NEC3 Term Service Contract (TSC3)

Between **ESKOM HOLDINGS SOC Ltd**
(Reg No. 2002/015527/30)

and
(Reg No. _____)

for **Institutionalised Training for learners in the LimLanga Cluster for a period of 5 years as an when required basis.**

Contents:

Tender No.

PART C1: AGREEMENTS & CONTRACT DATA

Contents:

C1.1 Form of Offer & Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Institutionalised Training for learners in the LimLanga Cluster as and when required basis for a period of 5 years.

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Options A	The offered total of the Prices exclusive of VAT is	**R**
	Value Added Tax @ 15% is	**R**
	The offered total of the amount due inclusive of VAT is[1]	**R**
	(in words) **Excluding VAT**	

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s) .....

Name(s) .....

Capacity .....

For the tenderer: .....

(Insert name and address of organisation)

Name & signature of witness ..... Date .....

Tenderer's CIDB registration number: .....

[1] This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: Service Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed and signed original copy of this document, including the Schedule of Deviations (if any).

Signature(s)	.....	.....	
Name(s)	.....	.....	
Capacity	.....	.....	
for the Employer	.....	.....	.....
	(Insert name and address of organisation)		
Name & signature of witness	.....	Date	.....

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

Schedule of Deviations to be completed by the *Employer* prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

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

	For the tenderer:	**For the Employer**
Signature	.....	.....
Name	.....	.....
Capacity	.....	.....
On behalf of	..... *(Insert name and address of organisation)*	..... *(Insert name and address of organisation)*
Name & signature of witness	.....	.....
Date	.....	.....

C1.2 TSC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	**General**	
	The *conditions of contract* are the core clauses and the clauses for main Option:	
		A: Priced contract with price list
	dispute resolution Option	**W1: Dispute resolution procedure**
	and secondary Options	
		X1: Price adjustment for inflation
		X2 Changes in the law
		X17: Low service damages
		X18: Limitation of liability
		X19: Task Order
		X20: Key performance indicators
		Z: *Additional conditions of contract*
	of the NEC3 Term Service Contract April 2013[2] (TSC3)	
10.1	The *Employer* is (name):	**Eskom Holdings SOC Ltd**
	Address	**Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg**
	Tel No.	**+27 11 709 3724**
	Fax No.	**N/A**
10.1	The *Service Manager* is (name):	**To be Advised**
	Address	**Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg**
	Tel	**+27 11 709 3724**
	Fax	**N/A**
	e-mail	**mkhonzln@eskom.co.za**
11.2(2)	The Affected Property is	**LimLanga cluster (Limpopo and Mpumalanga)**

[2] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

11.2(13)	The *service* is	Institutionalised Training is required as part of both the Learner Artisan and the Technician in Training learners' curriculum in the LimLanga cluster for a period of 5 years.
11.2(14)	The following matters will be included in the Risk Register	**1. Late response to the task order** **2. Non- compliance of terms and conditions of the contract.**
11.2(15)	The Service Information is in	**Part 3: Scope of Work and all documents and drawings to which it makes reference.**
12.2	The *law of the contract* is the law of	**the Republic of South Africa**
13.1	The *language of this contract* is	**English**
13.3	The *period for reply* is	**One week**
2	**The *Contractor*'s main responsibilities**	**Data required by this section of the core clauses is also provided by the *Contractor* in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data**
21.1	The *Contractor* submits a first plan for acceptance within	**One week of the Contract Date**
3	**Time**	
30.1	The *starting date* is.	**To be advised**
30.1	The *service period* is	**5 Years**
4	**Testing and defects**	As per the terms and conditions of the NEC3 Term Service Contract April 2013[3] (TSC3).
5	**Payment**	
50.1	The *assessment interval* is	**between the 25th day of each successive month.**
51.1	The *currency of this contract* is the	**South African Rand**
51.2	The period within which payments are made is	**Three weeks.**
51.4	The *interest rate* is	**the publicly quoted prime rate of interest (calculated on a 365 day year) charged by from time to time by the Standard Bank of South Africa Limited (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands and** **(ii) the LIBOR rate applicable at the time for amounts due in other currencies. LIBOR is the 6 month London Interbank Offered Rate quoted under the caption "Money Rates" in The Wall**

[3] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

		Street Journal for the applicable currency or if no rate is quoted for the currency in question then the rate for United States Dollars, and if no such rate appears in The Wall Street Journal then the rate as quoted by the Reuters Monitor Money Rates Service (or such service as may replace the Reuters Monitor Money Rates Service) on the due date for the payment in question, adjusted *mutatis mutandis* every 6 months thereafter (and as certified, in the event of any dispute, by any manager employed in the foreign exchange department of The Standard Bank of South Africa Limited, whose appointment it shall not be necessary to prove.
6	**Compensation events**	As per the terms and conditions of the NEC3 Term Service Contract April 2013[4] (TSC3).
7	**Use of Equipment Plant and Materials**	As per the terms and conditions of the NEC3 Term Service Contract April 2013[5] (TSC3).
8	**Risks and insurance**	
80.1	These are additional *Employer*'s risks	**1.** Suppliers to adhere and comply with all legislation, i.e. Eskom Safety and Health policies, procedures, specifications and guidelines and Occupational Health and Safety Act No. 85 of 1993. **2.** The suppliers are to meet Eskom's requirements with regards to the training materials, methodologies, and practical exposure requirements. **3.** Skills development through training of artisans and technicians as per the SD&L requirements.
9	**Termination**	As per the terms and conditions of the NEC3 Term Service Contract April 2013[6] (TSC3).
10	**Data for main Option clause**	
A	**Priced contract with price list**	
20.5	The *Contractor* prepares forecasts of the final total of the Prices for the whole of the *service* at intervals no longer than	**One week.**
11	**Data for Option W1**	
W1.1	The *Adjudicator*	**the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of**

[4] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za
[5] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za
[6] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

		Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
W1.2(3)	The *Adjudicator nominating body* is:	**the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the Institution of Civil Engineers (London) (see www.ice-sa.org.za) or its successor body.**
W1.4(2)	The *tribunal* is:	**arbitration**
W1.4(5)	The *arbitration procedure* is	**the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.**
	The place where arbitration is to be held is	**South Africa**
	The person or organisation who will choose an arbitrator - if the Parties cannot agree a choice or - if the arbitration procedure does not state who selects an arbitrator, is	**the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.**
12	**Data for secondary Option clauses**	
X1	**Price adjustment for inflation**	
X1.1	The *base date* for indices is	The rates offered are in Rand and are firm for the first year of the contract, thereafter subject only to an annual escalation, based on movements in CPI.
X2	**Changes in the law**	As per the terms and conditions of the NEC3 Term Service Contract April 2013[7] (TSC3).
X17	**Low service damages**	
X17.1	The *service level table* is in	**10% of the task order value penalty per complete week of delay.**
X18	**Limitation of liability**	
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to	**R0.0 (zero Rand)**
X18.2	For any one event, the *Contractor*'s liability to the *Employer* for loss of or damage to the *Employer*'s property is limited to	**the amount of the deductibles relevant to the event**
X18.3	The *Contractor*'s liability for Defects due to his design of an item of Equipment is limited to	**The greater of** **the total of the Prices at the Contract Date and**

[7] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

		• **the amounts excluded and unrecoverable from the *Employer*'s insurance (other than the resulting physical damage to the *Employer*'s property which is not excluded) plus the applicable deductibles**
X18.4	The *Contractor*'s total liability to the *Employer*, for all matters arising under or in connection with this contract, other than the excluded matters, is limited to	**the total of the Prices other than for the additional excluded matters.** **The *Contractor's* total liability for the additional excluded matters is not limited.** **The additional excluded matters are amounts for which the *Contractor* is liable under this contract for** • **Defects due to his design, plan and specification,** • **Defects due to manufacture and fabrication outside the Affected Property,** • **loss of or damage to property (other than the *Employer*'s property, Plant and Materials),** • **death of or injury to a person and** • **infringement of an intellectual property right.**
X18.5	The *end of liability date* is	**Six months after the end of the *service period*.**
X19	**Task Order**	
X19.5	The *Contractor* submits a Task Order programme to the *Service Manager* within	**Two days of receiving the Task Order**
X20	**Key Performance Indicators**	
X20.2	A report of performance against each Key Performance Indicator is provided at intervals of	**Three months**
Z	**The *additional conditions of contract* are**	**Z1 to Z14 always apply.**

Z1 Cession delegation and assignment

Z1.1 The *Contractor* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer.*

Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Contractor* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Joint ventures

Z2.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.

Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *Service Manager* within two weeks of the Contract Date of the key person who has the authority to bind the *Contractor* on their behalf.

Z2.3 The *Contractor* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Contractor* in writing.

Z3 Change of Broad Based Black Economic Empowerment (B-BBEE) status

Z3.1 Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor*'s B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change.

Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Service Manager* within thirty days of the notification or as otherwise instructed by the *Service Manager*.

Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor*'s obligation to Provide the Service.

Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P4 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Confidentiality

Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.

Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Service Manager*.

Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.

Z4.4 The taking of images (whether photographs, video footage or otherwise) of the Affected Property or any portion thereof, in the course of Providing the Service and after the end of the *service period*, requires the prior written consent of the *Service Manager*. All rights in and to all such images vests exclusively in the *Employer*.

The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z4.5

Z5 Waiver and estoppel: Add to core clause 12.3:

Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Service Manager* or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Health, safety and the environment: Add to core clause 27.4

Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *service*. Without limitation the *Contractor*:

- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Affected Property;
- warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of the *service*; and
- undertakes, in and about the execution of the *service*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6.2 The *Contractor*, in and about the execution of the *service*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z7 Provision of a Tax Invoice and interest. Add to core clause 51

Z7.1 Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer*'s procedures stated in the Service Information, showing the amount due for payment equal to that stated in the payment certificate.

Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.

Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer*'s VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

Z8.1 As per the terms and conditions of the NEC3 Term Service Contract April 2013[8] (TSC3).

Z9 *Employer's* limitation of liability

Z9.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)

[8] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

Z9.2 The *Contractor*'s entitlement under the indemnity in 82.1 is provided for in 60.1(12) and the *Employer*'s liability under the indemnity is limited to compensation as provided for in core clause 63 and X19.11 if Option X19 Task Order applies to this contract.

Z10 Termination

Z10.1 As per the terms and conditions of the NEC3 Term Service Contract April 2013[9] (TSC3).

Z11 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party	means, as the context requires, any party, irrespective of whether it is the *Contractor* or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the *Contractor*, or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractors or the Subcontractor's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
Prohibited Action	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

Z11.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.

Z11.2 The *Employer* may terminate the *Contractor*'s obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor*'s obligation to Provide the Services for this reason.

Z11.3 If the *Employer* terminates the *Contractor*'s obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.

Z11.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.

[9] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 539 1902 www.ecs.co.za

Z12 Insurance

Z _12_.1 Replace core clause 83 with the following:

Insurance cover 83

83.1 When requested by a Party, the other Party provides certificates from his insurer or broker stating that the insurances required by this contract are in force.

