



NEC3 Engineering & Construction Contract

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

and _____
THE TENDERER

for For The Provision of Supervision, Labour, Equipment, Material (except for the Eskom Free Issue material, i.e Wooden Poles, Concentric Cable, Meters and Pole Top Split Meter Boxes) for the Electrification of 60 Off-Grid Connections at Maqhashiya Village using Solar PV and a further 12-month post installation maintenance in the KZN Operating Unit, Central East Cluster.

Contents:	No of pages
Part C1 Agreements & Contract Data	[1-21]
Part C2 Pricing Data	[22-33]
Part C3 Scope of Work	[33-58]
Part C4 Site Information	[59-60]

ENQUIRY No. E3480DXKZNOU

Part C1: Agreements & Contract Data

Contents:		No of pages
C1.1	Form of Offer and Acceptance	1
	[to be inserted from Returnable Documents at award stage]	
C1.2a	Contract Data provided by the <i>Employer</i>	1
C1.2b	Contract Data provided by the <i>Contractor</i>	1
C1.3	Proforma Guarantees	

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:

For the Provision of Supervision, Labour, Equipment, Material (except for the Eskom Free Issue material, i.e Wooden Poles, Concentric Cable, Meters and Pole Top Split Meter Boxes) for the Electrification of 60 Off-Grid Connections at Maqhashiya Village using Solar PV and a further 12-month post installation maintenance in the KZN Operating Unit, Central East Cluster

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 B	The offered total of the Prices exclusive of VAT is	R
	Sub total	R
	Value Added Tax @ 15% is	R
	The offered total of the amount due inclusive of VAT is ¹	R
	(in words)	

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 (if applicable)

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: Works Information
Part C4	Site 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 original copy signed between them of this document, including the Schedule of Deviations (if any).

Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s)

Name(s)

Zetu Nciza

Capacity

**Portfolio Manager Electrification,
KZN Operating Unit, Central East
Cluster**

**for the
Employer**

Eskom Holdings SOC Limited

Name &
signature of
witness

Date

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)

Name & signature of witness

Date

Zetu Nciza**Portfolio Manager Electrification,
KZN Operating Unit, Central East Cluster***(Insert name and address of organisation)***Eskom Holding SOC Limited**

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
		A: Priced contract with activity schedule
		W1: Dispute resolution procedure
		X1: Price adjustment for inflation
		X2 Changes in the law
	dispute resolution Option	X7: Delay damages
	and secondary Options	X13: Performance Bond (Provisional)
		X16: Retention
		X18: Limitation of liability
		Z: Additional conditions of contract
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg

10.1	The <i>Project Manager</i> is:	Batusile Radebe
	Address	25 Valley View Road New Germany
	Tel	031-7105276
	e-mail	radebeba@eskom.co.za
10.1	The <i>Supervisor</i> is: (Name)	[•]
	Address	[•]
	Tel No.	[•]
	Fax No.	[•]
	e-mail	[•]
11.2(13)	The <i>works</i> are	For the Provision of Supervision, Labour, Equipment, Material (except for the Eskom Free Issue material, i.e Wooden Poles, Concentric Cable, Meters and Pole Top Split Meter Boxes) for the Electrification of 60 Off-Grid Connections at Maqhashiya Village using Solar PV and a further 12-month post installation maintenance in the KZN Operating Unit, Central East Cluster
11.2(14)	The following matters will be included in the Risk Register	1. Community unrest and hijacking; 2. Business forums & land occupant demands. 3. Inclement weather. 4. Site access for abnormal vehicles. 5. Any other Risk pertaining to project work
11.2(15)	The <i>boundaries of the site</i> are	As per the servitude attained by Eskom as per the final design package
11.2(16)	The Site Information is in	Part 4: Maqhashiya Village
11.2(19)	The Works Information is in	Part 3: Scope of Work and all documents and drawings to which it makes reference.
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa
13.1	The <i>language of this contract</i> is	English
13.3	The <i>period for reply</i> is	2 weeks

2 The Contractor's main responsibilities

Data required by this section of the core clauses is provided by the *Contractor* in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.

3 Time

11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	31 MARCH 2027	
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	Condition to be met	key date
		1 Completion of Project	31 March 2027
		2 [•]	[•]
		3 [•]	[•]
30.1	The <i>access dates</i> are:	Part of the Site	Date
		1 As per site access register	Site Access
		2 [•]	[•]
		3 [•]	[•]
31.1	The <i>Contractor</i> is to submit a first programme for acceptance within	2 weeks of the Contract Date.	
31.2	The <i>starting date</i> is	To be confirmed	
32.2	The <i>Contractor</i> submits revised programmes at intervals no longer than	2 weeks of the contract start date	
35.1	The <i>Employer</i> is not willing to take over the <i>works</i> before the Completion Date.	[No data needed if this statement is included]	
4	Testing and Defects		
42.2	The <i>defects date</i> is	52 weeks after Completion of the whole of the works.	
43.2	The <i>defect correction period</i> is	2 weeks	
5	Payment		
50.1	The <i>assessment interval</i> is	25th day of each successive month.	
51.1	The <i>currency of this contract</i> is the	South African Rand.	
51.2	The period within which payments are made is	30 days.	
51.4	The <i>interest rate</i> is	the publicly quoted prime rate of interest (calculated on a 365 day year) charged 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 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	
60.1(13)	The place where weather is to be recorded is: The <i>weather measurements</i> to be recorded for each calendar month are, The <i>weather measurements</i> are supplied by The <i>weather data</i> are the records of past <i>weather measurements</i> for each calendar month which were recorded at: and which are available from:	On Construction/ Site register the cumulative rainfall (mm) the number of days with rainfall more than 10 mm the number of days with minimum air temperature less than 0 degrees Celsius the number of days with snow lying at 08:00 hours South African Time and these measurements: South African weather Bureau Nearest weather station to South African weather services closer to site the South African Weather Bureau and included in Annexure A to this Contract Data provided by the <i>Employer</i>
60.1(13)	Assumed values for the ten year return <i>weather data</i> for each <i>weather measurement</i> for each calendar month are:	As stated in Annexure A to this Contract Data provided by the <i>Employer</i>. Note: If this arrangement is used, delete the rows above for 60.1(13) and delete this note.

7	Title	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	1. Political unrest 2. Theft and Vandalism
9	Termination	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
10	Data for main Option clause	
B	Priced contract with bill of quantities	
60.6	The <i>method of measurement</i> is	The Standard System of Measuring Building Work published by The Association of South African Quantity Surveyors and amended as stated in Part C2.1, Pricing Assumptions
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is	the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of 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).
	Address	[•]
	Tel No.	[•]
	Fax No.	[•]
	e-mail	[•]
W1.2(3)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.
W1.4(2)	The <i>tribunal</i> is:	arbitration.
W1.4(5)	The <i>arbitration procedure</i> 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- Not Applicable	
X2	Changes in the law	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.
X7	Delay damages (but not if Option X5 is also used)	
X7.1	Delay damages for Completion of the whole of the <i>works</i> are	R5 000.00 per day up to up to a limit of 25% of the contract value.
X12	Partnering Not Applicable	
X13	Performance bond Not Applicable	Provisional
X13.1	The amount of the performance bond is	R [•].
X14	Advanced payment to the Contractor	Not Applicable
X15	Limitation of the Contractor's liability for his design to reasonable skill & care	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.
X16	Retention (not used with Option F)	
X16.1	The <i>retention free amount</i> is	R0
	The <i>retention percentage</i> is	10%
X17	Low-performance damages Not Applicable	
X18	Limitation of liability	
X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to:	R0.0 (zero Rand)
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to:	the amount of the deductibles relevant to the event
X18.3	The <i>Contractor's</i> liability for Defects due to his design which are not listed on the	The greater of • the total of the Prices at the Contract Date

	Defects Certificate is limited to	and the amounts excluded and unrecoverable from the <i>Employer's</i> assets policy for correcting the Defect (other than the resulting physical damage which is not excluded) plus the applicable deductible as at contract date.
X18.4	The <i>Contractor's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	The total of the Prices other than for the additional excluded matters. The <i>Contractor's</i> total liability for the additional excluded matters is not limited. The additional excluded matters are amounts for which the <i>Contractor</i> is liable under this contract for - Defects due to his design which arise before the Defects Certificate is issued, - Defects due to manufacture and fabrication outside the Site, - loss of or damage to property (other than the <i>works</i>, Plant and Materials), - death of or injury to a person and - infringement of an intellectual property right.
X18.5	The <i>end of liability date</i> is	(i) 7 years after the <i>defects date</i> for latent Defects and (ii) the date on which the liability in question prescribes in accordance with the Prescription Act No. 68 of 1969 (as amended or in terms of any replacement legislation) for any other matter. A latent Defect is a Defect which would not have been discovered on reasonable inspection by the <i>Employer</i> or the <i>Supervisor</i> before the <i>defects date</i>, without requiring any inspection not ordinarily carried out by the <i>Employer</i> or the <i>Supervisor</i> during that period. If the <i>Employer</i> or the <i>Supervisor</i> do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the <i>Employer</i> or the <i>Supervisor</i> to have discovered the Defect.
X20	Key Performance Indicators (not used when Option X12 applies)	Not Applicable
Z	The <i>Additional conditions of contract</i> are	Z1 to Z15 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 *Project 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 *Project Manager* within thirty days of the notification or as otherwise instructed by the *Project 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 Works.
- 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 P3 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 *Project 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 *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.

Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

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 *Project Manager*, the *Supervisor*, 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 *works*. 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 Site;
- 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 *works*; and
- undertakes, in and about the execution of the *works*, 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 *works*, 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 *Project 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 Works 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 Delete from the last sentence in core clause 61.3, “unless the *Project Manager* should have notified the event to the *Contractor* but did not”.

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)
- Z9.2 The *Contractor's* entitlement under the indemnity in 83.1 is provided for in 60.1(14) and the *Employer's* liability under the indemnity is limited.

Z10 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

- Z10.1 or had a business rescue order granted against it.

Z11 Addition to secondary Option X7 Delay damages (if applicable in this contract)

- Z11.1 If the amount due for the *Contractor's* payment of delay damages reaches the limits stated in this Contract Data for Option X7 or Options X5 and X7 used together, the *Employer* may terminate the *Contractor's* obligation to Provide the Works using the same procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table.

Z12 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 <i>Contractor</i> 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 <i>Contractor</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractor 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	means any unlawfully or illegally intentional act or omission that misleads, or attempts to

- Action** 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.

- Z12.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.
- Z12.2 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.
- Z12.3 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.
- Z12.4 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.

Z13 Insurance

Z 13.1 Replace core clause 84 with the following:

Insurance cover 84

- 84.1** 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.
- 84.2** The *Contractor* provides the insurances stated in the Insurance Table A.
- 84.3** The insurances provide cover for events which are at the *Contractor's* risk 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 to the <i>works</i> , Plant and Materials	The replacement cost where not covered by the <i>Employer's</i> insurance The <i>Employer's</i> policy deductible, as Contract Date, where covered by the <i>Employer's</i> insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to	<u>Loss of or damage to property</u>

property (except the works, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) caused by activity in connection with this contract	<u><i>Employer's property</i></u> The replacement cost where not covered by the <i>Employer's</i> insurance The <i>Employer's</i> policy deductible, as at Contract Date, where covered by the <i>Employer's</i> insurance <u><i>Other property</i></u> The replacement cost <u>Bodily injury to or death of a person</u> The amount required by applicable law
Liability for death of or bodily injury to employees of the <i>Contractor</i> arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z 13.2**Replace core clause 87 with the following:**

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 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

Z14 Nuclear Liability

Z14.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.

Z14.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or

resulting from nuclear damage, as defined in Act 47 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.

- Z14.3 Subject to clause Z14.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z14.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 47 of 1999, or any replacement section dealing with the same subject matter.
- Z14.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z15 Asbestos

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

AAIA	means approved asbestos inspection authority.
ACM	means asbestos containing materials.
AL	means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
Ambient Air	means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
Compliance Monitoring	means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
OEL	means occupational exposure limit.
Parallel Measurements	means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.
Safe Levels	means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.
Standard	means the <i>Employer's</i> Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.
SANAS	means the South African National Accreditation System.
TWA	means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to

short term exposures, i.e. 10-minute TWA.

- Z15.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.
- Z15.2 Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are effected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor's* expense. For the purposes of compliance the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z15.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.
- Z15.3 The *Employer* manages asbestos and ACM according to the Standard.
- Z15.4 In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.
- Z15.5 The *Contractor's* personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.
- Z15.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.
- Z15.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer's* expense, and conducted in line with South African legislation.

Annexure A: One-in-ten-year-return *weather data* obtained from SA Weather Bureau -

If any one of these *weather measurements* recorded within a calendar month, before the Completion Date for the whole of the *works* and at the place stated in this Contract Data is shown to be more adverse than the amount stated below then the *Contractor* may notify a compensation event.

Month	<i>Weather measurement</i>				
	Cumulative rainfall (mm)	Number of days with rain more than 10mm	Number of days with min air temp < 0 deg.C	Number of days with snow lying at 08:00 CAT	[Other measurements if applicable]
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

Only the difference between the more adverse recorded weather and the equivalent measurement given above is taken into account in assessing a compensation event.

