary of recommendations, including but not restricted to;
Geometric improvements
Capacity improvements
Structural options (Refer to Bridge Report in Structures C.O.P)
Intersection improvements
Interchange improvements
Safety improvements
Structures
Pavement design options
Any other alternatives
Cost benefit analysis
Climatic influences

p) Construction materials (project/commercial and their appropriate application with respect to OH&S obligations) (Refer to SANRAL's Draft M1 (2004) Manual
Aggregate sources
Sand sources
Gravel sources
Fill material sources
Water sources
Bituminous products

q) Estimated costs of alternative strategies
Construction programme

r) Annexures
The Report shall also contain the following annexures where relevant:
Pavement analysis:
Summary of condition survey
Pavement evaluation sheets
Riding quality measurements
Deflection measurements
Deflection vs. rut depth analysis
FWD parameter analysis

Materials investigations: (Refer to SANRAL's Draft M1 (2004) Manual for Design Specialist's (Pavement) professional responsibilities and modus operandi)
Test pit profiles
Summary of test results
Analysis of cores
Existing binder property results
Texture depth and Ball Pen survey

Construction materials:
Test results summary
Materials designs

s) Draft pricing schedule and cost estimate.

t) Draft specifications differing from the COLTO Standard or Employer's pro-forma document.

Table 1: Economic Indicators Summary (Capital Projects Only)

Discount Rate	8%
Analysis Period	30 Years
Increase in Agency Capital Cost (Discounted)	R261 120 000
Savings in Motorised Vehicle Operating Costs (Discounted)	R831 070 000
Savings in Motorised Travel Time Costs (Discounted)	R213 040 000
Reduction in Accident Costs (Discounted)	R226 720 000
Net Present Value (Discounted, must be > 0)	R966 000 000
Nett Present Value/Capital Cost Ratio (must be > 0)	3.699
Internal Rate of Return (must be > 12% @ 8% Discount)	21.3 %

Appendix G: Request for Survey Work

Not Applicable

Appendix H: Memorandums of Agreement

H1 : Declaration of National Road through "Towns"
H2 : Hand-over of Access Roads Agreement between SANRAL and relevant Local Authority
H3: : SPLUMA Agreement

Appendix I: Road Safety Audit Policy

Not Applicable

Appendix J: 2nd Tier Procurement Procedure

Procurement of Sub-services

Second (2nd) tier procurement include the procurement of any work where either the work is not scheduled or priced, or where the process of procurement of the sub-Service Provider is by means of a prescribed 2nd tier pro-forma document provided by the Employer. It includes the procurement of work where rates have been omitted of where allowance for work is made under provisional sum or prime cost sum.

The following procurement methods is to be followed:

3. Where work is not scheduled but existing rates for similar work exist in the contract and the work can therefore be executed by the Service Provider or his Targeted Enterprise at existing rates.

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

4. Where work is scheduled and the payment calculation is based on a formula specified in the contract document, or where the payment rate is pre-determined or fixed by the Employer.

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

5. Where the supplier/sub-Service Provider is not selected by the Service Provider and actual cost is re-imbursable and no procurement process is possible.

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

6. Where there are omitted items as part of the existing scheduled scope of work and no existing rates for similar work exist in the contract.

   A proposal for a new rate shall be submitted by the Service Provider and evaluated by the Employer, by comparing with either adjusted relevant rates in the contract, or by comparing with similar rates on similar contract, or by comparing 3 (three) informal quotes to substantiate the rate. The new agreed rate is approved through the Works Authorisation process.

7. Where work is scheduled under a provisional sum or prime cost sum and the Employer prescribes a 2nd tier pro-forma either by quotation process or open tender process.

   The work is to be procured by means of the 2nd tier pro-forma and approved through the Works Authorisation process.

8. Where work is scheduled under a provisional sum or prime cost sum and there is not a 2nd tier pro-forma available from the Employer and the estimated cost of the work is equal or less than R500 000.00.

   A minimum of 3 (three) quotations shall be obtained from sub-Service Providers and approved through the Works Authorisation process.

   The following is the minimum requirements for this process:

   b. Quotation to include form of quotation, CSD registration, tax compliance certificate/PIN number and an original or certified copy of the original B-BBEE certificate.

c. Quotations to be evaluated on price and preference.

g) Where work is scheduled under a provisional sum or prime cost sum and there is not a 2nd tier pro-forma available from the Employer and the estimated cost of the work is more than R500 000.00.