83.2 The *Contractor* provides the insurances stated in the Insurance Table A from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity
Loss of or damage caused by the *Contractor* to the *Employer*'s property	The replacement cost where not covered by the *Employer*'s insurance. The *Employer*'s policy deductible as at Contract Date, where covered by the *Employer*'s insurance.
Loss of or damage to Plant and Materials	The replacement cost where not covered by the *Employer*'s insurance. The *Employer*'s policy deductible as at Contract Date, where covered by the *Employer*'s insurance.
Loss of or damage to Equipment	The replacement cost where not covered by the *Employer*'s insurance. The *Employer*'s policy deductible as at Contract Date, where covered by the *Employer*'s insurance.
The *Contractor*'s liability for loss of or damage to property (except the *Employer*'s property, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the *Contractor*) arising from or in connection with the *Contractor*'s Providing the Service	<u>Loss of or damage to property</u> The replacement cost <u>Bodily injury to or death of a person</u> The amount required by the applicable law.
Liability for death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z__12.2 Replace core clause 86 with the following:

Insurance by the *Employer*

86

86.1 The *Employer* provides the insurances stated in the Insurance Table B

INSURANCE TABLE B

Insurance against or name of policy	**Minimum amount of cover or minimum lir of indemnity**
Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document
Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document
Nuclear Material Damage and Business Interruption	Per the insurance policy document
Nuclear Material Damage Terrorism	Per the insurance policy document

C1.2 Contract Data

Part two - Data provided by the *Contractor*

Notes to a tendering contractor:

1. Please read both the both the NEC3 Term Service Contract April 2013 and the relevant parts of its Guidance Notes (TSC3-GN)[10] in order to understand the implications of this Data which the tenderer is required to complete.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data.
3. Where a form field like this [ ] appears, data is required to be inserted relevant to the option selected. Click on the form field ***once*** and type in the data. Otherwise complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The *Contractor* is (Name): Address Tel No. Fax No.	
11.2(8)	The *direct fee percentage* is The *subcontracted fee percentage* is	**%** **%**
11.2(14)	The following matters will be included in the Risk Register	
11.2(15)	The Service Information for the *Contractor*'s plan is in:	
21.1	The plan identified in the Contract Data is contained in:	
24.1	The key people are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job Responsibilities: Qualifications:	

[10] Available from Engineering Contract Strategies Tel 011 803 3008 Fax 086 5391902 or www.ecs.co.za

Experience:

		CV's (and further key person's data including CVs) are in .
A	**Priced contract with price list**	
11.2(12)	The *price list* is in	**Attached on this contract**
11.2(19)	The tendered total of the Prices is	**R** **Excluding VAT**

PART 2: PRICING DATA

TSC3 Option A

Document reference	Title	
C2.1	Pricing assumptions: Option A	
C2.2	The *price list*	

C2.1 Pricing assumptions: Option A

1. How work is priced and assessed for payment

Clause 11 in NEC3 Term Service Contract (TSC3) core clauses and Option A states:

Identified and defined terms	11 11.2	(12) The Price List is the *price list* unless later changed in accordance with this contract. (17) The Price for Services Provided to Date is the total of • the Price for each lump sum item in the Price List which the *Contractor* has completed and • where a quantity is stated for an item in the Price List, an amount calculated by multiplying the quantity which the *Contractor* has completed by the rate. (19) The Prices are the amounts stated in the Price column of the Price List. Where a quantity is stated for an item in the Price List, the Price is calculated by multiplying the quantity by the rate.

This confirms that Option A is a priced contract where the Prices are derived from a list of items of service which can be priced as lump sums or as expected quantities of service multiplied by a rate or a mix of both.

2. Function of the Price List

Clause 54.1 in Option A states: “Information in the Price List is not Service Information”. This confirms that instructions to do work or how it is to be done are not included in the Price List but in the Service Information. This is further confirmed by Clause 20.1 which states, “The *Contractor* Provides the Service in accordance with the Service Information”. Hence the *Contractor* does **not** Provide the Service in accordance with the Price List. The Price List is only a pricing document.

3. Link to the *Contractor*’s plan

Clause 21.4 states “The *Contractor* provides information which shows how each item description on the Price List relates to the operations on each plan which he submits for acceptance”. Hence when compiling the *price list*, the tendering contractor needs to develop his first clause 21.2 plan in such a way that operations shown on it can be priced in the *price list* and result in a satisfactory cash flow in terms of clause 11.2(17).

4. Preparing the *price list*

Before preparing the *price list*, both the *Employer* and tendering contractors should read the TSC3 Guidance Notes pages 14 and 15. In an Option A contract, either Party may have entered items into the *price list* either as a process of offer and acceptance (tendering) or by negotiation depending on the nature of the *service* to be provided. Alternatively the *Employer*, in his Instructions to Tenderers or in a Tender Schedule, may have listed some items that he requires the *Contractor* to include in the *price list* to be prepared and priced by him.

It is assumed that in preparing or finalising the *price list* the *Contractor:*

- Has taken account of the guidance given in the TSC3 Guidance Notes relevant to Option A;
- Understands the function of the Price List and how work is priced and paid for;
- Is aware of the need to link operations shown in his plan to items shown in the Price List;
- Has listed and priced items in the *price list* which are inclusive of everything necessary and incidental to Providing the Service in accordance with the Service Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;
- Has priced work he decides not to show as a separate item within the Prices or rates of other listed items in order to fulfil the obligation to complete the *service* for the tendered total of the Prices.
- Understands there is no adjustment to items priced as lump sums if the amount, or quantity, of work within that item later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the (lump sum) Prices is as a result of a compensation event.

4.1. Format of the *price list*

(From the example given in an Appendix within the TSC3 Guidance Notes)

Entries in the first four columns in the *price list* in section C2.2 are made either by the *Employer* or the tendering contractor.

If the *Contractor* is to be paid an amount for the item which is not adjusted if the quantity of work in the item changes, the tendering contractor enters the amount in the Price column only, the Unit, Expected Quantity and Rate columns being left blank.

If the *Contractor* is to be paid an amount for an item of work which is the rate for the work multiplied by the quantity completed, the tendering contractor enters the rate which is then multiplied by the Expected Quantity to produce the Price, which is also entered.

If the *Contractor* is to be paid a Price for an item proportional to the length of time for which a service is provided, a unit of time is stated in the Unit column and the expected length of time (as a quantity of the stated units of time) is stated in the Expected Quantity column.

C2.2 the *price list*

Item nr	Description	Unit (No. of Days)	Expected Quantity (No. of Learners)	Rate	Price (Excluding VAT)
1	**Phase 1 Electrical Training**	60	50		
	Accommodation and Meals (Breakfast and Dinner)	89	50		
	Electrical Toolbox hire	60	50		
	Lunch	60	50		
2	**Phase 2 Electrical Training**	60	50		
	Accommodation and Meals (Breakfast and Dinner)	89	50		
	Electrical Toolbox hire	60	50		
	Lunch	60	50		
3	**Phase 3 – Electrical Training**	60	50		
	Accommodation and Meals ((Breakfast and Dinner)	89	50		
	Electrical Toolbox hire	60	50		
	Lunch	60	50		
4	**Phase 4 - Electrical Training**	60	50		
	Accommodation and Meals ((Breakfast and Dinner)	89	50		
	Electrical Toolbox hire	60	50		
	Lunch	60	50		
5	**Re-writes**	15	50		
	Accommodation and Meals ((Breakfast and Dinner)	20	50		
	Electrical Toolbox hire	50	50		
	Lunch	20			

The total of the Prices

PART 3: SCOPE OF WORK

SCOPE OF WORK – INSTITUTIONALISED TRAINING

The provision of training for technical bursars and technical college bursars required within Limlanga Cluster Eskom's requirement.

To provide Training (as per SAQA and relevant legislative requirements) to all formal Eskom's operating units on the listed subjects.

Specification of Product or Goods

Accreditation and Authorisation

Facilitator, Moderator & Assessor Qualifications.
Facilitators, moderators and assessors must be registered by the relevant" SETA as ETDP.
Eskom requires all prospective service providers to provide Eskom with a company profile and organogram reflecting staff complement.

The total training days per level is 60 days.

- Phase 1
- Phase 2
- Phase 3
- Phase 4

The Employer to provide:

- A valid Task Order to enable the training service provider to provide the training required as per training program or formal Curriculum.
- Safety gear and clothing to the bursars as required.
- An attendee list will be provided to the training service provider prior to the start date of the training as part of the Task Order.
- Notification of cancellation of training to be done within 14 days prior to the start date of the training by both parties and must be done in writing.

The training service provider must provide the following:

- Training at the premises of the service provider
- Training manual
- Tool boxes and multi meters.
- Certificates
- Assessments
- Accommodation and meals must be included as part of this contract.
- Original Tax invoices, attendance registers and certificates of learners with unique numbers and cost centres numbers to be submitted to EAL Payment section before payment will be processed.
- The following particulars to be included in the suppliers tax invoice.
  - ❖ Purchase Order number (45000… no) with reference to the contract number.
  - ❖ Course name, Course date, course venue.

Training for UTB and TCB learners according to the following course content.

QCTO OCCUPATIONAL CERTIFICATE ELECTRICAL CURRICULUM LEVEL ONE

KM 01 1) Health, Safety, Quality and Legislation

KT 01 **Safety, Health, Environment, Risk and Quality Principles in the Workplace**

- KT 0101 Legislation and Regulations for Workplce Safety within the Electrical Field
  Describe and explain the difference between Act and Regulations, the responsibilities of the various role players and the application of the relevant health and safety regulations in the work place.
- KT 0102 Occupational Health and Safety Legislation
  Work place safety, health and Hygene is explained
- KT 0103 Safety Precautions and Safe Practices for working within Industry
  The inter-relationship between work place safety and a productive work environment is explained
- KT 0104 Personal Protective Equipment (PPE)
  Legislation and Regulations for Workplce Safety and the wearing of PPE must be explained
- KT 0105 Safety Symbols and Colour Coding
  Safety signs are identified and described in terms of associated risk and safe conduct
- KT 0106 Fundamentals of Isolating and Locking out Equipment and Circuits
  Plant Safety regulations and associated risk assesments in relation to work to be done is explained
- KT 0107 Fundamentals of securing Worksites
  Safety regarding personnel in a work site and the barricading thereof is explained
- KT 0108 Protection Devices
  The Phylosophy with regards to the purpose and function of Protection devices are explained
- KT 0109 Causes, Prevention and Control of Fires
  The attributes, characteristics, descriptions and properties of different types of fires are explained
- KT0110 Hazard Identification and Risk Principles
  The types of hazardous waste is identified and the impact of incorrectly disposing of waste is described
- KT0111 Environmental, Protection and Pollution Concepts
  Environmental regulations for the disposal of relevant hazardous waste is described
- KT 0112 Basic First Aid
  Basic First Aid procedures are described for the attributes, characteristics and properties of various injuries
- KT 0113 Incident Reporting
  The implications of injuries - their causes and effects are explained
- KT 0114 Evacuation Procedures
  Evacuation Procedures and the Safe and expeditious vacation of premisis in the event of an emergency must be explained

KM 02 2) Tools, Equipment and Materials

KT 01 **Hand Tools and Power Tools**

- KT 0101 Types, Uses and Care of Hand Tools
  Identify Hand Tools and describe their uses
- KT 0102 Types, Uses and Care of Portable Power Tools
  Identify Portable Power Tools and describe their uses
- KT 0103 Types, Uses and Care of Fixed Power Tools
  Identify Fixed Power Tools and describe their uses

KT 02 **Measuring and Testing Instruments** ⇨

- KT 0201 Fixed and Portable Electrical Measuring Instruments
  Identify different types of fixed and portable electrical measuring instruments and state their purpose
- KT 0202 Types of electrical Measuring and Testing Instruments
  Identify different types of electrical measuring instruments and state their purpose
- KT 0203 Safe use of Measuring and Testing Instruments
  Describe Safety and Functionality checks to be performed on Measuring and Test Instruments before use
- KT 0204 Construction and Operating Principles of Measuring and Testing Instrument
  Describe and explain the construction and operating principles of Measuring and Testing Instrumentation

KM 03 3) Electricity and Electronics

KT 01 **Fundamentals of Electricity**

KT 0101 Principles and Fundamental Concepts of Electricity
Describe, Calculate and Interpret fundamental concepts of electricity (electo motive force, Potential difference and Resistance) using the correct units of Measurement and Definitions

KT 0102 Definitions, Types, Properties and Applications of Conductors, Insulators and Semi-Conductors
List the Types of materials and describe the factors that influence the resistance of materials that are used for conductors, insulators and semi-conductors describing their Mechanical nd electrical properties and applications

KT 0103 Concepts,Theories and Principles of electrical Circuits
Define and explain, using the correct units of measurement OHMS Law and Kirchoff's Law in Electricity.