C1.2 Contract Data

Part two - Data provided by the *Contractor*

Notes to a tendering contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)² in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 (April 2013) Guidance Notes.
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 <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is	Not applicable
	The <i>subcontracted fee percentage</i> is	Not applicable
11.2(18)	The <i>working areas</i> are the Site and	Maqashiya Village in KZN Operating Unit
24.1	The <i>Contractor's</i> key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job: Responsibilities: Qualifications: Experience:	

² Available from Engineering Contract Strategies Tel 011 803 3008, Fax 011 803 3009 or see www.ecs.co.za

		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .		
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	31 March 2027		
11.2(14)	The following matters will be included in the Risk Register	1. Community unrest and hijacking; 2. Business forums & land occupant demands. 3. Inclement weather. 4. Site access for abnormal vehicles. 5. Any other Risk pertaining to project work		
11.2(19)	The Works Information for the <i>Contractor's</i> design is in:	Not applicable		
31.1	The programme identified in the Contract Data is	Not applicable		
A	Priced contract with activity schedule	BOQ to be priced		
F	Management contract	Not Applicable		
20.2	Work which the <i>Contractor's</i> will do himself is	Activity	price (lump sum or rate)	
	Data for Schedules of Cost Components	Note "SCC" means Schedule of Cost Components starting on page 60, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3 (April 2013).		
41 in SSCC	The percentage for people overheads is:	10 %		
21 in SSCC	The published list of Equipment is the last edition of the list published by The percentage for adjustment for Equipment in the published list is	Not applicable Not applicable		
22 in SSCC	The rates of other Equipment are:	Equipment	Size or capacity	Rate
61 in SSCC	The hourly rates for Defined Cost of design outside the Working Areas are Note: Hourly rates are estimated 'cost to company of the employee' and not selling rates. Please insert another schedule if foreign resources may also be used	Not applicable.		

62 in SSCC	The percentage for design overheads is	Not applicable
63 in SSCC	The categories of design employees whose travelling expenses to and from the Working Areas are included in Defined Cost are:	Not applicable
	If Option C, D or E is used	Data for Schedule of Cost Components
52 in SCC	The percentage for manufacture and fabrication overheads is	%
	If Option C, D, or E is used	Data for both schedules of cost components
	If Option C, D or E is used	Data for the Shorter Schedule of Cost Components
41 in SSCC	The percentage for people overheads is:	Not applicable
21 in SSCC	The published list of Equipment is the last edition of the list published by	Not applicable
	The percentage for adjustment for Equipment in the published list is	Not applicable

PART 2: PRICING DATA
ECC3 Option B

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option B	
C2.2	The <i>bill of quantities</i>	

C2.1 Pricing assumptions: Option B

How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract (ECC3) Option B states:

Identified and defined terms	11	
	11.2	(21) The Bill of Quantities is the <i>bill of quantities</i> as changed in accordance with this contract to accommodate implemented compensation events and for accepted quotations for acceleration.
		(28) The Price for Work Done to Date is the total of
		- the quantity of the work which the <i>Contractor</i> has completed for each item in the Bill of Quantities multiplied by the rate and - a proportion of each lump sum which is the proportion of the work covered by the item which the <i>Contractor</i> has completed.
		Completed work is work without Defects which would either delay or be covered by immediately following work.
		(31) The Prices are the lump sums and the amounts obtained by multiplying the rates by the quantities for the items in the Bill of Quantities.

This confirms that Option B is a re-measurement contract and the bill comprises only items measured using quantities and rates or stated as lump sums. Value related items are not used. Time related items are items measured using rates where the rate is a unit of time.

Function of the Bill of Quantities

Clause 55.1 in Option B states, "Information in the Bill of Quantities is not Works Information or Site Information". This confirms that specifications and descriptions of the work or any constraints on how it is to be done are not included in the Bill, but in the Works Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Works in accordance with the Works Information". Hence the *Contractor* does **not** Provide the Works in accordance with the Bill of Quantities. The Bill of Quantities is only a pricing document.

Guidance before pricing and measuring

Employers preparing tenders or contract documents, and tendering contractors are advised to consult the sections dealing with the bill of quantities in the NEC3 Engineering and Construction Contract Guidance Notes before preparing the *bill of quantities* or before entering rates and lump sums into the *bill*.

There is no general provision in Option B for payment for materials on Site before incorporation into the *works*. If secondary Option X14 Advanced payment has not been used then the tendering contractor may obtain the same effect by inserting appropriate items in the method related charges where the *method of measurement* allows, or alternatively making allowance in the rates of the *bill of quantities* for the financing of Plant and Materials until they are incorporated in the *works*.

When compensation events arise, the default position is that the Bill of Quantities is not used to calculate the cost effect of the event. Defined Cost and the resulting Fee is used and Defined Cost includes all components of cost which the *Contractor* is likely to incur, including so called P & G items. Rates and lump sums from the Bill of Quantities, or from any other source, may be used instead of Defined Cost and the Fee only if the *Contractor* and *Project Manager* agree. If they are unable to agree, then Defined Cost plus Fee is used.

Measurement and payment

Symbols

The units of measurement described in the Bill of Quantities are metric units abbreviated as follows:

Abbreviation	Unit
%	percent
h	hour
ha	hectare
kg	kilogram
kl	kilolitre
km	kilometre
km-pass	kilometre-pass
kPa	kilopascal
kW	kilowatt
l	litre
m	metre
mm	millimetre
m ²	square metre
m ² -pass	square metre pass
m ³	cubic metre
m ³ -km	cubic metre-kilometre
MN	meganewton
MN.m	meganewton-metre
MPa	megapascal
No.	number
sum	Lump sum
t	tonne (1000kg)

General assumptions

Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made in the quantities for waste.

The Prices and rates stated for each item in the Bill of Quantities shall be treated as being fully inclusive of all work, risks, liabilities, obligations, overheads, profit and everything necessary as incurred or required by the *Contractor* in carrying out or providing that item.

An item against which no Price is entered will be treated as covered by other Prices or rates in the *bill of quantities*.

The quantities contained in the Bill of Quantities may not be final and do not necessarily represent the actual amount of work to be done. The quantities of work assessed and certified for payment by the *Project Manager* at each assessment date will be used for determining payments due.

The short descriptions of the items of payment given in the *bill of quantities* are only for the purposes of identifying the items. Detail regarding the extent of the work entailed under each item is provided in the Works Information.

Departures from the *method of measurement*

Amplification of or assumptions about measurement items

The following is provided to assist in the interpretation of descriptions given in the *method of measurement*. In the event of any ambiguity or inconsistency between the statements in the *method of measurement* and this section, the interpretation given in this section shall be used.

C2.2 the *bill of quantities*

Use this page as a summary page or as a cover page to the *bill of quantities*.

SUMMARY OF BILL OF QUANTITIES - MASHAQIYA SOLAR PROJECT

Bill No.	Description	Amount
1	Preliminary and General	
2	Civil Works	
3	Solar Home System Equipment and Installation	
4	Earthing and Lightning Protection	
5	Telecommunications and Remote Monitoring	
6	Testing, Commissioning, Acceptance and Handover	
7	Operation and Maintenance Requirements	
8	Outdoor Inverter and Battery Enclosure	
	SUB-TOTAL EXCLUDING VAT	
	ADD VAT @ 15%	
	GRAND TOTAL INCLUDING VAT	

Signature of Tenderer

Name of Company

BILL NO. 1 - PRELIMINARY AND GENERAL

Item No.	Description	Unit	Qty	Rate	Amount
Contractual Requirements					
	"The sum shall cover the contractor's initial costs of providing sureties, insurance of the Works and plant, third party or public liability insurance and unemployment insurance to cover his compliance with the requirements of the Workmen's Compensation Act, 1941 (Act NO. 30 of 1941) and any other initial financing obligations of a preliminary and general nature, such as contributions to the CEITB."	Sum	1		
Establishment of facilities on site:					
	a) The supply and complete installation of Diamond mesh fencing including fence posts at 1.8 meters high	m	300		
	b) The supply and complete installation of a Diamond mesh Lockable Gate including fence posts 1.8m high x 3.6m wide, including lock	No.	2		
	c) The supply and complete installation of a temporary diamond mesh lockable pedestrian gate, 1m wide	No.	1		
	d) Site office 6m x 3m with aircon	Sum	1		
	e) Site Storage 6m x 3m	Sum	1		
	f) Ablution facilities	Sum	1		
	g) Plant, tools & equipment	Sum	1		
1.3	Removal of all items indicated above upon completion of construction and making good and restoring of the Site to the satisfaction of the Project Manager.	Sum	1		

1.4	Provision of "As Built" drawings.	Sum	1		
1.5	Construction Name Board - The Contractor shall supply, install and maintain one project signboard bearing the name of the project, the name and logo of Eskom, and the Contractor.	Sum	1		
1.6	Provision of samples of materials to be used (only materials supplied by contractor). (Provisional)	Sum	1		
1.7	Provision for the compilation of the Construction Programme, updated on a fortnight basis and Quality Assurance Programme for the works.	Sum	1		
Occupational Health & Safety Requirements					
2.2	Provision of personal protective equipment and clothing for all the contractor's staff, including sub-contractors.	Sum	1		
2.3	Provision of safety measures, e.g.. Fall arrest systems, shoring for safety purposes etc.	Sum	1		
2.4	Compliance with OH&S Act & Construction Regulations, for other provisions not accounted for elsewhere	Sum	1		
Compliance with the Requirements for the Expanded Public Works Programme					
Note: The reports are to be submitted with the contractors monthly invoice.					
3.1	Compliance with the Requirements for the Expanded Public Works Programme (incl. monthly reports).	Sum	1		
Time Related Items (To maintain site for the duration of the project)					
Operate and Maintain Facilities on Site:					
	a)Site office 6m x 3m with aircon	Month	3.5		
	b) Site Storage 6m x 3m	Month	3.5		
	c) Staff living accommodation	Month	3.5		
	b) Ablution facilities	Month	3.5		
	c) Plant, tools & equipment	Month	3.5		

	d) Temporary water supply	Month	3.5		
	e) Temporary electric power supply	Month	3.5		-
Labour: The Contractor need to submit Weekly Time Sheets for all hourly compensation claims and a Daily attendance register					
4.2	Contractor shall provide a competent SACPCMP registered Construction Manager for the management and the supervision of the whole construction works on a full-time basis	Month	3.5		
4.3	Community Liaison Officer conversant in Zulu and local cultural norms	Month	3.5		
4.4	Storeman (Storeman is required to reconcile and quantify All material on site including Eskom supplied material using the correct material return to stores forms. The Storeman shall adhere to the implementation and maintenance plan for Materials Management System for the duration of the contract).	Month	3.5		
Safety Officer					
4.5	Contractor shall provide a competent SACPCMP registered Safety Officer to ensure the safety of all individuals on site. The Safety Officer is to ensure all construction and safety regulations are adhered to on site.	Month	3.5		
Security					
4.6	Contractor shall provide security guard/s to ensure the site including offices, storage sheds and all Eskom material are protected from theft or any damage. The Contractor needs to ensure that the above mentioned is guarded 24hrs a day.	Month	3.5		
TOTAL (BILL 1) CARRIED TO SUMMARY					

BILL 2: CIVIL WORKS

Item No.	Description	Unit	Qty	Rate	Amount
Site clearance and earthworks					
2.01	Clear and grub the work areas for Solar Home System installations, access and working space, including removal of grass, shrubs, minor vegetation, roots, loose surface material and unsuitable organic matter; cart away or dispose of arisings as directed and leave the areas ready for setting out, excavation and construction. Measured net over the areas identified for the SHS installations.	m ²	4620.00		
2.02	Remove topsoil to a nominal depth of 150 mm, keep separate from unsuitable material, stockpile where practical for re-use in reinstatement or cart to spoil as instructed; include trimming, loading, hauling within the site, shaping stockpiles and maintaining stockpiles so that the material remains suitable for rehabilitation.	m ³	12.96		
2.03	Survey, set out and verify the position, levels, orientation and footprint of each complete SHS installation, including the PV carport structure, equipment enclosure, earthing electrodes, earth conductors and any associated civil works; include pegging, checking against drawings, recording coordinates and providing as-built setting out information. Ensure all PV panels are installed North-facing and located such that shading from trees, buildings, structures, terrain features or other obstructions is avoided.	No	60.00		
2.04	Excavate in all materials and spoil or dispose of surplus material from general bulk earthworks, working platforms, slope trimming and levelling required for the SHS positions; include loading, hauling, temporary stockpiling, trimming, keeping excavations free of water, maintaining safe working faces, and shaping the formation to receive compacted layers or foundations.	m ³	1479.00		