The work is to be procured through an open tender and approved through the Works Authorisation process. The following is the minimum requirements for this process:

d. Tenders to close at the office of the Employer.
e. Tender documents to include Form of Offer, CSD registration, tax compliance certificate/PIN number, an original or certified copy of the original B-BBEE certificate, SBD1, SBD4, SBD8, SBD9, SBD6.2 and Form A2.2.
f. Tenders to be evaluated on price and preference.

h) The following list of items is exempted from the provisions of paragraphs (f) and (g) and an indication of the method or minimum requirements are given under “Procurement Requirements”.

Item no	Description	Unit	Procurement Requirements
3.4.9(c)	Student stipend	Prov sum	Method (b)
3.4.10(b)	Review of tender documents	Prime cost	Method (b) or (d)
3.4.10(c)	Visit to construction site	Prime cost	Method (b) or (d)
3.4.11(a)	Personnel cost	Prov sum	Method (b) or (d)
3.4.14(a)	Services	Prime cost	Method (c)
3.6.1(b)	Hiring of venue, providing refreshments and coach	Prime cost	3 (three) quotations only
3.7.4(a)	Site supervision staff	Prov sum	Salaries to be agreed with Employer
3.7.4(f)	Project Liaison Officer	Prov sum	Salaries to be agreed with Employer
3.7.4(h)	Accommodation	Prov sum	3 (three) quotations only
3.7.5(c)	Student stipend	Prov sum	Method (b)
3.7.6(a)	Travelling to perform duties	Prov sum	Method (b)
3.7.6(c)	Toll fees	Prime cost	Method (c)
3.8.1(b)	Disbursements	Prime cost	3 (three) quotations only
3.8.4	Training of TE	Prov sum	Method (b)
3.8.6(b)	Liaison with PLC	Prov sum	Method (b) or (d)
3.8.6(c)	PLC stipend	Prov sum	Method (b)

Appendix K: Integrated Transport Information System

SANRAL
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
Reg.No.1998/009584/30
BUILDING SOUTH AFRICA
THROUGH BETTER ROADS

Integrated Transport Information System

ITIS Public User Registration

July 2018

Publication Details

Documentation Details

This document was developed for the South African National Road Agency (SANRAL). For content revisions, questions, or comments, contact the writer at itisissues@nra.co.za .

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Revision History

Revision	Description of Change	Author	Effective Date
0	Initial Release	K Niebuhr	July 2018

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Technical Support

For technical support please send an email to ITIS Support at itisissues@nra.co.za. The email needs to contain a short description of the problem in the Subject field. Please note that emails without a subject will be rejected. In the body of the email please describe your problem and provide your contact details.

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1. REGISTRATION

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1. Registration

To register a new ITIS user, go to the ITIS website https://itis.nra.co.za

i. Click on Register and accept the Term and Conditions and click on Next

ii. Select Public User from the dropdown on the registration category screen. Click on Next