KT 0104 Calculations on basic electrical Circuits (Resistance , Voltage and Current) and Power (W)
Manipulate formulae to calculate Voltage, Current and Resistance in a Series and Parallel circuit

KT 0105 Basic Principles and Calculation of Magnetism
Name, describe and explain the different types of Magnets and their properties. Explain the fundamental concepts by naming the five characteristics of Magnetic Lines of Force and explain the relationship between Flux and Flux density. Describe with the aid of drawings, "r the application of the "right hand" grip rule and show how a magnetic field is established when an electrical current flows through a conductor, then, by using the appropriate formulea calculate the force on a current carrying conductor. Using "Flemmings left hand " rule, describe with the aid of drawings the effect on the magnetic field around a current carrying conductor when placed in a uniform magnetic field. Describe and explain the various forces or methods that can be used to alter magnetic fields and describe the changes that take place.

KT 03 **Electrical Principles of Appliances**

KT 0301 Classification of Appliance according to SANS 10142-1
Define Fixed and Portable as well as the Classification of Electrical Appliances

KT 0302 Regularory Requirements of Appliances according to SANS 10142-1
Explain the regulations relevant to Electrical Appliances

KM 04 4) Introduction to the World of Work and the Electrical Trade

KT 01 **Introduction to the the world of Work and the Electrical Trade** ⇨

KT 0101 The Electricians World of Work
The Job environment and work place roles of an electrician are accurately described and explained

KT 0102 Carreer Opportunities for Qualified Electricians
The profile of an Electrician is described in relation to Industry descriptions, Career path Progression and requirements

KT 0103 The Electricians Responsibilities and Duties
Legal aspects which include:-
i) employment Contracts
ii) Roles and Responsibilities
of the Employer and Employee must be thouroughly explained

KT 0104 Legislation relating to Apprentices in the Electrical Trade
The use of Applicable Legislation and Regulations relating to the Electrical Trade is described

KT 0105 Electrical Trade Test Requirements
Trade Test Methodology, Requirements and Assessment procedures leading up to the Trade Assessment are explained

KM 05 5) Wireways and Wiring

KT 01 **Wireways**

KT 0101 Definitions, Types, Purposes and Applications of Wireways
Define the term "Wireway" as given in the SANS 10142-1 Code of Practice and describe the different types of Wireways and their applications

KT 0102 General Provisions for Wireways as prescribed in the SANS 10142-1
Describe and explain the Provisions in the SANS 19142-1 Code of Practice for the Correct and Safe Installation a nd use of the various types of wireways

KT 02 **Wiring of Installations**

KT 0201 Regulations and Statutory Requirements for the wiring of Premises
State and explain the Safety Purpose of Earthing, fuse, Circuit Breakers and Earth Leakage Protection Units

KT 0202 Electrical Diagrams and Symbols
List, Identify and explain the meaning of all Standard International Electrotechnical Commission (IEC) wiring symbols given on work drawings

KT 0203 Electrical Components and their Applications
Describe the Principles of Operation of Single and Three Phase Circuit Breakers and Core Balance Earth Leakage Relays (wound primaries and straight Primaries with Tripping Relays)

KT 03 **Earthing and Bonding**

KT 0301 Principles of Earthing and Bonding
Define Earthing and Bonding and explain the purpose thereof and explain the term "System earthing"
Describe the Earthng Systems relevant to SANS01042-1

KT 0302 Methods of Earthing and Bonding on low Voltage Overhead Lines, Equipment and Cables
Describe how a comon Earth Electrode is used in Reticulation Circuits
Explain the various Processes of Measuring, Testing and Calculating Earthing and Bonding system Values

Kt 0303 Regulatory and Statutory Requirements relate to Earthing and Bonding
Explain the Regulatory Requirements for the Earthing of Neutral Conductors on both the Supplier and Consumer side of an Installation
Explain the Regulatory Requirements for the Earthing and Bonding
Describe the provision of Earthing for Underground Cables and Overhead Lines

KM 06 6) Rotating Electrical Machinery

KT 01 **Rotating Electrical Machinery - AC Motors** ⇨

KT 0101 Construction of Alternating current (AC) Motors
List the diffent types of Alternating Current (AC) Motors and describe their Construction comparing the advantages and disadvantages of Single and Three Phase motors

KT0102 Principles of Operation of Alternating Current (AC) Motors
Explain the Principles of operation of Alternating Current (AC) Motors

KT 0103 Configuration of Motor Connections
Describe with the aid of diagrams, the configuration of Motor Connections

KT 0104 Types of Single and Three Phase Alternating Current (AC) Motors
Characteristics of Single and Three Phase Motors. (6 Stud and 12 Stud forward and reverse Single Phase motors) F/R Three Phase Mts

KT 0105 Application of Alternating Current (AC) Motors
Describe and explain the Application of AC Motors in industry

KT 0106 Testing Principles of Single and Three Phase Alternating current (AC) Motors
Describe and explain how Tests are carried out on Alternating Current (AC) Motors

KT 0107 Protection of Motors
Explain how Time Delay and Current Rating of Overload Protection Devices influence their use in protecting motors from damage in the case of locked Rotors, Overload during operation and Short Circuits.
Describe and explain Protection Devices used for Alternating Current (AC) Motors

KT 0108 Calculation of Motor Properties
Calculate Alternating Current (AC) Motor Properties

KM 07 7) Electrical Supply Systems and Components

KT 01 **Concepts, Theories and Principles of Supply Systems**

- KT 0101 Theories and Concepts of Alternating Current
  Explain the principles of Generationbyusing "Flemming's" right hand rule and "Faraday's" Law
- KT 0102 Fundamental Principles of Alternating Current
  Explain by using Wave Form Diagrams, the diffferences between "Line" and "Phase" values
- KT 0103 Alternating Current Generation (distribution system theory)
  Calculate Line and Phase Voltages, Line and Phase Currents, Power and Power factor taking Inductance, Capacatance and Impedance into account
- KT 0104 Characteristics and Calculations from Alternating Current Waveforms
  Explain the Generation and differences between Single and Three phase Alternating Current (AC) by using Wave Forms and Vector Diagrams
- KT 0105 Theories, Concepts and Principles of Direct Current Sources
  Explain the Generation principles of Direct Current (DC)
- KT 0106 Sources of Direct Current
  Explain the sources from which Direct Current (DC) is obtained
- KT 0107 Calculations of Direct and Alternating Current Circuits
  Calculate the Power and energy in Direct Current (DC) and Alternating Current (AC) Circuits
- KT 0108 Construction and Operating Principles of Direct Current Generators
  Describe with the aid of drawings the Components of DC Generators and their function as well as the Operating principles of Direct Current (DC) Generators
- KT 0109 Characteristics, Sources and Generation of Renewable Energy
  Explain the various methods of producing Renewable Energy and list the Advantages and Disadvantages of the different renewable energy Generation methods
- KT 0110 Relevant Legislative Requirements
  Explain in detail the legislative requirements regarding the Generation of Alternating Current (AC) Direct Current (DC) and Renewable energy

KT 02 **Batteries**

- KT 0201 Fundamentals of Battery Operation
  Describe with the aid of diagrams, the fundamentals of the operating principles of Battteries. Explain the terms:-
  i) Electromotive Force (EMF)
  ii) Relative Density
  iii) Capacity
- KT 0202 Types and Classification of Batteries
  Describe the explain the various types of Batteries and Battery Cells describing the advantages and disadvantages of Primary and Secondary Cells for particular applications
- KT 0203 Safety Precautions when dealing with batteries
  Explain with the aid of drawings, the discharging and charging action of Lead acid Cells
- KT 0204 Care and Maintenance of Batteries
  Describe and Explain the correct Procedures to Care, Maintain and Store Batteries and the hazards and safety precautions associated with Batteries and Battery Rooms. Name the Instruments used for Testing Batteries, describe how thay must be used and explain the purpose for each test
- KT 0205 Battery Components and Construction
  Describe with the aid of diagrams the fundamentals of Battery construction
- KT 0206 Safe Disposal of Batteries
  Describe and Explain the correct procedures to Safely Dispose of Batteries and the Hazards and Safey precutions associated with the Safe Disposal of Batteries

KT 03 **Transformers** ⇒

- KT 0301 Theories of Single Phase Wound Transformers
  Describe with the aid of drawings the Theory behind Single Phase wound Transformers
- KT 0302 Types of Single Phase Transformers including Single wound, Double wound and Auto-Transformers and their Applications
  Name and Describe the Types of Single Phase Transformers
- KT 0303 Fundamentals of Transformer Construction
  Describe with the aid of drawings, the Construction of single Phase Transformers
- KT 0304 Transformer Cooling Systems
  Describe and explain the types of Cooling Systems on Transformers
- KT 0305 Principles of Single Phase Transformer Operation
  Describe with the aid of drawings, the principle of operation of single Phase transformers in term of Mutual Inductance and the Henry as the Unit of Inductance
- KT 0306 Principles of Single Phase Auto-Transformer Operation
  Explain with the aid of drawings, the Principle of Operation of Single Phase Auto-Transformers

KT 04 **Types of Cables and Applications**

KT 0401 Types of Cable Construction including Armoured and Un-Armoured, Insulated and Un-insulated, Single and Multi-Core Cables
Describe, with the aid of sketches, the different types of Cables and their Construction and explain the function of the various materials used

KT 0402 Cable Materials and their Functions and Characteristics
Describe the Characteristics and Applications of the various types of Cables and compare their advantages and disadvantages

KT 0403 Idenification of Cable Characteristics and Properties
Describe the factors affecting the Efficiency of Cables

KT 0404 Applications of various types of Cables
Describe and explain the provisions in the SANS 10142-1 Code of Practice for the correct and Safe Application of the various Cables

KT 0405 Installation Methods and Safe use of Cables
Describe and explain the provisions in the SANS 10142-1 Code of Practice for the correct and Safe Installation and use of the various types of Cables

KT 0406 Safe Transport and Storage of Cables
Describe the Precautions required when Transporting and Storing Cables

KT 05 **Switchgear and Control Gear** ⇨

KT 0501 Principles of Operation of switchgear and Control gear
Describe Disconnectors, relays, Timer and Contactors in term of constructionand Operating principles with reference to the Contacts, Operating Coils, (where applicable) and Opeating Mechanisms

KT 0502 Components of Switchgear and Control gear Systems and the Application thereof
Describe with the ais of labelled drawings, the principle of operation of the Over Current and Earth Leakage Protection Relays.
Describe the following terminology in term of low Voltage Circiuit Breakers:-
i) Moulded Cases
ii) Positive Indication
iii) Trip Position
iv) Factory Sealed
v) Thermal Magnetic Tripping
vi) Quick Make
vii) Quick Break
viii) Trip Free Mechanism
ix) Interpole Barriers

KT 0503 Electrical Drawings
Explain by showing the different types of Electrical drawings used

KT 06 **Lighting Systems**

KT 0601 Principles of Illumination
Explain Illumination and Luminaire Circuits and describe Light intensity, Lux, Lumens, Colour Rendering and Stroboscopic effect

Kt 0602 Types of Luminaires and Lighting Systems
Explain the controlling of Lighting Circuits and the different types of Lamps and their principles of operation as well as the safe disposal of Lamps and Luminaires that have been discarded

KM 08 8) Low Voltage Protection

KT 01 **Low Voltage Protection**

KT 0101 Purpose and Application of Low Voltage Protection
Describe the Purpose and Functions of different types of Low Voltage Protection devices including Overload relays, fuses, Circuit Breakers and Earth Leakage Protection Devices

KT 0102 Types of Low Voltage Protection
Name and describe the types of Low Voltage Protective devices and explain with the aisd of circuit diagrams, how Single Phase Electrical Installations are and must be Protected

KT 0103 Low Voltage Protection Parameters and Statutory Requirements
Describe the effect of adverse conditions on the Operational Characteristics of Protective devices