2.05	Compact selected in-situ or backfilled material to a minimum of 93% Mod AASHTO maximum dry density at optimum moisture content, including watering, drying, scarifying, testing support and reworking where necessary until the specified density and finish are achieved.	m ³	259.20		
2.06	Supply, haul, place, water and compact approved G8 selected fill material in layers not exceeding 150 mm loose thickness, including all plant, labour, testing, trimming, shaping and compaction to a minimum of 93% Modified AASHTO density, complete in accordance with the Specifications, Drawings and Engineer's requirements. The rate shall include for loading, transport, spreading, moisture conditioning, compaction, proof rolling, removal of unsuitable material where required, and all associated quality control testing. Measured as compacted volume in place. Note: Final quantities shall be determined from actual site conditions and measured in place and material to be approved by the Engineer prior to use.	m ³	140.00		
Concrete and reinforcement					
2.07	Provide smooth formwork to exposed faces of concrete foundations, equipment plinths and support bases, including cutting, fixing, bracing, striking, cleaning, release agents and all labour and material necessary to obtain true lines, levels and faces suitable for the finished installation.	m ²	1080.00		
2.08	Supply, cut, bend, fix and support mild steel reinforcement bars in accordance with the drawings and Engineer's instructions, including tying wire, spacers, chairs, hooks, laps, bends, wastage, placing and maintaining correct cover during concrete placement.	kg	15600.00		
2.09	Place blinding concrete under foundations and excavated bases, Class 15/19 concrete, nominal 25 mm thickness or as detailed, including supply, placing, levelling, curing and surface preparation to receive reinforcement and structural	m ³	10.80		

	concrete.				
Foundations Concrete - SHS Pad Foundations and Concrete Testing					
2.10	G46 item 24) SHS Pad Foundations - Option A: ready-mix concrete to SHS pad foundations as scheduled in the Civil BOQ.	m ³	146.00		
Option B: Site-Mixed Concrete					
2.11	G46 item 25) SHS Pad Foundations - Supply all cement, stone, sand, water, batching equipment, mixing, transport, placing, vibration, curing and testing of 25 MPa/19 mm site-mixed concrete.	m ³	146.00		
Concrete Testing					
2.12	Slump testing of concrete, including test records and reporting.	No	10.00		
2.13	Casting, curing, transport and testing of concrete cube sets (6 cubes per set).	Set	8.00		
Structural steel for PV carport and enclosure support structures - SANS 1200H full breakdown					
H1 - Supply and Fabrication of Steelwork					
2.14	Supply and fabrication: COLUMN Section designation IPE 160 [Steel:350W], including shop preparation, cutting, drilling, marking, handling and delivery ready for subsequent corrosion protection and erection.	t	11.20		
2.15	Supply and fabrication: RAFTER Section designation IPE-AA 140 [Steel:350W], including cutting, drilling, connection preparation and handling.	t	7.76		
2.16	Supply and fabrication: PURLIN Section designation 100x75x20x2.0 [Steel:350W], including cutting to length, drilling, punching and handling.	t	8.09		
2.17	Supply and fabrication: DIAGONAL BRACING Section designation 100x75x20x2.0 [Steel:350W], including preparation, punching, drilling and handling.	t	7.17		
2.18	Supply and fabrication: Column to Rafter 180x270x5 mm steel plates, including cutting, drilling, edge	t	0.92		

	preparation and handling.				
2.19	Supply and fabrication: Rafter to Purlin 70x70x6 cleats, including cutting, drilling, edge preparation and handling.	t	0.32		
H2 - Corrosion Protection					
2.20	Corrosion protection to COLUMN Section designation IPE 160 [Steel:350W].	t	11.20		
2.21	Corrosion protection to RAFTER Section designation IPE-AA 140 [Steel:350W].	t	7.76		
2.22	Corrosion protection to PURLIN Section designation 100x75x20x2.0 [Steel:350W].	t	8.09		
2.23	Corrosion protection to DIAGONAL BRACING Section designation 100x75x20x2.0 [Steel:350W].	t	7.17		
2.24	Corrosion protection to Column to Rafter 180x270x5 mm steel plates.	t	0.92		
2.25	Corrosion protection to Rafter to Purlin 70x70x6 cleats.	t	0.32		
2.26	Corrosion protection to Column to Rafter M12 nuts and bolts.	t	0.18		
2.27	Corrosion protection to Rafter to Purlin M12 nuts and bolts.	t	0.14		
2.28	Corrosion protection to Top-Diagonal Bracing to Purlin M10 nuts and bolts.	t	0.03		
2.29	Corrosion protection to Side-Diagonal Bracing to Column M10 nuts and bolts.	t	0.05		
2.30	Corrosion protection to Enclosure-Column to Horizontal Member M12 nuts and bolts.	t	0.05		
2.31	Corrosion protection to Column-Base Plate to Concrete Pad M12 nuts and bolts.	t	0.11		
H3 - Delivery					
2.32	Delivery to site: COLUMN Section designation IPE 160 [Steel:350W].	t	11.20		
2.33	Delivery to site: RAFTER Section designation IPE-AA 140 [Steel:350W].	t	7.76		
2.34	Delivery to site: PURLIN Section designation 100x75x20x2.0 [Steel:350W].	t	8.09		
2.35	Delivery to site: DIAGONAL BRACING Section designation	t	7.17		

	100x75x20x2.0 [Steel:350W].				
2.36	Delivery to site: Column to Rafter 180x270x5 mm steel plates.	t	0.92		
2.37	Delivery to site: Rafter to Purlin 70x70x6 cleats.	t	0.46		
2.38	Delivery to site: Column to Rafter M12 nuts and bolts.	t	0.18		
2.39	Delivery to site: Rafter to Purlin M12 nuts and bolts.	t	0.14		
2.40	Delivery to site: Top-Diagonal Bracing to Purlin M10 nuts and bolts.	t	0.03		
2.41	Delivery to site: Side-Diagonal Bracing to Column M10 nuts and bolts.	t	0.05		
2.42	Delivery to site: Enclosure-Column to Horizontal Member M12 nuts and bolts.	t	0.05		
2.43	Delivery to site: Column-Base Plate to Concrete Pad M12 nuts and bolts.	t	0.11		
H4 - Erection by Crane					
2.44	Erection by crane: COLUMN Section designation IPE 160 [Steel:350W], including lifting, positioning, temporary bracing, alignment and making safe.	t	2.24		
2.45	Erection by crane: RAFTER Section designation IPE-AA 140 [Steel:350W], including lifting, positioning, temporary bracing, alignment and making safe.	t	0.03		
2.46	Erection by crane: PURLIN Section designation 100x75x20x2.0 [Steel:350W], including lifting, positioning, temporary bracing, alignment and making safe.	t	1.62		
H5 - Erection by Hand					
2.47	Erection by hand: COLUMN Section designation IPE 160 [Steel:350W], including handling, positioning, temporary bracing, alignment and making safe.	t	8.96		
2.48	Erection by hand: RAFTER Section designation IPE-AA 140 [Steel:350W], including handling, positioning, temporary bracing, alignment and making safe.	t	0.10		
2.49	Erection by hand: PURLIN Section designation 100x75x20x2.0 [Steel:350W], including handling,	t	6.48		

	positioning, temporary bracing, alignment and making safe.				
2.50	Erection by hand: DIAGONAL BRACING Section designation 100x75x20x2.0 [Steel:350W], including handling, positioning, temporary bracing, alignment and making safe.	t	5.74		
2.51	Erection by hand: Column to Rafter 180x270x5 mm steel plates.	t	0.92		
2.52	Erection by hand: Rafter to Purlin 70x70x6 cleats.	t	0.46		
H6 - Erection of Connection Bolts [M12]					
2.53	Erection of M12 connection bolts: Column to Rafter M12 nuts and bolts.	No	1920.00		
2.54	Erection of M12 connection bolts: Rafter to Purlin M12 nuts and bolts.	No	2880.00		
2.55	Erection of M12 connection bolts: Enclosure-Column to Horizontal Member M12 nuts and bolts.	No	480.00		
H7 - Erection of Connection Bolts [M10]					
2.56	Erection of M10 connection bolts: Top-Diagonal Bracing to Purlin M10 nuts and bolts.	No	600.00		
2.57	Erection of M10 connection bolts: Side-Diagonal Bracing to Column M10 nuts and bolts.	No	960.00		
H8 - Erection of Holding Down Bolts [M12]					
2.58	Erection of M12 holding down bolts: Column-Base Plate to Concrete Pad M12 nuts and bolts.	No	1200.00		
H9 - Site Welding [6 mm]					
2.59	Site welding [6 mm]: Column to Rafter connections, including preparation, welding, inspection, cleaning and touch-up of affected corrosion protection.	m	81.48		
2.60	Site welding [6 mm]: Rafter to Purlin connections, including preparation, welding, inspection, cleaning and touch-up of affected corrosion protection.	m	16.80		
TOTAL CARRIED TO SUMMARY					

Item No.	Description	Unit	Qty	Rate	Amount
PV modules, support and DC system					
3.1	Supply and install 600 W monocrystalline photovoltaic modules, complete with module positioning, alignment, final fixing on the approved support structure, handling, protection against damage, electrical interconnection readiness and all manufacturer-recommended installation requirements. Quantity is based on 9 modules per SHS for 60 installations.	No	540		
3.2	Supply and install PV mounting rails, clamps, brackets, end clamps, mid clamps, fixings, fasteners and all proprietary accessories required to secure the PV modules to the roof/ground/carport mounting arrangement; include alignment, stainless or corrosion-resistant fasteners, torqueing and making good of protective coatings.	Set	60		
3.3	Supply and install UV-resistant 4 mm ² red and black PV DC single-core cable between PV modules, combiner/DC protection box and inverter equipment as applicable, including routing, clipping, containment interface, segregation, labelling and allowance for wastage and terminations measured elsewhere.	m	6000		
3.4	Supply, make off and install MC4 compatible male/female connector pairs for PV module strings, including crimping, polarity checks, weatherproofing, strain relief, testing and all small accessories necessary for complete PV string connections.	Pair	300		
3.5	Supply and install UV-resistant cable glands, flexible and rigid conduit, saddles, bushes, locknuts, sealing accessories and supports for DC and auxiliary cabling between equipment, including drilling of enclosures and maintaining the required IP rating after installation.	Set	60		

3.6	Supply and install UV-resistant cable ties, clips, saddles and small cable support accessories for PV DC and equipment cabling, including fixing to the mounting structure, neat routing and provision of strain relief at equipment terminations.	Set	60		
3.7	Supply and install weatherproof DC protection box, complete with enclosure, DIN rail, glands, internal wiring, labels, termination points and arrangement suitable for the PV string configuration; include fixing to the support or enclosure and connection readiness.	No	60		
3.8	Supply and install 20 A, 1000 V DC PV string fuse holders and fuse links within the DC protection arrangement, including labelling, termination, polarity verification and all accessories necessary for safe isolation and protection of PV strings.	No	120		
3.9	Supply and install 600 to 1000 V DC, 32 A DC isolator, complete with enclosure or integral mounting, operating handle, labelling, termination, polarity checks, and all accessories necessary for safe disconnection of PV DC circuits.	No	60		
3.10	Supply and install Type II DC surge protection device suitable for 600 to 1000 V DC PV circuits, including base, cartridges, earthing connection to the common earth system, labelling and status indication where applicable.	No	60		
Inverter, battery and enclosure services					
3.11	Supply and install 5 kW, 48 V DC, 230 V AC off-grid hybrid inverter with MPPT functionality, complete with mounting bracket, fixing, DC and AC connection interfaces, communication interface, configuration, firmware setup where required and manufacturer-recommended installation accessories.	No	60		
3.12	Supply and install 48 V, 5.3 kWh lithium iron phosphate battery system, complete with battery management interface, mounting or rack arrangement, interconnecting hardware, protection during installation, configuration and integration with the hybrid inverter.	No	60		

3.13	Supply and install 160 A DC battery fuse and fuse holder or approved protective device, including enclosure/interface, terminations, labelling and coordination with the battery isolator and inverter DC input.	No	60		
3.14	Supply and install 160 A DC battery isolator suitable for the battery system, including mounting, cable terminations, labelling and safe access for operation and maintenance.	No	60		
3.15	Supply and install 35 mm ² copper red and black battery cabling between battery, isolator, fuse and inverter, including lugs, heat shrink, ferrules, routing, support, protection against abrasion, polarity checks and torqueing of terminations.	m	480		
3.16	Supply and install filtered battery cooling fan, complete with grille, filter, fixing, wiring, protection and testing. Contractor to determine the actual fan rating based on the enclosure size.	No	60		
3.17	Supply and install digital thermostat or battery cooling controller for automatic control of the battery ventilation system, including sensor placement, wiring, setting of operational parameters and functional testing.	No	60		
3.18	Supply and install DC extraction fan for inverter cooling, complete with fixing, grille, wiring, protection and testing. Contractor to determine the actual fan rating based on the enclosure size.	No	60		
3.19	Supply and install thermostatic fan controller for inverter ventilation, including sensor installation, wiring, setting of operating temperature range, testing and labelling.	No	60		
3.19 a	Supply and install passive ventilation louvre assemblies complete with washable or replaceable filtration media, insect screens and weather protection; include fixings, weather seals and all accessories necessary for integration with the enclosure ventilation system.	Set	60		