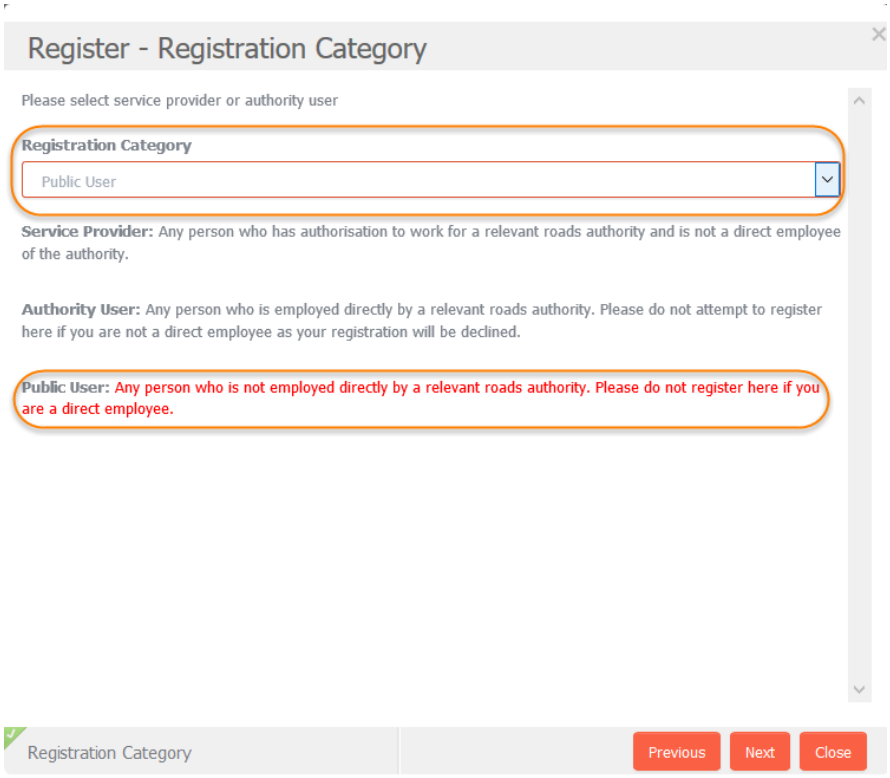


Figure 1: Registration Category

iii. Complete the User details form:

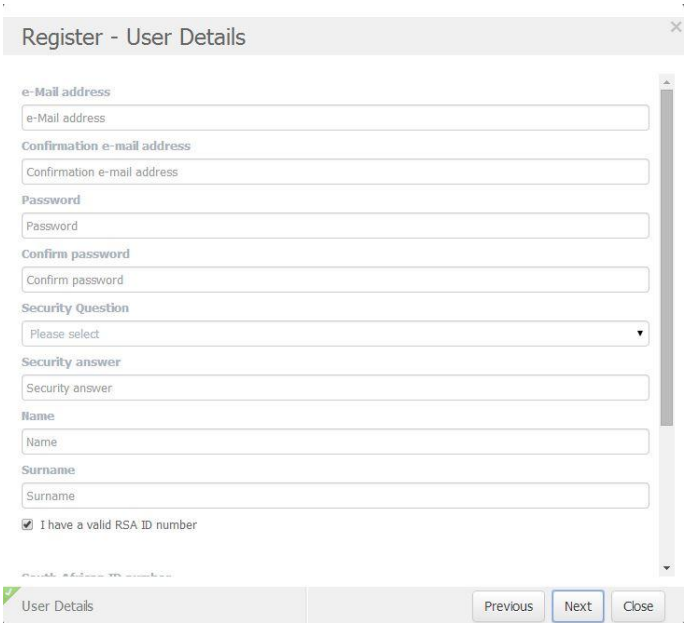


Figure 2: User Details

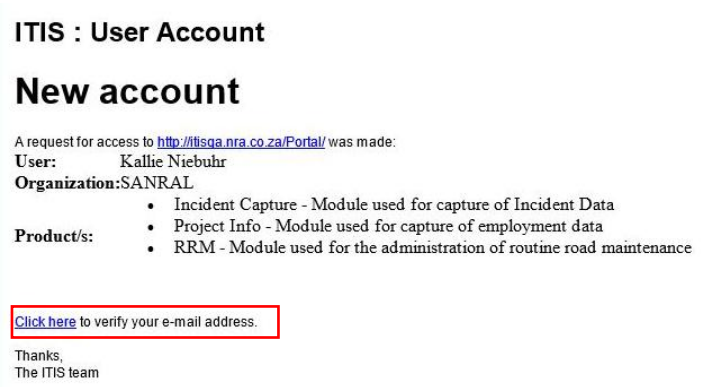
- **E-Mail Address -** This email address will be used as your user name to access this website and the ITIS software. Each user must have their own email address and users will not be allowed to share an email address
- **Password -** This password will be required when trying to access the website and the ITIS software. The password must contain at least 1 UPPERCASE letter, 1 lowercase letter, 1 special character and 1 number
- **Security Question -** Select a security question from the dropdown. This question will be used for confirmation when resetting your password
- **Security Answer -** Enter the answer to the question selected above
- **Name -** Your name
- **Surname -** Your surname
- **Telephone Number -** Your telephone number at the office
- **Mobile Number -** Your mobile number
- **Fax Number -** Your Fax number

iv. Click on Next

v. Enter the characters as seen on the Captcha Image and click on Register

vi. Clicking on Register will send a verification email to the email address you specified. Open the email and click on the email verification link.

vii. After a successful email verification, you should be able to Login


ITIS : User Account

New account

A request for access to http://itisqa.nra.co.za/Portal/ was made:
User: Kallie Niebuhr
Organization: SANRAL
Product/s:
- Incident Capture - Module used for capture of Incident Data
- Project Info - Module used for capture of employment data
- RRM - Module used for the administration of routine road maintenance

Click here to verify your e-mail address.

Thanks,
The ITIS team

Figure 3: Verification Email

Appendix L: Gateway Review Template

PART C5: ANNEXURES