KM 09 — 9) Fault Finding

KT 01 **Fault Finding** ⇨

- KT 0101 Fault Finding Principles for Electrical Circuits
  Explain Fault Finding Principles for Electrical Circuits including AC and DC
- KT 0102 Fault Finding Techniques for Electrical Circuits
  Explain Fault Finding Techniques for Electrical Circuits including C and DC
- KT 0103 Safety during Fault Finding
  Explain and emphasize the importance of Safety during the Fault Finding procedure including Permit to Work, Lock out, Risk Assessment, Hooking up at Heights and Access Control

QCTO OCCUPATIONAL CERTIFICATE ELECTRICAL CURRICULUM LEVEL TWO

KM 02 — 2) Tools, Equipment and Materials

⇦ KT 02 **Measuring and Testing Instruments+Installation Testing:Power "on"and"power off"** ⇨

1 WEEK

- KT 0201 Fixed and Portable Electrical Measuring Instruments
  Identify different types of fixed and portable electrical measuring instruments and state their purpose
- KT 0202 Types of electrical Measuring and Testing Instruments
  Identify different types of electrical measuring instruments and state their purpose
- KT 0203 Safe use of Measuring and Testing Instruments
  Describe Safety and Functionality checks to be performed on Measuring and Test Instruments before use
- KT 0204 Construction and Operating Principles of Measuring and Testing Instrument
  Describe and explain the construction and operating principles of Measuring and Testing Instrumentation

2 WEEKS

- KT 0205 Methods of connecting Measuring and Testing Instruments in Circuits
  Illustrate by means of circuit diagrams how the wattmeter (electrodynamometer type) Kilowatt-hour meter, frequency meter, Power factor meter, Loop Impedance Tester and Maximum Demand meter are connected in single and Three Phase circuits
- KT 0206 Applications and Methods of using electrical Measuring and Testing Instruments
- KT 0207 Care and Maintenance of Single and Three Phase Measuring and Testing Instruments
- KT 0208 Instrument Transformers
  Explain by means of circuit diagrams how an Ammeter and a Voltmeter are directly and indirectly connected by using Instrument Transformers
- KT 0209 Types and Functions of Panel Mounted electrical Measuring and Testing Instruments
- KT 0210 Safe use of panel mounted Measuring and Test Instruments
- KT 0211 Protection of Measuring Instruments when connected in a circuit
  Describe the various methods of protection when connecting Measuring Instruments in circuits

1 WEEK **Arc Welding**
1 WEEK **Gas Cutting**

KM 04 — 4) Introduction to the World of Work and the Electrical Trade

⇦ KT 01 **Introduction to the the world of Work and the Electrical Trade** ⇨

1 DAY

- KT 0101 The Electricians World of Work
  The Job environment and work place roles of an electrician are accurately described and explained
- KT 0102 Carreer Opportunities for Qualified Electricians
  The profile of an Electrician is described in relation to Industry descriptions, Career path Progression and requirements
- KT 0103 The Electricians Responsibilities and Duties
  Legal aspects which include:-
  i) employment Contracts
  ii) Roles and Responsibilities
  of the Employer and Employee must be thouroughly explained
- KT 0104 Legislation relating to Apprentices in the Electrical Trade
  The use of Applicable Legislation and Regulations relating to the Electrical Trade is described
- KT 0105 Electrical Trade Test Requirements
  Trade Test Methodology, Requirements and Assessment procedures leading up to the Trade Assessment are explained

KM 06 — 6) Rotating Electrical Machinery

KT 02 — Rotating Electrical Machinery - DC Motors (2 WEEKS)

- KT 0201 Construction of Direct Current (DC) Motors
  - List the different types of Direct Current (DC) Motors and describe their Construction
- KT 0202 Principles of operation for Direct Current (DC) Motors
  - Explain the Principles of Operation of Direct current (DC) Motors
- KT 0203 Configuration of Direct Current (DC) Motor Connections
  - Describe, with the aid of diagrams the Configuration of Direct Current (DC) Motor Connections, Power Circuits and Control Circuits
- KT 0204 Types and Applications of Direct Current (DC) Motors
  - Describe the Applications of the differnet types of Direct Current (DC) Motors and compare the advantages and disadvantages of the different types of Direct Current (DC) Motors
- KT 0205 Testing principles of Direct Current (DC) Motors
  - Explain the Testing Procedures and Principles OF Direct Current (DC) Motors
- KT 0206 Protection of Direct Current (DC) Motors
  - Describe and explain Protection Devices used for Direct Current (DC) Motors and explain how iTime Delay and Current Rating of Overload Protection Devices influence their usein protection motors from damage in the caso of Locked Rotors, Overload during operation and Short Circuits
- KT 0207 Calculation of Direct Current (DC) Motor Properties
  - Calculate Direct Current (DC) Motor properties

KT 03 — Transformers -Panel Wiring (CTVT &Kwh) (3 WEEKS)

- KT 0307 Transformer Losses
  - Describe the types of Transformer Losses and explain their Causes and Effects
- KT 0308 Formulas and Calculations on Input and Output of Transformers
  - Calculate the Terminal Voltage, Turns and Current Ratios for Single Phase Transformers
- KT 0309 Maintenance Requirement of Transformers
  - Describe and explain the basic Requirements for Single and Three Phase Transformer Schedules and Procedures for Maintenance
    - Current Transformers (CT's)
    - Voltage Tranformers (VT's)
- KT 0310 Types of Three Phase Transformers and their Applications
  - Describe and explain the various Applications for Three Phase Transformers
- KT 0311 Construction of Three Phase Transformers including Open Core, Closed Core and Shell or Divided Core
  - Describe with the aid of drawings and diagrams, the construction of Three Phase Transformers - Open core - Closed Core and Shell or Divided Core
- KT 0312 Principles of Three phase Transformer Operation and Configuration
  - Explain the Calculation for the relationship of the Voltage, Current, Turns Ratio and Power including True Power, Apparent Power and Power Factor. Describe and explain how Inductance causes a Phase Angle between Voltage and Current explaining the concept of "Leading and Lagging" and the relationship to the concept of "Power Factor"
- KT 0313 Principles of Three Phase Auto-Transformer Operation and Configuration
  - Describe with the aid of diagrams, Three Phase Gransofrmer Connections

KT 05 — Switchgear and Control Gear - (Motor & Starters)

- KT 0504 Introduction to Programmable Logic Controllers (PLC's)
  - Describe the basic principles of operation for Programmable Logic Controllers
- KT 0505 Introduction to Soft Starters
  - Describe the basic principles of operation for Soft Starters
- KT 0506 Introduction to Variable Speed Drives
  - Describe the basic principles of operation for Variable Speed Drives

KM 09 — 9) Fault Finding -(Relay Panel, 3 Stage F/R and 3 Phase F/R auto star delta)

KT 01 — Fault Finding (4 WEEKS)

- KT 0101 Fault Finding Principles for Electrical Circuits
  - Explain Fault Finding Principles for Electrical Circuits including AC and DC
- KT 0102 Fault Finding Techniques for Electrical Circuits
  - Explain Fault Finding Techniques for Electrical Circuits including C and DC
- KT 0103 Safety during Fault Finding
  - Explain and emphasize the importance of Safety during the Fault Finding procedure including Permit to Work, Lock out, Risk Assessment, Hooking up at Heights and Access Control

QCTO OCCUPATIONAL CERTIFICATE ELECTRICAL CURRICULUM LEVEL THREE

KM 02 2) Tools, Equipment and Materials

2 WEEKS

KT 02 **Measuring and Testing Instruments**

KT 0205 Methods of connecting Measuring and Testing Instruments in Circuits
Illustrate by means of circuit diagrams how the wattmeter (electrodynamometer type) Kilowatt-hour meter, frequency meter, Power factor meter, Loop Impedance Tester and Maximum Demand meter are connected in single and Three Phase circuits

KT 0206 Applications and Methods of using electrical Measuring and Testing Instruments

KT 0207 Care and Maintenance of Single and Three Phase Measuring and Testing Instruments

KT 0208 Instrument Transformers
Explain by means of circuit diagrams how an Ammeter and a Voltmeter are directly and indirectly connected by using Instrument Transformers

KT 0209 Types and Functions of Panel Mounted electrical Measuring and Testing Instruments

KT 0210 Safe use of panel mounted Measuring and Test Instruments

KT 0211 Protection of Measuring Instruments when connected in a circuit
Describe the various methods of protection when connecting Measuring Instruments in circuits

KM 03 3) Electricity and Electronics

4 WEEKS

KT 02 **Electronics**

KT 0201 International Electrotechnical Commission (IEC) Symbols for Electronics
Using the IEC chart, describe and explain the various Symbols and Components

KT 0202 Principles, Safety precautions, Identification and basic function of Electronic Components
Describe the various inductors used and their typical applications and determine the value of the different resistors utilizing colour coding charts. Determine the value of capacitors using charts and calculate the value of capacitance in a series and parallel circuit.

KT 0203 Basic Electronic Circuits
Draw basic electronic Circuits using the IEC Symbols

KT 0204 Principles of Rectification - Single and Three Phase
Describe the construction and uses of various semiconductor devices including Programmable Logic Controlers (PLC's)

KM 04 4) Introduction to the World of Work and the Electrical Trade

1 DAY

KT 01 **Introduction to the the world of Work and the Electrical Trade**

KT 0101 The Electricians World of Work
The Job environment and work place roles of an electrician are accurately described and explained at this Level

KT 0102 Carreer Opportunities for Qualified Electricians
The profile of an Electrician is described in relation to Industry descriptions, Career path Progression and requirements

KT 0103 The Electricians Responsibilities and Duties
Legal aspects which include:-
i) employment Contracts
ii) Roles and Responsibilities
of the Employer and Employee must be thouroughly explained at this Level

KT 0104 Legislation relating to Apprentices in the Electrical Trade
The Applicable Legislation and Regulations relating to the Electrical Trade is used at this Level

KT 0105 Electrical Trade Test Requirements
Trade Test Methodology, Requirements and Assessment procedures leading up to the Trade Assessment are explained at this final Level

KM 06 — 6) Rotating Electrical Machinery

2 WEEKS

KT 03 **Rotating Electrical Machinery - Alternators and Generators**

KT 0301 Construction of Alternators and Generators
List the different types of Alternators and Generators and describe their Construction

KT 0302 Principles of operation of Alternators and Generators
Explain the principles of operation of Alternators and Generators

KT 0303 Configuration of Alternator and Generator Connections
Explain the fundamental differences between Alternators and Generators and describe with the aid of diagrams, the configuration of Alternator and Generator connections, Power Circuits and Control Circuits

KT 0304 Types and Applications of Alternators and Generators
Describe the Applications of different types of Alternators and Generators

KT 0305 Testing Principles of Alternators and Generators
Describe how Tests are conducted on Alternators and Generators

KT 0306 Protection of Alternators and Generators
Describe and explain Protection Devices used for Alternators andGenerators and explain how time delay and Curent rating of Overload Protection Devices influence their usein Protecting Alternators and Genartorsfrom damage in the case of Locked Rotors, Overload during operation and short Circuits

KT 0307 Calculation Properties of Alternators and Generators
Calculations involving Alternators and Generators

KM 07 — 7) Electrical Supply Systems and Components

KT 03 **Transformers - Protection & Phasing**

KT 0314 Transformer Protection and Phasing
Describe and explain the Legislative Requirements concrning Transformer Protection

KT 05 **Switchgear and Control Gear - Plc, Soft starters & VSD's**

KT 0504 Introduction to Programmable Logic Controllers (PLC's)
Carry out Practical Circuit design on Programmable Logic Controllers

KT 0505 Introduction to Soft Starters
Carry out Practical Circuit design on:-
VSD's
Soft Starters
PLC's

KT 0506 Introduction to Variable Speed Drives
Carry out Practical exersizes for Variable Speed Drives

KM 09 — 9) Fault Finding

3 WEEKS

KT 01 **Fault Finding -Plc &VSD's**

KT 0101 Fault Finding Principles for Electrical Circuits
Carry out Curcuit Design and Fault Finding on Electrical Circuits including AC and DC
PLC Panel
DC Panel

KT 0102 Fault Finding Techniques for Electrical Circuits
Carry out and practice the Fault Finding Techniques covered previously

KT 0103 Safety during Fault Finding
Explain and emphasize the importance of Safety during the Fault Finding procedure including Permit to Work, Lock out, Risk Assessment, Hooking up at Heights and Access Control

FINAL TRAINING

Trade test preparation

FINAL RE- WRITES

Trade test Re-Writes

To provide Training (as per SAQA and relevant legislative requirements) to all formal Eskom's operating units on the listed subjects

Document reference	Title	
	This cover page	
C3.1	*Employer*'s Service Information	
C3.2	*Contractor*'s Service Information	
	Total number of pages	

C3.1: EMPLOYER'S SERVICE INFORMATION

1 Description of the *service*

1.1 Executive overview

SCOPE OF WORK – INSTITUTIONALISED TRAINING

The provision of training for technical bursars and technical college bursars required within Limlanga Cluster Eskom's requirement.