3.20	Automatic fire suppression system comprising self-activating fire suppression balls or approved equivalent, rated for Class A, B and C fire risks, complete with mounting brackets, fixing accessories and installation within the equipment enclosure (2 devices per enclosure).	No	120		
3.21	Hygrostat (humidity controller) complete with wiring, mounting and commissioning.	No	60		
3.22	Anti-condensation heater. Contractor to determine the actual heater rating based on the enclosure size.	No	60		
3.23	Internal 230 V AC socket outlet complete with wiring, mounting and labelling.	No	60		
AC distribution and interface materials					
3.24	Supply and install AC distribution board complete with enclosure, DIN rail, neutral and earth bars, internal wiring, labels, glands, fixing and all accessories necessary to distribute the inverter AC output to the connected installation.	No	60		
3.25	Supply and install 25 A double-pole AC circuit breaker, including mounting in the AC distribution board, wiring, termination, labelling and coordination with the inverter output and downstream circuits.	No	60		
3.26	Supply and install Type II, 230 V AC surge protection device, including base, cartridges, earth connection to the common earth busbar, indication, labelling and verification of correct connection.	No	60		
3.27	Supply and install 20 A double-pole AC circuit breaker, including mounting, wiring, termination, labelling and coordination with downstream circuits or protection requirements.	No	60		
3.28	Supply and install PV system safety labels, operating labels, warning notices, isolation labels, circuit identification labels and OHS notices to each SHS installation and associated equipment enclosures in accordance with applicable SANS and Eskom requirements.	Set	60		

3.29	Install Eskom supplied 1 kV, 6 mm ² concentric copper service cable where instructed, including handling, stringing/routing, securing, terminations by others where applicable, protection and coordination with the meter and SHS interface.	m	3000		
3.30	Install Eskom-supplied 5.0 m wooden pole, 80-100 mm top diameter, including receipt, handling, setting out, excavation, erection, plumbing, backfilling, compacting and making safe where required by the service arrangement.	No	60		
3.31	Install Eskom supplied pole-top split-meter box, two-way 50 A, including mounting to support, fixing, alignment, cable entry coordination, weatherproofing and readiness for meter installation.	No	60		
3.32	Install Eskom supplied smart DIN G3-PLC electricity service meter, including handling, mounting, connection interface, labelling and coordination with Eskom metering requirements. Final metering work shall be undertaken with the required authorised personnel where applicable.	No	60		
3.33	Install Eskom supplied meter seals and security seals to metering and service equipment where instructed, including recording of seal numbers and replacement of damaged seals caused by the Contractor.	No	60		
3.34	Install Eskom supplied padlocks to metering or service equipment where instructed, including handing-over of keys, key numbering and recording in the completion documentation.	No	60		
TOTAL CARRIED TO SUMMARY					

BILL 4: EARTHING AND LIGHTNING PROTECTION

Item No.	Description	Unit	Qty	Rate	Amount
Lightning protection and earth termination system					
4.1	Supply and install a Class III lightning protection and equipotential bonding system comprising 1 m high aluminium air termination rods fixed at the PV carport structure edges, including brackets, clamps, fixings, corrosion-resistant fasteners, alignment, bonding to the natural down-conductor path, and verification of continuity. The rate shall further include equipotential bonding of the PV carport structure, equipment enclosure support structure, metallic enclosures, exposed conductive parts, and associated support steelwork to the common earthing system, including lugs, clamps, stainless steel or brass hardware, conductor tails, all necessary connections, and continuity testing, complete and ready for commissioning.	No	240		
4.2	Supply and install 16 mm diameter × 1.5 m long copper-coated steel earth rods, driven to the required depth at locations shown on the drawings or as directed, including couplings where required, protection of rod tops, connection preparation, and testing support. The rate shall further include all exothermic welded connections between round copper conductors and copper-coated earth rods, including provision of moulds, weld charges, joint preparation, cleaning, inspection, testing support, corrosion protection, and completion of the earthing system ready for commissioning.	No	120		

4.3	Supply and install 10 mm diameter round copper earth conductor at approximately 0.6 m below finished ground level to interconnect earth electrodes and bond the PV carport structure, equipment enclosure support structure, and all exposed metallic components to the common earthing network. The rate shall include excavation, laying, backfilling, protection, mechanical support, and all Silbralloy brazed copper-to-copper earthmat joints, including joint preparation, sample joint approval prior to production work, brazing materials, cleaning, inspection, corrosion protection, testing, and maintenance of records of completed joints.	kg	1500		
4.4	Supply and install 10 mm diameter round copper earth conductor at approximately 0.6 m below finished ground level to interconnect earth electrodes and provide equipotential bonding of the PV carport structure, equipment enclosure support structure, metallic enclosures, exposed conductive parts, and associated steelwork to the common earthing network. The rate shall include excavation, laying, backfilling, protection, mechanical support, lugs, clamps, stainless steel or brass hardware, conductor tails, and all connections to the earthing system, including Silbralloy brazed copper-to-copper earthmat joints and exothermic welded joints between round copper conductors and copper-coated earth rods. The rate shall further include joint preparation, sample joint approval prior to production work, provision of brazing materials, weld moulds and charges, cleaning, inspection, testing support, continuity verification, corrosion protection, maintenance of records of completed joints, and commissioning of the complete earthing and bonding system.	kg	600		

4.5	Carry out earth continuity testing of each SHS installation, including continuity between PV support steelwork, equipment enclosure, earth busbar, SPDs, inverter, battery equipment and main earthing system; include test instruments, records and submission of results.	No	60		
4.6	Carry out earth resistance testing of each SHS earthing system, including testing before backfilling where required, attendance to witness hold points, recording of readings, and retesting after corrective measures where applicable.	No	60		
4.7	Install additional earth electrodes and associated interconnecting conductor where required to achieve the specified earth resistance or accepted performance criteria after pilot or final testing. This item is provisional and shall be used only upon instruction of the Project Manager or Engineer.	Prov. Sum	1		

TOTAL CARRIED TO SUMMARY					
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BILL 5: TELECOMMUNICATIONS AND REMOTE MONITORING

Item No.	Description	Unit	Qty	Rate	Amount
5.1	Supply, install, configure, activate, test and commission complete GPRS communication and remote monitoring facilities for each Solar Home System (SHS), including eSIM-enabled communication device/modem, antenna (where required), SIM/eSIM activation, cabling, mounting accessories, communication setup and verification of network connectivity. The rate shall include all labour, materials, software configuration, commissioning, documentation for each SHS installation.	No	60		

TOTAL CARRIED TO SUMMARY

BILL 6: TESTING, COMMISSIONING, ACCEPTANCE AND HANDOVER

Item No.	Description	Unit	Qty	Rate	Amount
6.1	Install, test and commission one complete pilot Solar Home System before proceeding with the remaining installations, including civil, structural, PV, inverter, battery, earthing, lightning protection, telecommunications and monitoring checks; include all inspection records, measurements, functional tests and corrective actions required before acceptance of the pilot installation.	Sum	1		
6.2	Provide corrective measures and retesting for the pilot installation where the required performance criteria are not achieved, including additional testing, investigation, minor remedial work and updated records. Use only where instructed or accepted by the Engineer or Project Manager.	Prov. Sum	1		
6.3	Carry out preliminary cable testing to prove correct installation of DC, AC, battery, communication and associated cabling, including polarity checks, insulation resistance, continuity, integrity of terminations, labelling checks and submission of test records for each SHS installation.	No	60		
6.4	Final test and commission the complete SHS electrical equipment installation, including PV array checks, inverter configuration, battery integration, AC distribution, DC protection, SPDs, controls, cooling and operational function tests; include coordination with manufacturer, Eskom or Eskom-appointed contractor where specified.	No	60		
6.5	Verify reliable transmission of operational data from each SHS to the monitoring platform, including acceptance record for PV generation, battery state of charge, load consumption, alarms and device status.	No	60		
6.6	Compile and submit all relevant test results for materials, workmanship and commissioning, including electrical tests, earthing tests, lightning protection tests, communication tests, inspection checklists, hold-point approvals and corrective action close-out records.	Sum	1		

6.7	Provide Certificates of Compliance and statutory electrical certification for the completed electrical works covered by the contract, including inspection, testing, authorised sign-off and inclusion of certificates in the handover package.	No	60		
6.8	Demonstrate successful communication, operation and acceptance of each completed SHS installation to the designated Eskom representative or Engineer prior to completion, including live demonstration, system status review and acceptance record.	No	60		

TOTAL CARRIED TO SUMMARY					
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BILL 7: OPERATION AND MAINTENANCE REQUIREMENTS

Item No.	Description	Unit	Qty	Rate	Amount
7.1	Prepare and submit a preventative maintenance schedule and corrective maintenance plan for the installed SHS assets, including planned inspections, cleaning, battery checks, corrosion checks, monitoring arrangements, defect response and reporting responsibilities aligned to the defects liability period and Eskom requirements.	Sum	1		
7.2	Establish and maintain monitoring and fault reporting arrangements during the defects liability period, including call logging, escalation, tracking, reporting arrangements and communication channels for operational faults and alarms.	Sum	1		
7.3	Carry out quarterly scheduled inspections of the complete SHS installations, including visual inspection of PV modules, support structures, enclosures, inverter, battery, cabling, protection devices, labels, earthing, lightning protection, cooling systems and general condition; quantity based on 60 installations x 4 inspections.	No	240		
7.4	Carry out quarterly cleaning of relevant solar PV and enclosure components, including safe cleaning of PV module surfaces, ventilation grilles, filters and accessible enclosure components; include equipment, consumables, access and recording of completed cleaning activities.	No	240		
7.5	Carry out quarterly battery health checks and reporting, including review of battery condition, state of charge, alarms, temperature/ventilation status, terminations and manufacturer-recommended checks; submit records for each installation.	No	240		
7.6	Carry out quarterly corrosion inspections of support structures, enclosures, fixings, fasteners, electrical terminations, earthing connections and associated components, including condition reporting and recommendations for remedial action.	No	240		
7.7	Monitor system performance and alarms during the defects liability period, including regular review of communications, alarms, system status, abnormal performance and escalation of defects or failures for action.	Month	12		

7.8	Carry out monthly operational data download, backup and submission to Eskom Engineering, including data checks, file naming, secure storage, report preparation and confirmation of submission.	Month	12		
7.9	Prepare and submit quarterly maintenance reports, including inspection findings, cleaning records, battery health results, corrosion observations, faults, corrective actions, performance trends and recommendations.	Quarter	4		
7.10	Prepare and submit a recommended spare parts schedule for major equipment, including PV modules, inverters, batteries, communication equipment, protection equipment and ancillary components, with suggested quantities and identification references.	Sum	1		
7.11	Supply initial critical spare holding where instructed by Eskom. This item is provisional and may be adjusted by the Quantity Surveyor or Project Manager based on final equipment selection and approved spare holding strategy.	Prov. Sum	1		
7.12	Carry out final defects liability inspection and prepare O&M close-out report, including final status of installations, outstanding defects, corrective actions completed, recommendations and handover confirmation.	Sum	1		

TOTAL CARRIED TO SUMMARY					
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BILL 8: OUTDOOR INVERTER & BATTERY ENCLOSURE

The following items comprise complete outdoor IP65 inverter and battery enclosures measuring approximately 1650mm (L) × 1410mm (H) × 400mm (D), including all components and accessories required for a complete installation.

Item No.	Description	Unit	Qty	Rate	Amount
8.1	IP65 enclosure cabinet complete with mounting plate, weather seals and installation hardware.	No	60		
8.2	Lockable enclosure door complete with 3-point locking mechanism, hinges and handles.	No	60		
8.3	Supply and install copper earth busbar within each equipment enclosure, complete with mounting insulators, fixing hardware, labels and sufficient termination points for inverter, battery, AC and DC SPD, enclosure, support structure and associated bonding conductors.	No	60		
8.4	Provide earthing and bonding connections for AC and DC surge protection devices to the common earthing system, including correctly sized conductors, short and direct routes, lugging, labelling, testing and verification of connection integrity.	No	60		
8.5	Weatherproof gland plate complete with cable glands, blanking plugs and sealing accessories.	Set	60		
8.6	Replaceable dust filter set.	Set	60		
8.7	Internal wiring trunking, cable ducts, terminals, ferrules and installation hardware.	Set	60		
8.8	Communication equipment mounting plate and support brackets.	Set	60		
8.9	External antenna mounting bracket complete with fixings and cable routing accessories.	No	60		
8.10	External earth stud complete with protective cover, labels and fixing hardware.	No	60		
8.11	Site Acceptance Testing (SAT) of completed enclosure installation.	Lot	60		
8.12	As-built drawings, O&M manuals, datasheets, warranties and commissioning records.	Lot	60		

TOTAL CARRIED TO SUMMARY

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	<i>Employer's Works Information</i>	
C3.2	<i>Contractor's Works Information</i>	
	Total number of pages	

C3.1: EMPLOYER'S WORKS INFORMATION

Contents

When the document is complete, insert a 'Table of Contents'. To do this go to: Insert, → Reference, → Index and tables → Table of Contents. Three levels and the title (but not the subtitle) may be shown if the formats used in this template are retained.

Part 3: Scope of Work	28
C3.1: Employer's works Information	29
1 Description of the works	31
1.1 Executive overview	31
1.2 <i>Employer's</i> objectives and purpose of the works	Error! Bookmark not defined.
1.3 Interpretation and terminology	39
2 Management and start up.	39
2.1 Management meetings	39
2.2 Documentation control	39
2.3 Health and safety risk management	
2.4 Environmental constraints and management	41
2.5 Quality assurance requirements	43
2.6 Programming constraints	43
2.7 <i>Contractor's</i> management, supervision and key people	44
2.8 Invoicing and payment	45
2.9 Insurance provided by the <i>Employer</i>	45
2.10 Contract change management	Error! Bookmark not defined.
2.11 Provision of bonds and guarantees	Error! Bookmark not defined.
2.12 Records of Defined Cost, payments & assessments of compensation events to be kept by the <i>Contractor</i>	45
2.13 Training workshops and technology transfer	45
3 Engineering and the <i>Contractor's</i> design	45
3.1 <i>Employer's</i> design	45
3.2 Parts of the works which the <i>Contractor</i> is to design	45
3.3 Procedure for submission and acceptance of <i>Contractor's</i> design	45
3.4 Other requirements of the <i>Contractor's</i> design	46
3.5 Use of <i>Contractor's</i> design	46
3.6 Design of Equipment	46
3.7 Equipment required to be included in the works	46
3.8 As-built drawings, operating manuals and maintenance schedules	46
4 Procurement	46
4.1 People	46
4.1.1 Minimum requirements of people employed on the Site	46
4.1.2 BBEE and preferencing scheme	46
4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)	Error! Bookmark not defined.
4.2 Subcontracting	51
4.2.1 Preferred subcontractors	51
4.2.2 Subcontract documentation, and assessment of subcontract tenders	51
4.2.3 Limitations on subcontracting	51
4.2.4 Attendance on subcontractors	51
4.3 Plant and Materials	51
4.3.1 Quality	51
4.3.2 Plant & Materials provided "free issue" by the <i>Employer</i>	52
4.3.3 <i>Contractor's</i> procurement of Plant and Materials	52
4.3.4 Spares and consumables	53
4.4 Tests and inspections before delivery	53
4.5 Marking Plant and Materials outside the Working Areas	53

4.6	<i>Contractor's</i> Equipment (including temporary works).....	53
4.7	Cataloguing requirements.....	53
5	Construction Error! Bookmark not defined.	
5.1	Temporary works, Site services & construction constraints	54
5.1.1	<i>Employer's</i> Site entry and security control, permits, and Site regulations	54
5.1.2	Restrictions to access on Site, roads, walkways and barricades	54
5.1.3	People restrictions on Site; hours of work, conduct and records	54
5.1.4	Health and safety facilities on Site	54
5.1.5	Environmental controls, fauna & flora, dealing with objects of historical interest	55
5.1.6	Title to materials from demolition and excavation	55
5.1.7	Cooperating with and obtaining acceptance of Others	55
5.1.8	Publicity and progress photographs Error! Bookmark not defined.	
5.1.9	<i>Contractor's</i> Equipment Error! Bookmark not defined.	
5.1.10	Equipment provided by the <i>Employer</i> Error! Bookmark not defined.	
5.1.11	Site services and facilities	56
5.1.12	Facilities provided by the <i>Contractor</i>	56
5.1.13	Existing premises, inspection of adjoining properties and checking work of Others Error!	
	Bookmark not defined.	
5.1.14	Survey control and setting out of the <i>works</i> Error! Bookmark not defined.	
5.1.15	Excavations and associated water control	56
5.1.16	Underground services, other existing services, cable and pipe trenches and covers	56
5.1.17	Control of noise, dust, water and waste Error! Bookmark not defined.	
5.1.18	Sequences of construction or installation Error! Bookmark not defined.	
5.1.19	Giving notice of work to be covered up	57
5.1.20	Hook ups to existing works	57
5.2	Completion, testing, commissioning and correction of Defects	57
5.2.1	Work to be done by the Completion Date	57
5.2.2	Use of the <i>works</i> before Completion has been certified	57
5.2.3	Materials facilities and samples for tests and inspections	57
5.2.4	Commissioning	57
5.2.5	Start-up procedures required to put the <i>works</i> into operation	57
5.2.6	Take over procedures	58
5.2.7	Access given by the <i>Employer</i> for correction of Defects	58
5.2.8	Performance tests after Completion	58
5.2.9	Training and technology transfer	58
5.2.10	Operational maintenance after Completion	58
6	Plant and Materials standards and workmanship	58
6.1	Investigation, survey and Site clearance	59
6.2	Building works.....	59
6.3	Civil engineering and structural works.....	59
6.4	Electrical & mechanical engineering works	59
6.5	Process control and IT works	59
6.6	Other [as required]..... Error! Bookmark not defined.	
7	List of drawings	60
7.1	Drawings issued by the <i>Employer</i>	60
C3.2	<i>Contractor's</i> Works Information	61

Description of the works

Executive overview:

Maqhashiya Village is a remote village about 20km South of Melmoth Town. Purpose is to Supply electricity to a residential Customers. There are a total of 59 household + 1 primary school (Maqhashiya Primary School)

The community has been identified for potential electrification, using PV Solar Home Systems.

The community currently has no electricity and Solar PV installation has been deemed the most viable solution to electrify this village.

Scope of Work

Project overview and objective

- The project provides off-grid Solar Home Systems (SHSs) as an electrification solution for 59 households and Maqhashiya Primary School in Maqhashiya Village, located approximately 20 km south of Melmoth in KwaZulu-Natal.
- The objective is to provide a reliable, sustainable and cost-effective electrification solution, supported by a practical, safe and SANS 62305-compliant earthing and lightning protection system to ensure personnel safety, equipment protection and continuity of electricity supply.
- The project area is rural and includes dispersed homesteads across uneven, rocky and elevated terrain. Access is mainly via local gravel roads, with some households requiring river crossing and pedestrian bridge access.
- The proposed SHSs will be installed within individual household yards. The site includes residential dwellings, Maqhashiya Primary School, local access roads and a pedestrian bridge.

1. Solar Home System Description

Each Solar Home System (SHS) installation shall comprise, as applicable, a 5.4 kWp Solar PV array, 5 kW hybrid inverter, 5.3 kWh lithium battery system, telecommunications equipment, AC and DC protection systems, customer reticulation and metering interface equipment, and all associated civil, structural, electrical, earthing and lightning protection infrastructure required to provide a complete operational installation.

2. Contractor scope statement

The Contractor shall procure, supply, deliver, install, test, commission, document and hand over the complete Solar Home System works, including all associated civil, structural, earthing, lightning protection, equipment installation, quality control, health and safety, environmental management and rehabilitation requirements needed to provide a complete and compliant installation at each approved installation site.

The Contractor shall execute the works in accordance with the approved design drawings, project specifications, Eskom standards, applicable SANS requirements, manufacturer requirements, the Health and Safety Specification, and written instructions issued by the Engineer / Project Manager.

3. Procurement and supply requirements

- Procure and supply all equipment and materials required for the complete SHS installation, including PV support structure components, equipment enclosure support components, foundation-related materials, concrete, reinforcement, earthing materials, lightning protection components, bonding materials, labels, fasteners, inspection pits, testing equipment and consumables.
 - Supply and install a Class III Lightning Protection System comprising four, 1 m high aluminium air termination rods mounted on the PV carport structure edges.
-

- Supply and install two 3 m long, 16 mm diameter copper-clad steel earth rods according to the design drawings, interconnected using 10 mm diameter round copper conductor.
- Supply and install 10 mm diameter round copper conductor for the equipotential bonding of the PV carport structure, equipment enclosure support structure and associated metallic components to the common earthing system.
- Supply 50 mm x 3.15 mm flat copper bar for bonding foundation bolts inside each foundation and for connection of the steel support structure to the earth mat through the holding down bolts.
- Provide earthing and equipotential bonding connections for AC and DC Surge Protection Devices (SPDs) to ensure integration with the common earthing and lightning protection system.
- Ensure materials delivered to site are received by a competent person, kept in a complete inventory, stored in accordance with manufacturer and Eskom specifications, secured against vandalism and theft, kept dry where required, and protected from water, mud and damage.
- Replace or repair equipment damaged in transit or during construction at the Contractor's cost if required by the Design Engineer / Clerk of Works.
- Procure and supply Solar photovoltaic modules and associated mounting systems required for each complete SHS installation.
- Procure and supply 5 kW hybrid inverter systems and 5.3 kWh lithium battery systems.
- Procure and supply AC and DC protection equipment, associated accessories, customer reticulation and metering interface equipment.
- Procure and supply equipment enclosure ventilation and cooling systems required for the safe and reliable operation of inverter, battery and associated electrical equipment.
- Procure and supply telecommunications and remote monitoring equipment, including GPRS communication equipment and any required communication accessories for integration with the inverter monitoring platform.
- All equipment supplied shall be new, fit for purpose, and compliant with approved design drawings, Eskom standards, manufacturer requirements and relevant SANS requirements.

4. Civil and structural installation scope

- Clear and grub all vegetation and organic material within 1.5 m of the foundation footprint.
 - Strip topsoil to a minimum depth of 150 mm in areas to be excavated. Stripped topsoil shall not be used as backfill unless approved for later use by the Environmental Control Officer where applicable.
 - Prepare excavations for new foundations so that the bottom is flat, level and horizontal. Where solid rock is encountered at founding depth, clean and dry the surface and implement stepping or dowelling where required to prevent lateral movement.
 - Place all backfill in 150 mm layers and compact to 93% Modified AASHTO density. Backfill within 500 mm of the foundation footprint shall not contain organic matter or stones larger than the lesser of 150 mm or two-thirds of the layer thickness.
 - Install a 50 mm thick Grade 15 concrete blinding layer before placing reinforcement.
 - Prepare suitable steel shuttering / formwork for foundation concrete pouring in accordance with the applicable foundation drawing.
 - Accommodate structure earthing within the foundations, in line with the electrical specification and applicable foundation drawings.
 - Protect newly placed concrete from rapid drying and extreme temperature changes and cure for at least seven days using accepted curing methods such as water spray, plastic sheeting or approved curing compounds.
 - Ensure all structural foundations match the dimensions, positions and engineering details shown on the foundation design drawings.
-

- Erect all structural load bearing elements in strict accordance with the engineering documentation and structural design drawings.
- Install all structural members and connection systems in accordance with the structural connection design drawings.
- Mount and place Solar PV panels in accordance with the engineer's provided design and drawing specifications.

5. Site survey, positioning and orientation

- Undertake a high-level site survey to determine the most suitable installation site for each Solar Home System in conjunction with the design engineer's studies and approved design information.
- Identify, set out and confirm the final location of each Solar PV support structure and associated pole-top equipment in accordance with the approved design drawings and site-specific constraints.
- Orientate each Solar PV array to face True North to optimise solar energy yield, unless site-specific conditions or written instruction by the Engineer require otherwise.
- Use an approved surveying method, GPS device or suitable compass corrected for magnetic declination to establish True North.
- Verify the final position and orientation before foundation construction and panel installation.
- Report obstructions, shading concerns or site conditions that may affect the required orientation to the Engineer for review and approval before installation proceeds.
- Position the associated pole-top box to fulfil its operational requirements, integrate with relevant system infrastructure, facilitate maintenance access and maintain compliance with the required Solar PV array orientation and electrical design requirements.

6. Electrical, earthing and lightning protection scope

- Install and connect all equipment detailed in the design in accordance with the relevant Eskom and/or manufacturer specifications, applicable detailed design drawings, project specifications and sound engineering practice.
 - Install the Type A earth termination arrangement consisting of two 3 m long, 16 mm diameter copper-clad steel earth rods interconnected using 10 mm diameter round copper conductor.
 - Install the round copper conductor at a depth of 0.6 m below finished ground level and concurrently with the earthworks to minimise disturbance of final formed and compacted surfaces.
 - Install and bond the conductor within foundations to the steel support structure to provide equipotential bonding and connection to the common earthing system.
 - Complete all joints, crossings and interconnections of the earthing system using Silbralloy brazing to achieve permanent, low-resistance and mechanically robust electrical connections. Sample joints shall be approved by the Clerk of Works before brazing proceeds on site.
 - Complete joints between round copper and copper-clad steel earth rods using exothermic welding.
 - Bond all four corners of the PV carport structure and the equipment enclosure support structure to the main earthing system.
 - Install the enclosure earth busbar within the equipment enclosure and connect it to the main earthing system. The busbar shall provide termination points for the inverter, battery system, AC and DC SPDs, equipment enclosures, support structure and associated bonding conductors.
 - No earthing or bonding is required for the pole-top box structure where it is non-metallic and does not introduce exposed conductive parts.
-

- Earth LV cable armouring at both ends through the cable gland where the gland plate is conductive, or by adding an earth ring where the gland plate is non-conductive. Bond earth rings and gland plates to the earth bar/stud where necessary.
- Earth all spare cable cores at the panel end by lugging and bolting the cores together per cable, connected to the earth bar/stud using a single green earth core with ferrules numbered to the cable number.
- Use only brass or stainless-steel bolts, nuts and washers for electrical connections. Galvanised or electroplated bolts are not acceptable for these electrical connections.
- Fit all applicable operational labels to equipment, junction boxes and control boxes, and install OHS Act safety and warning notices where appropriate.
- Install and commission hybrid inverter systems in accordance with the approved design, manufacturer specifications and Eskom standards.
- Install and commission lithium battery energy storage systems in accordance with manufacturer requirements and approved design documentation.
- Install AC and DC protection equipment, including all required isolation, protection and coordination devices.
- Install customer reticulation and metering interface equipment as detailed in the approved design documentation.
- Install ventilation and cooling systems required for the safe operation of inverter, battery and control equipment housed within the equipment enclosure.
- Install and configure all telecommunications and monitoring equipment necessary for remote system performance monitoring.