To provide Training (as per SAQA and relevant legislative requirements) to all formal Eskom's operating units on the listed subjects.

Specification of Product or Goods

Accreditation and Authorisation

Facilitator, Moderator & Assessor Qualifications.
Facilitators, moderators and assessors must be registered by the relevant" SETA as ETDP.
Eskom requires all prospective service providers to provide Eskom with a company profile and organogram reflecting staff complement.

The total training days per level is 60 days.

- Phase 1
- Phase 2
- Phase 3
- Phase 4

The Employer to provide:

- A valid Task Order to enable the training service provider to provide the training required as per training program or formal Curriculum.
- Safety gear and clothing to the bursars as required.
- An attendee list will be provided to the training service provider prior to the start date of the training as part of the Task Order.
- Notification of cancellation of training to be done within 14 days prior to the start date of the training by both parties and must be done in writing.

The training service provider must provide the following:

- Training at the premises of the service provider
- Training manual
- Tool boxes and multi meters.
- Certificates
- Assessments
- Accommodation and meals must be included as part of this contract.
- Original Tax invoices, attendance registers and certificates of learners with unique numbers and cost centres numbers to be submitted to EAL Payment section before payment will be processed.
- The following particulars to be included in the suppliers tax invoice.
  - ❖ Purchase Order number (45000… no) with reference to the contract number.
  - ❖ Course name, Course date, course venue.

Training for UTB and TCB learners according to the following course content.

QCTO OCCUPATIONAL CERTIFICATE ELECTRICAL CURRICULUM LEVEL ONE

KM 01 1) Health, Safety, Quality and Legislation

KT 01 **Safety, Health, Environment, Risk and Quality Principles in the Workplace**

- KT 0101 Legislation and Regulations for Workplce Safety within the Electrical Field
  Describe and explain the difference between Act and Regulations, the responsibilities of the various role players and the application of the relevant health and safety regulations in the work place.
- KT 0102 Occupational Health and Safety Legislation
  Work place safety, health and Hygene is explained
- KT 0103 Safety Precautions and Safe Practices for working within Industry
  The inter-relationship between work place safety and a productive work environment is explained
- KT 0104 Personal Protective Equipment (PPE)
  Legislation and Regulations for Workplce Safety and the wearing of PPE must be explained
- KT 0105 Safety Symbols and Colour Coding
  Safety signs are identified and described in terms of associated risk and safe conduct
- KT 0106 Fundamentals of Isolating and Locking out Equipment and Circuits
  Plant Safety regulations and associated risk assesments in relation to work to be done is explained
- KT 0107 Fundamentals of securing Worksites
  Safety regarding personnel in a work site and the barricading thereof is explained
- KT 0108 Protection Devices
  The Phylosophy with regards to the purpose and function of Protection devices are explained
- KT 0109 Causes, Prevention and Control of Fires
  The attributes, characteristics, descriptions and properties of different types of fires are explained
- KT0110 Hazard Identification and Risk Principles
  The types of hazardous waste is identified and the impact of incorrectly disposing of waste is described
- KT0111 Environmental, Protection and Pollution Concepts
  Environmental regulations for the disposal of relevant hazardous waste is described
- KT 0112 Basic First Aid
  Basic First Aid procedures are described for the attributes, characteristics and properties of various injuries
- KT 0113 Incident Reporting
  The implications of injuries - their causes and effects are explained
- KT 0114 Evacuation Procedures
  Evacuation Procedures and the Safe and expeditious vacation of premisis in the event of an emergency must be explained

KM 02 2) Tools, Equipment and Materials

KT 01 **Hand Tools and Power Tools**

- KT 0101 Types, Uses and Care of Hand Tools
  Identify Hand Tools and describe their uses
- KT 0102 Types, Uses and Care of Portable Power Tools
  Identify Portable Power Tools and describe their uses
- KT 0103 Types, Uses and Care of Fixed Power Tools
  Identify Fixed Power Tools and describe their uses

KT 02 **Measuring and Testing Instruments** ⇨

- KT 0201 Fixed and Portable Electrical Measuring Instruments
  Identify different types of fixed and portable electrical measuring instruments and state their purpose
- KT 0202 Types of electrical Measuring and Testing Instruments
  Identify different types of electrical measuring instruments and state their purpose
- KT 0203 Safe use of Measuring and Testing Instruments
  Describe Safety and Functionality checks to be performed on Measuring and Test Instruments before use
- KT 0204 Construction and Operating Principles of Measuring and Testing Instrument
  Describe and explain the construction and operating principles of Measuring and Testing Instrumentation

KM 03 3) Electricity and Electronics

KT 01 **Fundamentals of Electricity**

KT 0101 Principles and Fundamental Concepts of Electricity
Describe, Calculate and Interpret fundamental concepts of electricity (electo motive force, Potential difference and Resistance) using the correct units of Measurement and Definitions

KT 0102 Definitions, Types, Properties and Applications of Conductors, Insulators and Semi-Conductors
List the Types of materials and describe the factors that influence the resistance of materials that are used for conductors, insulators and semi-conductors describing their Mechanical nd electrical properties and applications

KT 0103 Concepts,Theories and Principles of electrical Circuits
Define and explain, using the correct units of measurement OHMS Law and Kirchoff's Law in Electricity.

KT 0104 Calculations on basic electrical Circuits (Resistance , Voltage and Current) and Power (W)
Manipulate formulae to calculate Voltage, Current and Resistance in a Series and Parallel circuit

KT 0105 Basic Principles and Calculation of Magnetism
Name, describe and explain the different types of Magnets and their properties. Explain the fundamental concepts by naming the five characteristics of Magnetic Lines of Force and explain the relationship between Flux and Flux density. Describe with the aid of drawings, "r the application of the "right hand" grip rule and show how a magnetic field is established when an electrical current flows through a conductor, then, by using the appropriate formulea calculate the force on a current carrying conductor. Using "Flemmings left hand " rule, describe with the aid of drawings the effect on the magnetic field around a current carrying conductor when placed in a uniform magnetic field. Describe and explain the various forces or methods that can be used to alter magnetic fields and describe the changes that take place.

KT 03 **Electrical Principles of Appliances**

KT 0301 Classification of Appliance according to SANS 10142-1
Define Fixed and Portable as well as the Classification of Electrical Appliances

KT 0302 Regularory Requirements of Appliances according to SANS 10142-1
Explain the regulations relevant to Electrical Appliances

KM 04 4) Introduction to the World of Work and the Electrical Trade

KT 01 **Introduction to the the world of Work and the Electrical Trade** ⇨

KT 0101 The Electricians World of Work
The Job environment and work place roles of an electrician are accurately described and explained

KT 0102 Carreer Opportunities for Qualified Electricians
The profile of an Electrician is described in relation to Industry descriptions, Career path Progression and requirements

KT 0103 The Electricians Responsibilities and Duties
Legal aspects which include:-
i) employment Contracts
ii) Roles and Responsibilities
of the Employer and Employee must be thouroughly explained

KT 0104 Legislation relating to Apprentices in the Electrical Trade
The use of Applicable Legislation and Regulations relating to the Electrical Trade is described

KT 0105 Electrical Trade Test Requirements
Trade Test Methodology, Requirements and Assessment procedures leading up to the Trade Assessment are explained

KM 05 5) Wireways and Wiring

KT 01 **Wireways**

KT 0101 Definitions, Types, Purposes and Applications of Wireways
Define the term "Wireway" as given in the SANS 10142-1 Code of Practice and describe the different types of Wireways and their applications

KT 0102 General Provisions for Wireways as prescribed in the SANS 10142-1
Describe and explain the Provisions in the SANS 19142-1 Code of Practice for the Correct and Safe Installation a nd use of the various types of wireways

KT 02 **Wiring of Installations**

KT 0201 Regulations and Statutory Requirements for the wiring of Premises
State and explain the Safety Purpose of Earthing, fuse, Circuit Breakers and Earth Leakage Protection Units

KT 0202 Electrical Diagrams and Symbols
List, Identify and explain the meaning of all Standard International Electrotechnical Commission (IEC) wiring symbols given on work drawings

KT 0203 Electrical Components and their Applications
Describe the Principles of Operation of Single and Three Phase Circuit Breakers and Core Balance Earth Leakage Relays (wound primaries and straight Primaries with Tripping Relays)

KT 03 **Earthing and Bonding**

KT 0301 Principles of Earthing and Bonding
Define Earthing and Bonding and explain the purpose thereof and explain the term "System earthing"
Describe the Earthng Systems relevant to SANS01042-1

KT 0302 Methods of Earthing and Bonding on low Voltage Overhead Lines, Equipment and Cables
Describe how a comon Earth Electrode is used in Reticulation Circuits
Explain the various Processes of Measuring, Testing and Calculating Earthing and Bonding system Values

Kt 0303 Regulatory and Statutory Requirements relate to Earthing and Bonding
Explain the Regulatory Requirements for the Earthing of Neutral Conductors on both the Supplier and Consumer side of an Installation
Explain the Regulatory Requirements for the Earthing and Bonding
Describe the provision of Earthing for Underground Cables and Overhead Lines

KM 06 6) Rotating Electrical Machinery

KT 01 **Rotating Electrical Machinery - AC Motors** ⇨

KT 0101 Construction of Alternating current (AC) Motors
List the diffent types of Alternating Current (AC) Motors and describe their Construction comparing the advantages and disadvantages of Single and Three Phase motors

KT0102 Principles of Operation of Alternating Current (AC) Motors
Explain the Principles of operation of Alternating Current (AC) Motors

KT 0103 Configuration of Motor Connections
Describe with the aid of diagrams, the configuration of Motor Connections

KT 0104 Types of Single and Three Phase Alternating Current (AC) Motors
Characteristics of Single and Three Phase Motors. (6 Stud and 12 Stud forward and reverse Single Phase motors) F/R Three Phase Mts

KT 0105 Application of Alternating Current (AC) Motors
Describe and explain the Application of AC Motors in industry

KT 0106 Testing Principles of Single and Three Phase Alternating current (AC) Motors
Describe and explain how Tests are carried out on Alternating Current (AC) Motors

KT 0107 Protection of Motors
Explain how Time Delay and Current Rating of Overload Protection Devices influence their use in protecting motors from damage in the case of locked Rotors, Overload during operation and Short Circuits.
Describe and explain Protection Devices used for Alternating Current (AC) Motors

KT 0108 Calculation of Motor Properties
Calculate Alternating Current (AC) Motor Properties

KM 07 7) Electrical Supply Systems and Components

KT 01 **Concepts, Theories and Principles of Supply Systems**

- KT 0101 Theories and Concepts of Alternating Current
  Explain the principles of Generationbyusing "Flemming's" right hand rule and "Faraday's" Law
- KT 0102 Fundamental Principles of Alternating Current
  Explain by using Wave Form Diagrams, the diffferences between "Line" and "Phase" values
- KT 0103 Alternating Current Generation (distribution system theory)
  Calculate Line and Phase Voltages, Line and Phase Currents, Power and Power factor taking Inductance, Capacatance and Impedance into account
- KT 0104 Characteristics and Calculations from Alternating Current Waveforms
  Explain the Generation and differences between Single and Three phase Alternating Current (AC) by using Wave Forms and Vector Diagrams
- KT 0105 Theories, Concepts and Principles of Direct Current Sources
  Explain the Generation principles of Direct Current (DC)
- KT 0106 Sources of Direct Current
  Explain the sources from which Direct Current (DC) is obtained
- KT 0107 Calculations of Direct and Alternating Current Circuits
  Calculate the Power and energy in Direct Current (DC) and Alternating Current (AC) Circuits
- KT 0108 Construction and Operating Principles of Direct Current Generators
  Describe with the aid of drawings the Components of DC Generators and their function as well as the Operating principles of Direct Current (DC) Generators
- KT 0109 Characteristics, Sources and Generation of Renewable Energy
  Explain the various methods of producing Renewable Energy and list the Advantages and Disadvantages of the different renewable energy Generation methods
- KT 0110 Relevant Legislative Requirements
  Explain in detail the legislative requirements regarding the Generation of Alternating Current (AC) Direct Current (DC) and Renewable energy

KT 02 **Batteries**

- KT 0201 Fundamentals of Battery Operation
  Describe with the aid of diagrams, the fundamentals of the operating principles of Battteries. Explain the terms:-
  i) Electromotive Force (EMF)
  ii) Relative Density
  iii) Capacity
- KT 0202 Types and Classification of Batteries
  Describe the explain the various types of Batteries and Battery Cells describing the advantages and disadvantages of Primary and Secondary Cells for particular applications
- KT 0203 Safety Precautions when dealing with batteries
  Explain with the aid of drawings, the discharging and charging action of Lead acid Cells
- KT 0204 Care and Maintenance of Batteries
  Describe and Explain the correct Procedures to Care, Maintain and Store Batteries and the hazards and safety precautions associated with Batteries and Battery Rooms. Name the Instruments used for Testing Batteries, describe how thay must be used and explain the purpose for each test
- KT 0205 Battery Components and Construction
  Describe with the aid of diagrams the fundamentals of Battery construction
- KT 0206 Safe Disposal of Batteries
  Describe and Explain the correct procedures to Safely Dispose of Batteries and the Hazards and Safey precutions associated with the Safe Disposal of Batteries

KT 03 **Transformers** ⇨

- KT 0301 Theories of Single Phase Wound Transformers
  Describe with the aid of drawings the Theory behind Single Phase wound Transformers
- KT 0302 Types of Single Phase Transformers including Single wound, Double wound and Auto-Transformers and their Applications
  Name and Describe the Types of Single Phase Transformers
- KT 0303 Fundamentals of Transformer Construction
  Describe with the aid of drawings, the Construction of single Phase Transformers
- KT 0304 Transformer Cooling Systems
  Describe and explain the types of Cooling Systems on Transformers
- KT 0305 Principles of Single Phase Transformer Operation
  Describe with the aid of drawings, the principle of operation of single Phase transformers in term of Mutual Inductance and the Henry as the Unit of Inductance
- KT 0306 Principles of Single Phase Auto-Transformer Operation
  Explain with the aid of drawings, the Principle of Operation of Single Phase Auto-Transformers

KT 04 **Types of Cables and Applications**

KT 0401 Types of Cable Construction including Armoured and Un-Armoured, Insulated and Un-insulated, Single and Multi-Core Cables
Describe, with the aid of sketches, the different types of Cables and their Construction and explain the function of the various materials used

KT 0402 Cable Materials and their Functions and Characteristics
Describe the Characteristics and Applications of the various types of Cables and compare their advantages and disadvantages

KT 0403 Idenification of Cable Characteristics and Properties
Describe the factors affecting the Efficiency of Cables

KT 0404 Applications of various types of Cables
Describe and explain the provisions in the SANS 10142-1 Code of Practice for the correct and Safe Application of the various Cables

KT 0405 Installation Methods and Safe use of Cables
Describe and explain the provisions in the SANS 10142-1 Code of Practice for the correct and Safe Installation and use of the various types of Cables

KT 0406 Safe Transport and Storage of Cables
Describe the Precautions required when Transporting and Storing Cables

KT 05 **Switchgear and Control Gear** ⇨

KT 0501 Principles of Operation of switchgear and Control gear
Describe Disconnectors, relays, Timer and Contactors in term of constructionand Operating principles with reference to the Contacts, Operating Coils, (where applicable) and Opeating Mechanisms

KT 0502 Components of Switchgear and Control gear Systems and the Application thereof
Describe with the ais of labelled drawings, the principle of operation of the Over Current and Earth Leakage Protection Relays.
Describe the following terminology in term of low Voltage Circiuit Breakers:-
i) Moulded Cases
ii) Positive Indication
iii) Trip Position
iv) Factory Sealed
v) Thermal Magnetic Tripping
vi) Quick Make
vii) Quick Break
viii) Trip Free Mechanism
ix) Interpole Barriers

KT 0503 Electrical Drawings
Explain by showing the different types of Electrical drawings used

KT 06 **Lighting Systems**

KT 0601 Principles of Illumination
Explain Illumination and Luminaire Circuits and describe Light intensity, Lux, Lumens, Colour Rendering and Stroboscopic effect

Kt 0602 Types of Luminaires and Lighting Systems
Explain the controlling of Lighting Circuits and the different types of Lamps and their principles of operation as well as the safe disposal of Lamps and Luminaires that have been discarded

KM 08 8) Low Voltage Protection

KT 01 **Low Voltage Protection**

KT 0101 Purpose and Application of Low Voltage Protection
Describe the Purpose and Functions of different types of Low Voltage Protection devices including Overload relays, fuses, Circuit Breakers and Earth Leakage Protection Devices

KT 0102 Types of Low Voltage Protection
Name and describe the types of Low Voltage Protective devices and explain with the aisd of circuit diagrams, how Single Phase Electrical Installations are and must be Protected

KT 0103 Low Voltage Protection Parameters and Statutory Requirements
Describe the effect of adverse conditions on the Operational Characteristics of Protective devices

KM 09 — 9) Fault Finding

KT 01 **Fault Finding** ⇨

- KT 0101 Fault Finding Principles for Electrical Circuits
  Explain Fault Finding Principles for Electrical Circuits including AC and DC
- KT 0102 Fault Finding Techniques for Electrical Circuits
  Explain Fault Finding Techniques for Electrical Circuits including C and DC
- KT 0103 Safety during Fault Finding
  Explain and emphasize the importance of Safety during the Fault Finding procedure including Permit to Work, Lock out, Risk Assessment, Hooking up at Heights and Access Control

QCTO OCCUPATIONAL CERTIFICATE ELECTRICAL CURRICULUM LEVEL TWO

KM 02 — 2) Tools, Equipment and Materials

⇦ KT 02 **Measuring and Testing Instruments+Installation Testing:Power "on"and"power off"** ⇨

1 WEEK

- KT 0201 Fixed and Portable Electrical Measuring Instruments
  Identify different types of fixed and portable electrical measuring instruments and state their purpose
- KT 0202 Types of electrical Measuring and Testing Instruments
  Identify different types of electrical measuring instruments and state their purpose
- KT 0203 Safe use of Measuring and Testing Instruments
  Describe Safety and Functionality checks to be performed on Measuring and Test Instruments before use
- KT 0204 Construction and Operating Principles of Measuring and Testing Instrument
  Describe and explain the construction and operating principles of Measuring and Testing Instrumentation

2 WEEKS

- KT 0205 Methods of connecting Measuring and Testing Instruments in Circuits
  Illustrate by means of circuit diagrams how the wattmeter (electrodynamometer type) Kilowatt-hour meter, frequency meter, Power factor meter, Loop Impedance Tester and Maximum Demand meter are connected in single and Three Phase circuits
- KT 0206 Applications and Methods of using electrical Measuring and Testing Instruments
- KT 0207 Care and Maintenance of Single and Three Phase Measuring and Testing Instruments
- KT 0208 Instrument Transformers
  Explain by means of circuit diagrams how an Ammeter and a Voltmeter are directly and indirectly connected by using Instrument Transformers
- KT 0209 Types and Functions of Panel Mounted electrical Measuring and Testing Instruments
- KT 0210 Safe use of panel mounted Measuring and Test Instruments
- KT 0211 Protection of Measuring Instruments when connected in a circuit
  Describe the various methods of protection when connecting Measuring Instruments in circuits

1 WEEK **Arc Welding**
1 WEEK **Gas Cutting**

KM 04 — 4) Introduction to the World of Work and the Electrical Trade

⇦ KT 01 **Introduction to the the world of Work and the Electrical Trade** ⇨

1 DAY

- KT 0101 The Electricians World of Work
  The Job environment and work place roles of an electrician are accurately described and explained
- KT 0102 Carreer Opportunities for Qualified Electricians
  The profile of an Electrician is described in relation to Industry descriptions, Career path Progression and requirements
- KT 0103 The Electricians Responsibilities and Duties
  Legal aspects which include:-
  i) employment Contracts
  ii) Roles and Responsibilities
  of the Employer and Employee must be thouroughly explained
- KT 0104 Legislation relating to Apprentices in the Electrical Trade
  The use of Applicable Legislation and Regulations relating to the Electrical Trade is described
- KT 0105 Electrical Trade Test Requirements
  Trade Test Methodology, Requirements and Assessment procedures leading up to the Trade Assessment are explained

KM 06 — 6) Rotating Electrical Machinery

KT 02 — Rotating Electrical Machinery - DC Motors (2 WEEKS)

- KT 0201 Construction of Direct Current (DC) Motors
  - List the different types of Direct Current (DC) Motors and describe their Construction
- KT 0202 Principles of operation for Direct Current (DC) Motors
  - Explain the Principles of Operation of Direct current (DC) Motors
- KT 0203 Configuration of Direct Current (DC) Motor Connections
  - Describe, with the aid of diagrams the Configuration of Direct Current (DC) Motor Connections, Power Circuits and Control Circuits
- KT 0204 Types and Applications of Direct Current (DC) Motors
  - Describe the Applications of the differnet types of Direct Current (DC) Motors and compare the advantages and disadvantages of the different types of Direct Current (DC) Motors
- KT 0205 Testing principles of Direct Current (DC) Motors
  - Explain the Testing Procedures and Principles OF Direct Current (DC) Motors
- KT 0206 Protection of Direct Current (DC) Motors
  - Describe and explain Protection Devices used for Direct Current (DC) Motors and explain how iTime Delay and Current Rating of Overload Protection Devices influence their usein protection motors from damage in the caso of Locked Rotors, Overload during operation and Short Circuits
- KT 0207 Calculation of Direct Current (DC) Motor Properties
  - Calculate Direct Current (DC) Motor properties

KT 03 — Transformers -Panel Wiring (CTVT &Kwh) (3 WEEKS)

- KT 0307 Transformer Losses
  - Describe the types of Transformer Losses and explain their Causes and Effects
- KT 0308 Formulas and Calculations on Input and Output of Transformers
  - Calculate the Terminal Voltage, Turns and Current Ratios for Single Phase Transformers
- KT 0309 Maintenance Requirement of Transformers
  - Describe and explain the basic Requirements for Single and Three Phase Transformer Schedules and Procedures for Maintenance
    - Current Transformers (CT's)
    - Voltage Tranformers (VT's)
- KT 0310 Types of Three Phase Transformers and their Applications
  - Describe and explain the various Applications for Three Phase Transformers
- KT 0311 Construction of Three Phase Transformers including Open Core, Closed Core and Shell or Divided Core
  - Describe with the aid of drawings and diagrams, the construction of Three Phase Transformers - Open core - Closed Core and Shell or Divided Core
- KT 0312 Principles of Three phase Transformer Operation and Configuration
  - Explain the Calculation for the relationship of the Voltage, Current, Turns Ratio and Power including True Power, Apparent Power and Power Factor. Describe and explain how Inductance causes a Phase Angle between Voltage and Current explaining the concept of "Leading and Lagging" and the relationship to the concept of "Power Factor"
- KT 0313 Principles of Three Phase Auto-Transformer Operation and Configuration
  - Describe with the aid of diagrams, Three Phase Gransofrmer Connections