7. Telecommunications and Remote Monitoring

The Contractor shall supply, install, configure, test and commission the telecommunications and remote monitoring systems associated with the Solar Home System installations.

- Supply and installation of GPRS communication equipment with eSim capabilities.
- The Contractor shall supply, activate and use an eSim for the installation.
- Integration with the inverter monitoring platform.
- Configuration of remote monitoring functionality.
- Configuration of alarming and notification functionality.
- Provision of system reporting capabilities.
- Verification of communication functionality during commissioning.
- Demonstration of successful communication between each installed SHS and the designated monitoring platform prior to submission for completion.

8. Testing, commissioning and acceptance

- Install and commission one complete Solar Home System as a pilot installation before commencing the remaining installations.
 - Perform all specified inspections, tests and measurements on the pilot installation, including earth resistance testing. Where required earth resistance or other performance criteria are not achieved, install additional earth electrodes or implement other corrective measures and retest until compliance is demonstrated.
 - Perform testing and commissioning of the earthing and lightning protection system, including earth continuity testing, bonding verification, earth resistance measurements and verification of overall system functionality.
 - Undertake preliminary testing of cables to prove correct installation.
 - Ensure final testing and commissioning of installed electrical equipment is performed by the manufacturer, Eskom, or an Eskom appointed contractor where specified.
 - Verify successful operation of all GPRS communication equipment.
 - Verify connectivity between field equipment and the inverter monitoring platform.
-

- Verify functionality of alarms, status reporting and communication interfaces.
- Verify reliable transmission of operational data from each SHS to the monitoring platform.
- Complete concrete cube testing in compliance with SANS 5860, SANS 5861 and SANS 5863 where applicable to the concrete works.
- Submit all relevant test results for materials, workmanship and commissioning to the Engineer / Project Manager for review and acceptance.
- The earthing system may only be buried after acceptance of the earthmat jointing and testing by the Design Engineer and/or Clerk of Works.

9. Quality assurance and hold points

- The Contractor shall be solely responsible for producing work that complies with the specifications to the satisfaction of the Engineer and shall implement an appropriate quality assurance system on site.
- The Contractor shall provide regular feedback on quality control as a prerequisite to final handover / takeover.
- All hold points shall be observed. No further work shall continue beyond a hold point until inspection and approval is obtained from the Design Engineer and/or Clerk of Works.
- The Contractor shall give suitable notice to the Design Engineer and Clerk of Works for inspection.
- Upon completion and submission of each portion of the Works for examination, the Contractor shall provide the Engineer with relevant tests, measurements and levels to confirm compliance.
- The latest revision of Eskom document 240-87605434, Quality Checklist for Distribution Substation Primary Plant Prior to Handing Over for Commercial Operation, shall be completed for the applicable civil and electrical portions and returned with the as-built documentation.

10. Engineer's Health, Safety and Site Control Specifications

- Comply with the Occupational Health and Safety Act and Regulations, No. 85 of 1993, and applicable Construction Regulations.
 - Submit an Occupational Health and Safety Plan for approval, addressing the mitigation of anticipated project-specific onerous site conditions.
 - Appoint a full-time competent construction supervisor in writing and appoint additional competent employees in writing where required.
 - Ensure all relevant PPE is worn at all times and Eskom Life Saving Rules are adhered to at all times.
 - Prepare method statements for the project and each individual activity.
 - Perform risk assessments before and during construction, by a competent person appointed in writing, and include the Project Risk Assessment in the Health and Safety Plan.
 - Ensure work at elevated levels is supervised, fall arrest systems are issued and training completed where required, and no work is undertaken directly beneath personnel working at height.
 - Ensure excavations are supervised, shored and barricaded as required. Orange plastic netting supported on rigid poles/posts is identified as the acceptable barricading method for excavations.
 - Restrict construction equipment and mobile plant to trained and authorised operators, maintain and inspect plant daily, and ensure lifting equipment certificates are current.
 - Appoint a Responsible Person in writing for electrical work, testing and commissioning, and appoint an authorised person in writing to issue the Certificate of Compliance for the LV installation where required.
 - Maintain good housekeeping, correct storage of materials and equipment, regular removal of scrap/waste/debris, and establish secure storage areas.
-

- Maintain fire precautions, prohibit open fires, make fire extinguishing equipment available, train sufficient site employees, and complete emergency appointments in writing.
- Control site access, prevent unauthorised access, and do not remove Eskom property without written authorisation from the Project Manager.

11. Environmental, access and community constraints

- Keep to existing access roads and approved access routes at all times.
- No cut-and-fill operations, road construction, road widening, vegetation clearing or establishment of temporary access roads may be undertaken without prior written Eskom approval.
- Submit any proposed deviation from existing access arrangements to the Engineering, Environmental and Execution Departments responsible for review and approval before implementation.
- Confine operations to as small an area as practical and do not disturb natural vegetation except where essential for execution of the work or directed by the Engineer.
- Do not cut or remove indigenous vegetation without required tree cutting permits from DFFE.
- Apply weed killer to finished floor level before commissioning only with direct authorisation from the project environmental specialist.
- Protect watercourses. Construction vehicles crossing the river must have no oil leakage or other contaminating substances and may cross only at the designated area agreed by the Environmentalist and Engineer.
- No abstraction of water from the river is permitted for construction purposes. Provide potable drinking water for workers.
- No washing of vehicles or construction equipment is allowed in the river. Conduct all concrete mixing on an impermeable surface and prevent cement-containing water from entering the river.
- Dispose of surplus and unsuitable material at legal spoil areas arranged by the Contractor.
- Rehabilitate the site in accordance with the Environmental Management Plan.

12. Proposed construction sequence

- Site access issued by the Project Manager; all permits, safety documentation and risk assessments completed.
 - Site survey, final position confirmation and True North orientation verification for each installation.
 - Site clearing, vegetation control and topsoil removal.
 - Civil bulk earthworks, intermediate excavation, removal of boulders where applicable, and backfilling with approved material.
 - Setting out of PV carport positions and earthing system locations.
 - Excavation and installation of 50 mm x 3.15 mm flat copper conductor within foundations for equipotential bonding and connection to the common earthing system.
 - Establishment and casting of carport foundations and equipment enclosure support foundations.
 - Installation of earth rods, inspection pits and 10 mm diameter round copper conductor for earth rod interconnection and connection to the common earthing network.
 - Erection of galvanised steel PV carport structure.
 - Installation of equipment enclosure support structure.
 - Installation of air termination rods on PV carport structure.
 - Bonding of all four corners of the PV carport structure and the equipment enclosure support structure to the main earthing system.
-

- Provision of AC and DC SPD earthing and bonding connections.
- Installation and placing of Solar PV panels, equipment and associated connections.
- Installation, configuration and communication verification of telecommunications and remote monitoring equipment.
- Pilot SHS testing and commissioning, including earth resistance testing and corrective works if required.
- Testing and commissioning of all installed equipment and systems.
- Site rehabilitation and handover documentation submission.

13. Contractor deliverables and handover documentation

- Approved Health and Safety Plan and risk assessments.
- Written appointments and authorisations, including construction supervisor, Responsible Person and authorised testing / commissioning personnel.
- Method statements for project activities and critical tasks.
- Material delivery records, receiving inspections, inventory records and storage records.
- Quality assurance records, hold point sign-offs and Clerk of Works / Design Engineer inspection records.
- Concrete test results, compaction records, survey/setting-out records and foundation alignment verification records.
- Earthmat sample joint approval, earthmat inspection records, earth continuity results, bonding verification records and earth resistance measurements.
- Pilot installation commissioning results and records of any corrective measures implemented.
- Commissioning test records for primary and control plant equipment and all relevant SHS equipment.
- Marked-up drawings and as-built package, including all relevant primary and control plant marked-up drawings. All documents and drawings shall be submitted in their editable format as well as PDF file format's.
- Certificates of Compliance for LV installation where applicable.
- Operation and Maintenance manuals for Solar PV modules, inverter systems, battery systems, telecommunications equipment and ancillary equipment.
- Telecommunications commissioning reports, including GPRS communication verification records.
- Monitoring platform configuration records and communication interface test records.
- Remote monitoring, alarming and reporting system acceptance records.
- Confirmation that each completed SHS installation is functional and ready for handover to Eskom.
- Completed applicable sections of the Eskom quality / handover checklist and final handover package.

14. Operation and Maintenance Requirements

The Contractor shall include operation and maintenance support during the defects liability period for the Solar Home System installations. These requirements are intended to support safe operation, sustained performance, early defect identification and orderly handover to Eskom.

14.1 Defects liability obligations

As part of the defect's liability period, the Contractor shall correct defects attributable to any of the following:

- Poor workmanship.
 - Incorrect installation.
-

- Defective materials.
- Failure to achieve the specified performance requirements.

14.2 Maintenance services during the defect's liability period

The Contractor shall create a preventative maintenance schedule, a corrective maintenance plan and provide maintenance services during the defect's liability period, including the following as applicable conjunction with 240-171000351:

- Quarterly Scheduled inspections.
- Quarterly cleaning of relevant Solar PV and enclosure components.
- Preventive maintenance activities (this can also be initiated by poor system performance).
- Monitoring of system performance and alarms.
- Firmware and software updates were required by the equipment manufacturer or Eskom.
- Download and backup monthly to be handed over to Eskom Engineering.
- Battery health checks.
- Quarterly corrosion inspections of the support structure, enclosure, fixings, fasteners, electrical terminations and associated components.

Hybrid inverter system operation

The installed Solar PV system shall operate as a fully off-grid hybrid system capable of supplying the connected household independently, if customer energy demand is maintained within the approved operating limits. The system shall use solar energy during daylight hours and store surplus energy in the battery bank for periods of low or no solar generation.

System components

- A 5.4 kWp PV array mounted on the carport structure with a 20 degree tilt and north orientation.
- A 5 kW single-phase hybrid inverter to convert DC power from the PV array and battery into AC power for the household or facility.
- A 5.3 kWh battery bank to store energy for night-time operation and periods of low solar irradiation.
- A monitoring and control system providing real-time data on PV production, battery state of charge (SOC), total load consumption and system operating status.

Integration and operating requirements

- During daytime operation, solar power generated by the PV array shall first be used to supply the household or facility loads.
 - Excess PV energy shall be stored in the battery bank for later use.
 - The inverter shall continuously manage power flow between the PV array, battery and loads to optimise energy use and maintain battery health.
 - The hybrid inverter shall charge the battery where PV production exceeds current load demand and automatically draw power from the battery when PV production is insufficient to meet the load.
 - Battery discharge shall be managed to avoid depletion below 10% state of charge, preserving battery life.
 - During night-time and low irradiance operation, the inverter shall supply the household or facility from the battery where PV generation is not sufficient.
 - The inverter shall include over-current protection and battery management functions to prevent over-discharge and overcharge.
 - The system shall support efficient energy use during extended periods of low solar availability.
-

Fault Response During Defects Liability Period.

The Contractor is to respond all faults during the first year within a time period defined by Eskom.

Spare Holdings

The Contractor shall provide a recommended spare parts schedule for all major equipment supplied under the Works. The schedule shall identify the spare parts required to support routine maintenance and fault response during the operational life of the installation. Allowance for spare parts should typically be in the range of 2% to 5% of the value of major components such as PV modules, inverters, and battery storage systems.

Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AFC	Approved for construction
OBL	Outside battery limits

Management and start up.**2.1 Management meetings****General**

In addition to formal and informal communications between the *Project Manager* and the *Contractor*, frequent formal routine meetings are necessary throughout the duration of the *Contractor's* performance in order to assure continued communication and record such interfaces for the future.

Meetings will be scheduled at any time to resolve problems. Major meetings are scheduled on a regular basis and will be determined as the contract work develops.

All safety meetings and Safety specifications (SHEQ) are as per the details listed in the SHEQ specification.

2.2 Documentation control

Contractor will submit a weekly report indicating the project status.

- The Start and Completion date must be agreed upon prior to signing the Task Order. Late completion may result in penalty clause being applied as per contract document.
- Original tax invoices must be submitted to the Programme Management Department containing all the relevant mentioned above. (See a full attached tick list)

2.3 Health and safety risk management

The following activities have been identified as Potential Risks and / or pertaining to the Health and Safety of the people employed to work on the specified site and / or to people in general in close proximity to the work site.

1. Supervision of Construction Works

Amongst Other Things, the Contractor must ensure;

- That a competent person is appointed as full time construction supervisor in writing.
 - The contractor may appoint additional competent employees, in writing, to assist the construction supervisor, provided the relevant conditions of the Construction Regulations are met.
 - The construction supervisor may not supervise work on any other site unless the relevant conditions of the Construction Regulations are met.
-

2.4 Risk Assessment

Every contractor performing construction work shall before the commencement of any construction work and during construction work, cause a risk assessment to be performed by a competent person appointed in writing and the risk assessment shall form part of the health and safety plan to be applied on the site and shall include at least-

- a) The identification of the risks and hazards to which persons may be exposed to;

The *Contractor* shall comply with the health and safety requirements contained in Annexure _____ to this Works Information.

- b) The analysis and evaluation of the risks and hazards identified;
c) A documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
d) A monitoring plan; and
e) A review plan.

No contractor shall allow or permit any employee or person to enter any site, unless such employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

Health and safety risk management

The *Contractor* shall comply with the health and safety requirements contained in the Works Information (SHE Requirements for the Eskom Commercial Process 32-726).

The *Contractor* supplies the *Project Manager* with a monthly safety report indicating the total number of employees on site, the number of hours worked, the number of hours lost due to injury and details of any incidents/accidents.

Minutes of Safety Meetings are forwarded to the *Project Manager*.

Reporting of incidents shall be in accordance with Eskom Distribution procedure (Procedure Manual for Perform Occupational Health and Safety Management and Environmental Management: Conduct EH&S Incident Management 32-95).

2.5 SAFETY REQUIREMENTS -

<u>Ref.</u>	<u>OHS Tender Returnable</u>
1	Annexure B Is the acknowledgement of Eskom's OHS legal and other requirements form signed and submitted by the CEO/MD and 2 witnesses?
2	OH&S Organogram- Including names and appointment reference, to be approved by CEO/MD.
3	Occupational, Health and Safety Plan (OHS plan) Must address the project /scope of work OHS risk(s) and aligned with the health and safety specification or requirements (Numbering must align to the left-hand side numbers in the SHE specification). Next review date to be included and to be signed by the CEO/MD of the company.
4	Public Safety Plan Pre, during & post public safety plan that will consider safety of the public. Next review date to be included and to be signed by the CEO/MD of the company.
5	Baseline Risk Assessment (BRA) Identification, assessment, and management of OHS risks related to the scope of work. The methodology and applicable risk matrix used for the risk assessment must be provided together with the BRA. (Driving to be included) Next review date to be added and to be signed by CEO/Director)
6	Valid Letter of Good Standing (COID or equivalent) The letter of good standing must state the relevant services rendered by the company, e.g. Electrical related construction work in line with the Scope of Work applicable for this tender.
7	OHS policy signed by CEO. The submitted policy document must comply to OHS Act Section 7. To be signed by the Owner/CEO/MD and have the next review date.
8	OHS Competency: Proof of the training certificates and appointment letters for each of the following: NB Accreditation certificates to be provided by the training service provider to the contractor for each competency. - Section 17 Health and Safety Representative (Appointment if not yet trained) - GSR 3(4) First Aid Training

<u>Ref.</u>	<u>OHS Tender Returnable</u>
	• CR 29(h&i) Fire fighters • CR 9(1) Risk Assessor • CR 8(7) Construction Supervisor with Supervision Certificate and LV Regs Authorization and proven civil works experience (A detailed Curriculum Vitae(CV) must be included as part of the submission • CR 8(5) Safety Officer (Registered with SACPCMP) • CR 10(1) Fall Protection planner/developer • Fall Rescuer (Training Certificate only) • GAR 9(2) Incident Investigator • CR 13(1) Competent person for Excavation Work
9	Medical Fitness Certificate (Including Annexure 3 template) To be done by the Occupational Health Practitioner/Nurse/Doctor (Minimum of 3)
10	Fall Protection Plan as per CR 10 (With Rescue Plan & Fall Risks) Next review date to be included, to be signed by the fall protection planner & CEO/MD of the company
11	Substance Abuse Procedure or Policy Policy to be signed by the CEO/MD
12	Costing for Health and Safety management (The cost should be broken down not provided as a lump sum)? • The costing must be based on the overall scope of work/service to be performed.

2.6 Environmental constraints and management

2.7 Quality assurance requirements

	Supplier Quality Management:		Unique Identifier	240-12248652
	List of Tender Returnables Documents		Revision	7
			Effective Date	2022/01/26
			Specification	240-105658000
Category 3 : Quality Requirements		Deliverables to be evaluated indicator = 1		
SECTION A : Quality Management System Requirements ISO 9001				
Objective evidence of documented QMS that is not certified but complies with ISO 9001				
				Apply =1
A.1 QMS Manual or a document that defines and describes the QMS and its scope				1
A.2 Quality Policy Approved by top management.				1
A.3 Quality Objectives Approved by top management.				1
A.4 Control of documented information (i.e. document and record control) Clause 7.5 of ISO 9001:2015				1
A.5 Documented information for Control of nonconforming outputs Clause 8.7 of ISO 9001:2015				1
A.6 Documented information for Nonconformity and Corrective action Clause 10.2 of ISO 9001:2015				1
A.7 Documented information for Internal audit Clause 9.2 of ISO 9001:2015				1
Section A Score Option 2				7
SECTION B : Evidence of QMS in operation (Tender Quality Requirements -Ref 240-105658000)				
				Apply =1
B.1 Documented information for defined roles, responsibilities and authorities - Organization chart and Responsibility matrix (must include but not limited to quality management function/role) (Clause 5.3 of ISO 9001:2015)				1
B.2 Documented information for Control of Externally Provided Processes, Products and Services - Must include criteria for evaluation, selection, monitoring of performance, and re-evaluation of external providers (Clause 8.4 of ISO 9001:2015)				1
Section B Score				2
SECTION C: Contract Quality Plan Requirements (Ref 240-105658000 and 240-109253698).				
Draft Contract Quality Plan specific to the scope of work as described in the tender documents (Ref ISO 10005)				
				Apply (Yes=1)
NB! Draft Contract/Project Quality Plan has important QA deliverables				1
Section C Score				1
SECTION D: Quality Control Plan Requirements (Ref 240-105658000 or 240-109253302)				
QCP /Checklist/ ITP (Quality Control Plans) as per Scope of Works (Ref ISO 10005)				
				Apply = 1
NB! Draft/ Example of an Inspection and Test Plan (ITP) or Quality Control Plan (QCP) on similar and/ or previous work done				1
Section D Score				1
SECTION E: User defined additional Requirements & miscellaneous (Ref 240-105658000)				
Customer specific requirements & other standards and required can be listed and evaluated here				
E.1 Form A is completed and signed.				Apply (Yes=1)
Section E Score				1
NAME OF ESKOM REPRESENTATIVE		Acanda Msomi		
DATE ISSUED		04-Aug-26		
PROJECT: TENDER TITLE		MAQHASHIYA SOLAR PV PROJECT		
SIGNATURE		[Signature]		

2.8 FINANCIAL REQUIREMENTS

Requirements for Financial Evaluation of Companies

• • Public Interest Score (PIS) and the calculations to arrive at the score (refer to annexure attached for calculation of PIS). The PIS letter must specify whether:

1. Whether the AFS were internally or externally prepared.
2. Whether the company was owner managed or not owner managed.

The PIS does **NOT** apply to companies that have been **AUDITED**.

- • Latest approved financial statements including comparative amounts.

AFS must be valid and not outdated, received within 18 months after year-end.

- A signed director's / member's report.
- Signed Compilers / Accounting Officers / Independent Reviewers / Audit report whichever is applicable, based on the PIS above.

Where the PIS requires an Audit or Independent Reviewers report, the Compilers / Accounting Officers report must still be submitted.

• Approved Annual Financial statements must comprise : o Statement of financial position (Balance Sheet)

o Statement of comprehensive income (income statement)

o Statement of changes in Equity

o Statement of cash flows

o Notes to the financial statements

o ITA 34C Income Tax Assessment for companies that have **NOT** been **AUDITED**. The **ITA-34C assessments must be provided for the current and previous financial years. The turnover amount shown in the income statement must correspond to the amount shown in the ITA-34C. Should the amounts not correspond, a financial analysis will not be performed.**

• The notes to the AFS specifically referring to **Accounts Receivable** and **Accounts Payable** must give a complete breakdown of the amounts. A clear distinction must be made between Trade Debtors and other receivables as well Trade Creditors and other payables. The note must clearly show the amounts subject to interest and the terms and condition of interest.

• The notes to the AFS must clearly specify the current and non-current liabilities that are subject to interest.

• Member / Directors loans must be accompanied by a note specifying the terms of the loan, whether secured or unsecured, terms of repayment and interest rates.

• Name of Holding company if the company is a subsidiary company.

• Where there is a Holding company the Latest Signed Group Annual Financial Statements of the Holding Company may be requested at a later stage.

• Information requested from companies via Procurement Office not received within five working days from date of Finance request will result in the financial evaluation being closed. Finance will issue a 1-page report stating that an opinion could not be expressed due to insufficient information.

Note:

Draft, bi-annual, management accounts and unsigned financial statements will NOT be accepted. Soft copies of the AFS submitted with the tender documents may be requested at a later stage.

Programming constraints

Not applicable.

Contractor's management, supervision and key people

No additional requirements.

Invoicing and payment

The Z clauses make reference to invoicing procedures stated here in this Service Information. Also include a list of information which is to be shown on an invoice.

Within one week of receiving a payment certificate from the *Project 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 *Project Manager's* payment certificate.

The *Contractor* shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project 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)

Insurance provided by the *Employer*

No insurance provided by the Employer, the Contractor to provide his/her own Insurance as appropriate

Records of Defined Cost, payments & assessments of compensation events 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, works sub-contracted by the Contractor and Equipment. A Site Diary will be required

Training workshops and technology transfer

Not Applicable

Engineering and the *Contractor's* design

Not applicable

Employer's design

As Per Scope of Work – Drawings made available as part of the enquiry documentation

Parts of the works which the *Contractor* is to design

Not applicable

Procedure for submission and acceptance of *Contractor's* design

Not applicable

Other requirements of the *Contractor's* design

Not applicable

Use of *Contractor's* design

Not applicable

Design of Equipment

Not applicable

Equipment required to be included in the *works*

Not applicable

As-built drawings, operating manuals and maintenance schedules**Procurement**

Commercial Compliance is mandatory at Tender Closing

People**Minimum requirements of people employed on the Site**

Not applicable.

BBBEE and preferencing scheme**Section 1: Specific Goals**

A maximum of 20 points may be awarded to a tenderer for the specific goal specified for the tender. The points scored for the specific goal must be added to the points scored for price and the total must be rounded off to the nearest two decimal places. Subject to section 2(1)(f) of the Preferential Procurement Policy Framework Act, the contract must be awarded to the tenderer scoring the highest points.

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	14
4	12
5	8
6	6

7	4
8	2
Non-compliant contributor	0

NB: The following documents are required to claim preference points,

- **Valid** BBBEE certificate issued by a SANAS accredited verification agency **or** a **valid** sworn affidavit **or** a **valid** BBBEE Certificate issued by CIPC for EME companies **or** for joint ventures a **valid** BBBEE certificate issued by a SANAS accredited verification agency in the **name of the joint venture**

NB: Supporting documents may be requested during evaluation (This list is not exhaustive):

- Proof of ownership / shareholding (CIPC registration documentation) inclusive of shareholding breakdown
- ID copies of shareholder(s) or owner(s) of the business
- Proof of Disability of owner(s) of the business (where applicable)

Tenderer failing to provide documentation for the allocation of preference points will not be disqualified, but

- May only score point out of 90/80 for price
- Scores 0 points out of 10/20 for specific goals

Section 2: Objective criteria

The inclusion of objective criteria is not mandatory but a condition for contract award. If the tenderer does not meet objective criteria; it may lead to the second-ranked tenderer being recommended for award.

2.1 Designated Sectors

When applicable the following stipulated minimum threshold for Local Production and Content must be achieved in full by the tenderer

a) Is this Commodity or part of it a Designated Sector?

YES

NO



Commodity	Components	Local Content Threshold
Electrical and telecom cables	Low Voltage Cable, Telecom Cables	90%
Solar PV Components	Laminated PV Modules	15%
Solar PV Components	Module Frame	65%
Solar PV Components	DC Combiner Boxes	65%
Solar PV Components	Mounting Structure	90%
Solar PV Components	Inverter	40%
Residential Electricity Meter	SMART Meters	50%

Plastic Pipes	Polyvinyl chloride (PVC) pipes	100%
Cement	Cement	100%
Steel Products and Component for Construction	Steel Value-added Products	100%

NOTE: SBD 6.2 Declaration Form and Annex C (Local Content Declaration-Summary Schedule) is a tender returnable and is the condition for contract award.

2.2 CIDB Skills Development

Continuation of Mandatory Requirements

a) Is there CIDB compulsory training?

If Yes, what is the % of the Construction Skills Development Goal % (CSDG)

YES	NO
☐	☒
Not applicable	

If the answer above is Yes, it will then be mandatory for the supplier to match Eskom's targets

Criteria	Eskom Target	Tenderer Commitment
CSDG Percentage	N/A	
Description	N/A	

NOTE: Failure by the Contractor/Service Provider/Supplier to meet the CIDB CSDG mandatory % will render their tender non-responsive.

2.4 Mandatory Subcontracting as condition of award – Not Applicable

Section 3: SDL&I Objectives in line with Reconstruction and Development Programme (RDP) Goals

Tenderers who complete and submit the objectives as required, but who do not meet Eskom's targets, will not be disqualified. SDL&I objectives do not form part of scoring but commitments will form part of contractual obligations

1. Transformation – BBBEE Improvement or Retention Plan

Transformation remains an area of focus, where Eskom continuously strives to align itself with national transformation imperatives to unlock growth, drive industrialization, create employment and contribute to skills development.

Eskom encourages its suppliers to constantly strive to improve their B-BBEE rating. Whereas Tenderer/s will be allocated points in terms of a preference point system based on specific goals,

Eskom also requests that tenderer/s submits their B-BBEE improvement or retention plan within 30 days of signing the contract.