KT 05 — Switchgear and Control Gear - (Motor & Starters)

- KT 0504 Introduction to Programmable Logic Controllers (PLC's)
  - Describe the basic principles of operation for Programmable Logic Controllers
- KT 0505 Introduction to Soft Starters
  - Describe the basic principles of operation for Soft Starters
- KT 0506 Introduction to Variable Speed Drives
  - Describe the basic principles of operation for Variable Speed Drives

KM 09 — 9) Fault Finding -(Relay Panel, 3 Stage F/R and 3 Phase F/R auto star delta)

KT 01 — Fault Finding (4 WEEKS)

- KT 0101 Fault Finding Principles for Electrical Circuits
  - Explain Fault Finding Principles for Electrical Circuits including AC and DC
- KT 0102 Fault Finding Techniques for Electrical Circuits
  - Explain Fault Finding Techniques for Electrical Circuits including C and DC
- KT 0103 Safety during Fault Finding
  - Explain and emphasize the importance of Safety during the Fault Finding procedure including Permit to Work, Lock out, Risk Assessment, Hooking up at Heights and Access Control

QCTO OCCUPATIONAL CERTIFICATE ELECTRICAL CURRICULUM LEVEL THREE

KM 02 2) Tools, Equipment and Materials

2 WEEKS

KT 02 **Measuring and Testing Instruments**

- KT 0205 Methods of connecting Measuring and Testing Instruments in Circuits
  Illustrate by means of circuit diagrams how the wattmeter (electrodynamometer type) Kilowatt-hour meter, frequency meter, Power factor meter, Loop Impedance Tester and Maximum Demand meter are connected in single and Three Phase circuits
- KT 0206 Applications and Methods of using electrical Measuring and Testing Instruments
- KT 0207 Care and Maintenance of Single and Three Phase Measuring and Testing Instruments
- KT 0208 Instrument Transformers
  Explain by means of circuit diagrams how an Ammeter and a Voltmeter are directly and indirectly connected by using Instrument Transformers
- KT 0209 Types and Functions of Panel Mounted electrical Measuring and Testing Instruments
- KT 0210 Safe use of panel mounted Measuring and Test Instruments
- KT 0211 Protection of Measuring Instruments when connected in a circuit
  Describe the various methods of protection when connecting Measuring Instruments in circuits

KM 03 3) Electricity and Electronics

4 WEEKS

KT 02 **Electronics**

- KT 0201 International Electrotechnical Commission (IEC) Symbols for Electronics
  Using the IEC chart, describe and explain the various Symbols and Components
- KT 0202 Principles, Safety precautions, Identification and basic function of Electronic Components
  Describe the various inductors used and their typical applications and determine the value of the different resistors utilizing colour coding charts. Determine the value of capacitors using charts and calculate the value of capacitance in a series and parallel circuit.
- KT 0203 Basic Electronic Circuits
  Draw basic electronic Circuits using the IEC Symbols
- KT 0204 Principles of Rectification - Single and Three Phase
  Describe the construction and uses of various semiconductor devices including Programmable Logic Controlers (PLC's)

KM 04 4) Introduction to the World of Work and the Electrical Trade

1 DAY

KT 01 **Introduction to the the world of Work and the Electrical Trade**

- KT 0101 The Electricians World of Work
  The Job environment and work place roles of an electrician are accurately described and explained at this Level
- KT 0102 Carreer Opportunities for Qualified Electricians
  The profile of an Electrician is described in relation to Industry descriptions, Career path Progression and requirements
- KT 0103 The Electricians Responsibilities and Duties
  Legal aspects which include:-
  i) employment Contracts
  ii) Roles and Responsibilities
  of the Employer and Employee must be thouroughly explained at this Level
- KT 0104 Legislation relating to Apprentices in the Electrical Trade
  The Applicable Legislation and Regulations relating to the Electrical Trade is used at this Level
- KT 0105 Electrical Trade Test Requirements
  Trade Test Methodology, Requirements and Assessment procedures leading up to the Trade Assessment are explained at this final Level

KM 06 — 6) Rotating Electrical Machinery

2 WEEKS

KT 03 **Rotating Electrical Machinery - Alternators and Generators**

- KT 0301 Construction of Alternators and Generators
  - List the different types of Alternators and Generators and describe their Construction
- KT 0302 Principles of operation of Alternators and Generators
  - Explain the principles of operation of Alternators and Generators
- KT 0303 Configuration of Alternator and Generator Connections
  - Explain the fundamental differences between Alternators and Generators and describe with the aid of diagrams, the configuration of Alternator and Generator connections, Power Circuits and Control Circuits
- KT 0304 Types and Applications of Alternators and Generators
  - Describe the Applications of different types of Alternators and Generators
- KT 0305 Testing Principles of Alternators and Generators
  - Describe how Tests are conducted on Alternators and Generators
- KT 0306 Protection of Alternators and Generators
  - Describe and explain Protection Devices used for Alternators andGenerators and explain how time delay and Curent rating of Overload Protection Devices influence their usein Protecting Alternators and Genartorsfrom damage in the case of Locked Rotors, Overload during operation and short Circuits
- KT 0307 Calculation Properties of Alternators and Generators
  - Calculations involving Alternators and Generators

KM 07 — 7) Electrical Supply Systems and Components

KT 03 **Transformers - Protection & Phasing**

- KT 0314 Transformer Protection and Phasing
  - Describe and explain the Legislative Requirements concrning Transformer Protection

KT 05 **Switchgear and Control Gear - Plc, Soft starters & VSD's**

- KT 0504 Introduction to Programmable Logic Controllers (PLC's)
  - Carry out Practical Circuit design on Programmable Logic Controllers
- KT 0505 Introduction to Soft Starters
  - Carry out Practical Circuit design on:-
    - VSD's
    - Soft Starters
    - PLC's
- KT 0506 Introduction to Variable Speed Drives
  - Carry out Practical exersizes for Variable Speed Drives

KM 09 — 9) Fault Finding

3 WEEKS

KT 01 **Fault Finding -Plc &VSD's**

- KT 0101 Fault Finding Principles for Electrical Circuits
  - Carry out Curcuit Design and Fault Finding on Electrical Circuits including AC and DC
    - **PLC Panel**
    - **DC Panel**
- KT 0102 Fault Finding Techniques for Electrical Circuits
  - Carry out and practice the Fault Finding Techniques covered previously
- KT 0103 Safety during Fault Finding
  - Explain and emphasize the importance of Safety during the Fault Finding procedure including Permit to Work, Lock out, Risk Assessment, Hooking up at Heights and Access Control

FINAL TRAINING Trade test preparation **FINAL RE- WRITES** Trade test Re-Writes

To provide Training (as per SAQA and relevant legislative requirements) to all formal Eskom's operating units on the listed subjects

1.2 *Employer*'s requirements for the *service*

The provision of training for Learner Artisans required within LimLanga Cluster according to the required curriculum to enable Learners to qualify for relevant Trade as per Eskom's requirement.

1.3 Interpretation and terminology

The following abbreviations are used in this Service Information:

Abbreviation	Meaning given to the abbreviation
	N/A

1.4 Specifications

Title	Date or revision	Tick if publicly available
General Specifications:		
Health and Safety requirements	Latest	
Environmental requirements	Latest	
Site regulations and access control	Latest	
Recommended Herbicides	Latest	
Herbicides Management	Latest	
PROCEDURE FOR CLEARING VEGETATION AND MAINTENANCE WITHIN OVERHEAD POWERLINES	EPC 32-247	
LOCAL STANDARD FOR THE OPERATING OF HIGH CUTTER / CHAIN SAW	Latest	
Eskom Distribution Standard Copies available from Eskom Distribution Technology, Technical Administrator, Telephone 011-871 2214. Important Note: where material options (i.e coastal and inland) are available the coastal option will be applicable in Eskom's Limpopo Operating Region (Refer to Engineering Instruction EI-039-MVL).	Latest	
Technical Bulletins As issued by Eskom's Distribution Technology, Simmerpan Copies of the relevant Bulletins are available on request.	**Latest**	
Environnemental Management Environnemental Management Programme (EMP) Procedure SHEQ Policy	**Latest**	EPC: 32-248
Quality Quality Requirements for the Procurement of Assets, Goods & Services	**Latest**	ESKASAAU7
Safety Occupational Health and Safety Requirements to be met by Contractors and Subcontractors Employed by Eskom. Co-ordination of Safety on Capital Projects. Standard applicable to Contractors working in Close Proximity to Live Apparatus	**Latest**	Health & Safety Documents
Management of Substance Abuse	**Latest**	SCSPVABP4

Business Conduct Suspending s from Eskom's Lists Eskom Business Conduct Policy and Guidelines Declaration of Conflict of Interest Copies of the abovementioned documents are not attached but are available from Eskom's Tender Advise Centre, Clare Loittering, (031) 710 5429	**Latest**	ESKADABD7
Technology & Quality Engineering Instruction : Generic Stubby Line	**Latest**	E1-048-MVL
Authorisation of contractors / Eskom staff	**Latest**	TDQES001
Standard for a fall arrest system Procedure for using a fall arrest system Specification for a fall arrest system	**Latest**	SCSASABW3 SCSPVACL6 SCSSCABA5
Checklist of Eskom Qualified s List of Eskom Qualified s	**Latest**	TQSNK008
CONTRACT SPECIFICATION FOR VEGETATION MANAGEMENT SERVICES ON ESKOM NETWORKS	**Latest**	240-52456757

Management strategy and start up.

1.5 The *Contractor*'s plan for the *service*

Management meetings

Regular meetings of a general nature may be convened and chaired by the *Supply Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Risk register and compensation events	As required	Service Manager's office	Both parties
Overall contract progress and feedback	As required	Service Manager's office	Both parties

Meetings of a specialist nature may be convened as specified elsewhere in this Service Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *service*. Records of these meetings shall be submitted to the *Service Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

Contractor's management, supervision and key people

N/A

Provision of bonds and guarantees

N/A

Documentation control

All contractual Documentation must have relevant contract number and Purchase Order Number as reference as per Eskom Holdings SOC Ltd Standards . Contractual communications will be in the form of properly compiled letters, letters attached to emails, emails, NEC3 template and urgent contractor meetings can be in the form of sms. The use of sms's, emails does not override the use of applicable and relevant NEC3 standard templates, forms and Eskom Holdings SOC Limited procedures.

Invoicing and payment

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager*'s payment certificate.

The *Contractor* shall address the tax invoice to

_____
and include on each invoice the following information:

Name and address of the *Contractor* and the *Service Manager;*
The contract number and title;
Contractor's VAT registration number;
The *Employer*'s VAT registration number 4740101508;
Description of service provided for each item invoiced based on the Price List;
Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
(add other as required)

Add procedures for invoice submission and payment (e. g. electronic payment instructions)
Within one week of receiving a payment certificate from the *Service Manager* the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager*'s payment certificate.

Contract change management

For any change in scope, such changes must be treated as Compensation Events.

Records of Defined Cost to be kept by the *Contractor*

In order to substantiate the Defined Cost of compensation events, the *Employer* may require the *Contractor* to keep records of amounts paid by him for people employed by the *Contractor*, Plant and Materials, work subcontracted by the *Contractor* and Equipment. A site diary will be required.

Insurance provided by the *Employer*

The insurance provided by the Employer, is addressed under the contract data.

Training workshops and technology transfer

To be advised by the Service Manager, as required.

Design and supply of Equipment

N/A

Things provided at the end of the *service period* for the *Employer*'s use

Equipment

As per Task Order

Information and other things

As per Task Order

Management of work done by Task Order

NB: No work that falls outside the approved scope of works will be undertaken without a Task Order.

Health and safety, the environment and quality assurance

Health and safety risk management

In addition to the requirements of the laws governing health and safety, Eskom may have some additional requirements particular to the *service* and the Affected Property for this contract.

The Divisional/Regional Safety Risk Manager or his representative having jurisdiction over the *service* must provide the relevant safety, health and environmental (SHE) criteria for incorporation into this Service Information. The SHE specification / scope must be signed off by the Divisional/Regional Safety Risk Manager or his representative confirming that the applicable safety criteria have been taken into account.

The Commodity Manager / Buyer must refer the tender to the Divisional/Regional Safety Risk Manager or his representative in order to evaluate against enquiry-specific safety criteria.

The Divisional Safety Risk Managers who will be responsible for the allocation of resources to assist P&SCM with the above processes are as follows:

· Distribution: Alex Stramrood

The *Contractor* shall comply with the health and safety requirements contained in Below Form to this Service Information.

Environmental constraints and management

The *Contractor* shall comply with the environmental criteria and constraints.
Guidelines of Compiling an Environmental Policy
Environmental policy
The environmental policy is the driver for implementing and improving the organization's environmental management system so that it can maintain and potentially improve its environmental performance. The policy should therefore reflect the commitment of top management to comply with applicable laws and to demonstrate continual improvement. The policy forms the basis upon which the organization sets its objectives and targets. The policy should be sufficiently clear to be capable of being understood by internal and external interested parties and should be periodically reviewed and revised to reflect changing conditions and information.
Top management shall define the organization's environmental policy and ensure that it:
Top management includes people on site, at head office, or any member of a controlling group designated to be management of the organization.

A site or an operating unit does not need to document its formal adoption of a corporate environmental policy if the corporate policy, as defined by its scope, applies to the site or operating unit. In addition, the corporate policy will need to be adequately specific to the site or operating unit.
If the site or corporate policy is modified to suit the site or operating unit, then these changes must be documented.

a) is appropriate to the nature, scale and environmental impacts of its activities, products or services;
for example, an organization involved in activities with a high environmental risk (for example, scheduled processes) would be expected to provide more specific undertakings in its environmental policy than an organization involved in low risk activities. The environmental policy should also address the different types of environmental impacts of the organization's activities, products or services.
This does not imply that all environmental impacts be addressed in the policy but that the framework of the policy covers all significant impacts (see 4.2 d).

b) includes a commitment to continual improvement and prevention of pollution;
The words "continual improvement" and "pollution prevention" do not need to be explicitly mentioned as long as similar words are used or there are clear statements in the policy that directly address pollution reduction

(for example, waste minimization, source reduction and cleaner technologies) and continual improvement. Pollution prevention is more than just pollution control and requires preventive measures, instead of only control.

c) includes a commitment to comply with relevant environmental legislation and regulations,
Compliance with all relevant legislated and other requirements (National, provincial and local) is a minimum requirement for certification.
Exceptions to this are where:
a) The authorities have been informed of the non-compliance in writing;
b) A corrective action programme is in place;
c) Evidence is available that the authorities have accepted the corrective action programme;
d) Evidence is available that the corrective action programme is being implemented.
Where a permit for a process of the organization has expired and the organization can provide evidence of due diligence, for example, records of telephone calls, faxes to the regulator or minutes of meetings with the regulator showing that they are in the process of applying for new permits.
The word comply does not need to be explicitly mentioned in the environmental policy, as long as there are similar words (for example, adhere to, in accordance with) clearly communicating commitment to compliance with legislation and regulations.

d and with other requirements to which the organization subscribes;
The "*other requirements*" may include:
a) Industry initiatives, non-regulatory guidelines or codes of practice such as Responsible Care or more general environmental initiatives such as the business Charter for Sustainable Development to the extent that the organization has formally adopted them;
b) Agreements with public authorities;
c) Formal management systems such as SABS ISO 9001/2, NOSA and ISRS; and
d) Corporate or Head office requirements.

If an organization subscribes to other requirements (as in 4.2(c) a) and b) above in their environmental policy then:
1) The certification body will verify compliance with these requirements;
2) Compliance with those requirements will not be included in the scope of the certificate; and
3) Non-compliance with these requirements could provide grounds for not granting certification.

If an organization subscribes to other requirements (as in 4.2(c)) c) above then the certification body will only verify compliance with the SABS ISO 14001 requirements and not to those other formal management systems. (An exception to this is where the organization requests a combined SABS ISO 14001 and SABS ISO 9000 certification assessment/audit).

e) Provides the framework for setting and reviewing environmental objectives and targets;
The policy should be sufficiently detailed to provide a yardstick against which the organization's environmental performance can be evaluated.

The policy wording must be specific enough so that specific objectives and targets can be formulated from it by the organization in order to implement the policy.

f) Is documented, implemented and maintained …
The policy can be documented in any form (i.e. paper or electronic).

All the requirements of SABS ISO 14001 shall be addressed and an organization cannot elect to omit any of these requirements from its environmental management system.
Policies tend to set long-term goals.
The policy should be periodically reviewed and revised in response to new information and changing circumstances.
The policy must be reviewed periodically – at least annually.
It is not expected that the policy be reissued annually. A well-developed policy can effectively drive the organization's environmental management system for several years.
g) … and communicated to all employees;
Communication involves both the transmission and the understanding of the policy.
Communication mechanisms can include posting the policy in common areas, distributing it by memo, and reviewing it at staff or "toolbox talks" meetings.
A person's level of knowledge of the policy should be proportional to his/her level of responsibility in the environmental management system i.e. senior staff responsible for ensuring implementation need a greater knowledge of the policy than personnel at shop-floor level. In the South African context, unskilled, illiterate workers cannot be expected to have in-depth knowledge of the contents of the environmental policy, however all employees are expected to have an idea of the concepts of the environment, why it is important to protect the environment, and of their role in achieving this (see also 4.4.2).
h) is available to the public
The policy must be available to any interested party on request.
The words "is available" do not necessarily mean that the organization has to pro-actively distribute the policy to the public. The organization should however make the public aware of the fact that the policy is available.
A mechanism should be in place to have the policy available to the public.
i) Key component of the policy
The policy provides an environmental purpose and set of values for the organization to follow.
The policy should:
a) Be relevant and straightforward;
b) Relay that protection of the environment is a top priority of the organization;
c) Show commitment to continued improvement of environmental performance and compliance with the laws and regulations;
d) Clearly specify which organizational activities are covered by the statement;
e) Be a natural jumping-off point for setting environmental objectives and targets;
f) Provide a framework for assessing progress made with the targets and objectives that are oriented towards minimizing environmental impacts.

j) Communication, promotion and support of policy

The policy statement will be totally ineffective if the commitment it contains is not communicated, made available, promoted and supported by all. It is important to note that the policy:

a) Should be available to all employees in the organization;
b) Should be communicated repeatedly after a period of time as a reminder;
c) Should be made available to the public;
d) Should be promptly provided whenever a copy is required;
e) Should be signed by top management to show commitment and support.
Repeated exposure is the key to communicating the policy effectively thus it can be posted, communicated through news letters or sent to desktop personal computers.

Quality assurance requirements

As per Tender Quality requirements.

Procurement

- **Skills Development**

Tenderers are required to submit proposals in a table below for developing the skills of unemployed candidates within the Cluster. Skills development is intended to address Eskom's core, scarce and critical skills. These skills are also included in a 2020 list of occupations in high demand as stipulated in the Government Gazette 43937. Candidates for skills development shall be from both Limpopo and Mpumalanga provinces, and their composition shall be representative of the population demographics of these provinces.

Skill type / Occupation	Eskom target	Proposed Number of Candidates
Facilitator – accredited	1	
Moderator & assessor – accredited	1	
She Rep	1	
First Aider levels 1 and 2 Course	3	
Fire Fighting Course	3	

Note: That these targets for skills development candidates categorically exclude Eskom employees and registered learners. The tenderers are required to take full responsibility for the total cost of developing the requisite skills, and Eskom shall not make any financial contribution towards the fulfilment of this obligation. Tenderers also are advised to approach their relevant SETAs to access grants, subsidies, and incentives as well as South African Revenue Services for tax rebates that are earmarked for skills development initiatives.

Eskom will apply a penalty of 2.5% of the total accumulated task order values for failure to meet SDL&I obligations.

For the duration of the contract, Eskom will retain 2.5% of every invoice (excluding VAT) as security for the fulfilment of all SDL&I Obligations. The retained amounts shall only be released to the Contractor upon:

- Eskom receives the SDL&I progress report/s from the contractor.
- Fulfilment of all SDL&I obligations by the contractor.

Submission of an approved compliance report by SDL&I Department.

Reporting and Monitoring

- The suppliers shall on a quarterly basis submit a report to Eskom in accordance with Data Collection Template on their compliance with the SDL&I obligations described above.
- Eskom shall review the SDL&I reports submitted by the suppliers within 30 (thirty) days of receipt of the reports and notify the suppliers in writing if their SDL&I obligations have not been met.
- Upon notification by Eskom that the suppliers have not met their SDL&I obligations, the suppliers shall be required to implement corrective measures to meet those SDL&I obligations before the commencement of the following report, failing which Retention clauses shall be invoked.
- Every contract shall be accompanied by the SDL&I Implementation Schedule, which must be completed by the suppliers and returned to SDL&I representative for acceptance 28 days after contract award. This will be used as a reference document for monitoring, measuring and reporting on the supplier's progress in delivering on their stated SDL&I commitments.

- **Job creation**

Job Opportunities

Contractor to indicate number of Jobs to be created and/or retained from this contract;

Type of Jobs to be created	Number of Jobs to be created
9 catering for the skills proposed	Tenderer's proposal

Type of Jobs to be retained	Number of Jobs to be retained
Tenderer to propose	Tenderers proposal

Communities based local to site (villages around site) should be prioritized for employment.

Local content 100%

BBBEE and preferencing scheme

Where a change in the *Contractor's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Contractor*'s B-BBEE status, the *Contractor* notifies the *Employer* within seven days of the change

Subcontracting

Preferred subcontractors

The NEC Engineering Term Services Contract refers:
Contractors are requested to submit names of proposed "Subcontractors" to be utilized on this project.
Contractors are advised that only Eskom Approved Consultants and Contractors who have completed the necessary Eskom Contractor Training & Accreditation may be used.

Subcontractor	Section of Work to be Subcontracted	Vendor No.

Subcontract documentation, and assessment of subcontract tenders

As per Terms and Conditions of NEC Term Services Contract.

Limitations on subcontracting

Suppliers are not allowed to sub-contract more than 25% of the contract value to another enterprise that does not have equal or higher BBBEE status level, unless the intended sub-contractor is an EME that has the capability and ability to execute the sub-contract.

Attendance on subcontractors

None

Plant and Materials

Specifications

As per Task Order

Correction of defects

Defects to be corrected within 1 Week

Contractor's procurement of Plant and Materials

Material to be procured Locally from Eskom approved suppliers.

Tests and inspections before delivery

The inspection to be done by the Service Manager.

Plant & Materials provided "free issue" by the *Employer*

As per Task Order

Working on the Affected Property

The Contractor must adhere the OHSA Act.

Employer's site entry and security control, permits, and site regulations

As per Task Order.

People restrictions, hours of work, conduct and records

As per Task Order.

Health and safety facilities on the Affected Property

As per Task Order.

Environmental controls, fauna & flora

This sub-paragraph may not be required in a service contract or if these matters are dealt with in the general environmental requirements.

Equipment provided by the *Employer*

None

Site services and facilities

Provided by the *Employer*

Security and Site.

Provided by the *Contractor*

As per Task Order.

Control of noise, dust, water and waste

The Contractor to adhere to Environment Management Act.

Hook ups to existing works

The Contractor to adhere to Eskom life saving rules.

Tests and inspections

Description of tests and inspections

N/A

Materials facilities and samples for tests and inspections

N/A.