Tenderer/s are therefore requested to indicate the extent to which they will maintain (only if the respondent is a Level 1) or may improve/maintain their B-BBEE status over the contract period if their B-BBEE status is level 2 or 3. Tenderer/s with a B-BBEE status level 4 at the time of contract award, shall migrate and achieve as a non-negotiable a milestone of B-BBEE Level 3 by the end of the first year of the contract and thereafter improve their B-BBEE status level or migrate by one level higher.

Tenderer/s with a B-BBEE recognition status of Level 5 to Level 8 or non-compliant at the time of contract award, shall migrate and achieve as a non-negotiable a milestone of Level 4 by the end of the first year of the contract and thereafter improve at least one B-BBEE Level higher of each year from the second year of the contract.

Tenderer/s are requested to submit their B-BBEE Improvement Plan as an essential document within 30 days of signing the contract.

NB: A valid B-BBEE certificate or Sworn Affidavit is a condition for contract award if your company's annual Total Revenue is R10 Million or less you qualify as an Exempted Micro Enterprise therefore you can submit Sworn Affidavit. If your annual Total Revenue is R50 Million or less, you qualify as Qualifying Small Enterprise and must comply with all of the elements of QSE score card relevant to your sector unless an entity is at least 51% Black owned you are required to obtain a Sworn affidavit. If your Annual Total Revenue is above R50m you need to submit a Valid B-BBEE certificate

2. Local Procurement Content

"Local Procurement Content" refers to value added in South Africa by South African resources. Where a single contract involves a combination of local and imported goods and/or services, the tender response must be separated into its components as per the Price Schedule included with the tender documents. Local procurement content is total spending minus the imported component.

Tenderers are required to submit their proposals in the table below.

Local Procurement Content	Eskom target	Tenderer Proposal
	100%	

3. Procurement spend on entities with a minimum 51% black ownership

The winning tenderer is encouraged to procure/spend on designated groups on the following paid invoices for both:

- the indirect expenses (e.g. overheads) on goods and services supplied to the contractor/supplier by

designated groups; and

- direct spend on goods and services supplied by the subcontractors for the execution of the scope of work.

Activities, as a proportion of the local procurement content, which may be subcontracted to designated black owned enterprises must be submitted in a table below.

Procurement from Designated Group	Eskom Target	Tenderer Proposal
Black Owned	4.0%	
Black Women Owned	3.0%	
Black Youth Owned	2.0%	
Black Persons with Disability	1.0%	

4. Jobs.

Tenderers are required to submit proposals for the type and number of jobs that will be created and retained in South Africa as a direct result of being awarded a contract.

Jobs to be created	Jobs to be retained

5. Skills development

Tenderers are required to submit proposals in the table below for developing the skills of unemployed candidates in the country. 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 shall be from the Kwa Zulu Natal **area**, and their composition shall be representative of the population demographics of South Africa.

Skill type / Occupation	Eskom target	Proposed Number of Candidates
Solar PV Installer Course	1	

The process of developing these skills shall involve the participation by tenderers directly and through their supply network. In certain cases, the SETA's accredited training providers can be approached to participate in developing critical and scarce skills.

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.

Section 4: SDL&I Penalty and Performance Security

Eskom will apply a penalty of 2.5% of the Contract Value 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.

Subcontracting

Preferred subcontractors

Not applicable

Subcontract documentation, and assessment of subcontract tenders

Not applicable

Limitations on subcontracting

Not applicable

Attendance on subcontractors

Not applicable

Plant and Materials

Quality

- The Contractor shall be solely responsible for producing work that complies with the specifications to the satisfaction of the Engineer and shall implement an appropriate quality assurance system on site.
- The Contractor shall provide regular feedback on quality control as a prerequisite to final handover / takeover.
- All hold points shall be observed. No further work shall continue beyond a hold point until inspection and approval is obtained from the Design Engineer and/or Clerk of Works.
- The Contractor shall give suitable notice to the Design Engineer and Clerk of Works for inspection.
- Upon completion and submission of each portion of the Works for examination, the Contractor shall provide the Engineer with relevant tests, measurements and levels to confirm compliance.
- The latest revision of Eskom document 240-87605434, Quality Checklist for Distribution Substation Primary Plant Prior to Handing Over for Commercial Operation, shall be completed for the applicable civil and electrical portions and returned with the as-built documentation.

Plant & Materials provided “free issue” by the *Employer***Item Description**

CABLE 1kV 6mmSQ CONCENT CU
 READYBOARD,SPLIT METER 2x16A SKTS D3176
 METER ELECT SERV:SMART(DIN) G3-PLC)
 Box, pole top split meter 2-way 50A
 Seals
 Padlocks
 POLE,WOOD 5.0 X 80-100 TOP DIA

Contractor's procurement of Plant and Materials

- Procure and supply all equipment and materials required for the complete SHS installation, including PV support structure components, equipment enclosure support components, foundation-related materials, concrete, reinforcement, earthing materials, lightning protection components, bonding materials, labels, fasteners, inspection pits, testing equipment and consumables.
 - Supply and install a Class III Lightning Protection System comprising four, 1 m high aluminium air termination rods mounted on the PV carport structure edges.
 - Supply and install two 3 m long, 16 mm diameter copper-clad steel earth rods according to the design drawings, interconnected using 10 mm diameter round copper conductor.
 - Supply and install 10 mm diameter round copper conductor for the equipotential bonding of the PV carport structure, equipment enclosure support structure and associated metallic components to the common earthing system.
 - Supply 50 mm x 3.15 mm flat copper bar for bonding foundation bolts inside each foundation and for connection of the steel support structure to the earth mat through the holding down bolts.
 - Provide earthing and equipotential bonding connections for AC and DC Surge Protection Devices (SPDs) to ensure integration with the common earthing and lightning protection system.
 - Ensure materials delivered to site are received by a competent person, kept in a complete inventory, stored in accordance with manufacturer and Eskom specifications, secured against vandalism and theft, kept dry where required, and protected from water, mud and damage.
 - Replace or repair equipment damaged in transit or during construction at the Contractor's cost if required by the Design Engineer / Clerk of Works.
 - Procure and supply Solar photovoltaic modules and associated mounting systems required for each complete SHS installation.
 - Procure and supply 5 kW hybrid inverter systems and 5.3 kWh lithium battery systems.
 - Procure and supply AC and DC protection equipment, associated accessories, customer reticulation and metering interface equipment.
 - Procure and supply equipment enclosure ventilation and cooling systems required for the safe and reliable operation of inverter, battery and associated electrical equipment.
 - Procure and supply telecommunications and remote monitoring equipment, including GPRS communication equipment and any required communication accessories for integration with the inverter monitoring platform.
 - All equipment supplied shall be new, fit for purpose, and compliant with approved design drawings, Eskom standards, manufacturer requirements and relevant SANS requirements.
-

Spares and consumables

The Contractor shall provide a recommended spare parts schedule for all major equipment supplied under the Works. The schedule shall identify the spare parts required to support routine maintenance and fault response during the operational life of the installation. Allowance for spare parts should typically be in the range of 2% to 5% of the value of major components such as PV modules, inverters, and battery storage systems.

Tests and inspections before delivery**Testing, commissioning and acceptance**

- Install and commission one complete Solar Home System as a pilot installation before commencing the remaining installations.
- Perform all specified inspections, tests and measurements on the pilot installation, including earth resistance testing. Where required earth resistance or other performance criteria are not achieved, install additional earth electrodes or implement other corrective measures and retest until compliance is demonstrated.
- Perform testing and commissioning of the earthing and lightning protection system, including earth continuity testing, bonding verification, earth resistance measurements and verification of overall system functionality.
- Undertake preliminary testing of cables to prove correct installation.
- Ensure final testing and commissioning of installed electrical equipment is performed by the manufacturer, Eskom, or an Eskom appointed contractor where specified.
- Verify successful operation of all GPRS communication equipment.
- Verify connectivity between field equipment and the inverter monitoring platform.
- Verify functionality of alarms, status reporting and communication interfaces.
- Verify reliable transmission of operational data from each SHS to the monitoring platform.
- Complete concrete cube testing in compliance with SANS 5860, SANS 5861 and SANS 5863 where applicable to the concrete works.
- Submit all relevant test results for materials, workmanship and commissioning to the Engineer / Project Manager for review and acceptance.
- The earthing system may only be buried after acceptance of the earthmat jointing and testing by the Design Engineer and/or Clerk of Works.

Marking Plant and Materials outside the Working Areas

Not applicable

Contractor's Equipment (including temporary works).**Cataloguing requirements by the Contractor**

Not Applicable

Temporary works, Site services & construction constraints

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

Restrictions to access on Site, roads, walkways and barricades

In addition to the above there may be other restrictions once on the Site, plus rules relating to roads, walkways and the provision of barricades

People restrictions on Site; hours of work, conduct and records

Restrictions and hours of work may apply on some Sites. It is very important that the *Contractor* keeps records of his people on Site, including those of his Subcontractors which the *Project Manager* or *Supervisor* have access to at any time. These records may be needed when assessing compensation events.

Health and safety facilities on Site

Engineer's Health, Safety and Site Control Specifications

- Comply with the Occupational Health and Safety Act and Regulations, No. 85 of 1993, and applicable Construction Regulations.
 - Submit an Occupational Health and Safety Plan for approval, addressing the mitigation of anticipated project-specific onerous site conditions.
 - Appoint a full-time competent construction supervisor in writing and appoint additional competent employees in writing where required.
 - Ensure all relevant PPE is worn at all times and Eskom Life Saving Rules are adhered to at all times.
 - Prepare method statements for the project and each individual activity.
 - Perform risk assessments before and during construction, by a competent person appointed in writing, and include the Project Risk Assessment in the Health and Safety Plan.
 - Ensure work at elevated levels is supervised, fall arrest systems are issued and training completed where required, and no work is undertaken directly beneath personnel working at height.
 - Ensure excavations are supervised, shored and barricaded as required. Orange plastic netting supported on rigid poles/posts is identified as the acceptable barricading method for excavations.
 - Restrict construction equipment and mobile plant to trained and authorised operators, maintain and inspect plant daily, and ensure lifting equipment certificates are current.
 - Appoint a Responsible Person in writing for electrical work, testing and commissioning, and appoint an authorised person in writing to issue the Certificate of Compliance for the LV installation where required.
 - Maintain good housekeeping, correct storage of materials and equipment, regular removal of scrap/waste/debris, and establish secure storage areas.
 - Maintain fire precautions, prohibit open fires, make fire extinguishing equipment available, train sufficient site employees, and complete emergency appointments in writing.
 - Control site access, prevent unauthorised access, and do not remove Eskom property without written authorisation from the Project Manager.
-

Environmental controls, fauna & flora, dealing with objects of historical interest

Environmental, access and community constraints

- Always keep to existing access roads and approved access routes.
- No cut-and-fill operations, road construction, road widening, vegetation clearing or establishment of temporary access roads may be undertaken without prior written Eskom approval.
- Submit any proposed deviation from existing access arrangements to the Engineering, Environmental and Execution Departments responsible for review and approval before implementation.
- Confine operations to as small an area as practical and do not disturb natural vegetation except where essential for execution of the work or directed by the Engineer.
- Do not cut or remove indigenous vegetation without required tree cutting permits from DFFE.
- Apply weed killer to finished floor level before commissioning only with direct authorisation from the project environmental specialist.
- Protect watercourses. Construction vehicles crossing the river must have no oil leakage or other contaminating substances and may cross only at the designated area agreed by the Environmentalist and Engineer.
- No abstraction of water from the river is permitted for construction purposes. Provide potable drinking water for workers.
- No washing of vehicles or construction equipment is allowed in the river. Conduct all concrete mixing on an impermeable surface and prevent cement-containing water from entering the river.
- Dispose of surplus and unsuitable material at legal spoil areas arranged by the Contractor.
- Rehabilitate the site in accordance with the Environmental Management Plan.

Title to materials from demolition and excavation

Clause 73.2 states that the *Contractor* has title to materials from excavation and demolition (e. g. copper) only as stated in the Works Information. Hence state here any special arrangements regarding such title. If nothing is stated then the default position is the *Contractor* has no such title.

Cooperating with and obtaining acceptance of Others

This sub-paragraph could be used to deal with two issues.

- 1) The cross reference from core clause 25.1 about cooperation generally as well as details about Others with whom the *Contractor* may be required to share the working areas. See clause 11.2(10) for the definition of Others.
- 2) Requirements for liaison with and acceptance from statutory authorities or land owners.

Site services and facilities

Contractor to make provision of power, water, waste disposal, telecomms, ablutions, fire protection, lighting etc. The *Contractor* shall provide everything else necessary for Providing the Works.

Facilities provided by the Contractor

As per the Preliminaries and General Requirements in the Bill of Quantities

Excavations and associated water control

- Prepare excavations for new foundations so that the bottom is flat, level and horizontal. Where solid rock is encountered at founding depth, clean and dry the surface and implement stepping or dowelling where required to prevent lateral movement.
- Ensure excavations are supervised, shored and barricaded as required. Orange plastic netting supported on rigid poles/posts is identified as the acceptable barricading method for excavations.

Proposed construction sequence

- Site access issued by the Project Manager; all permits, safety documentation and risk assessments completed.
 - Site survey, final position confirmation and True North orientation verification for each installation.
 - Site clearing, vegetation control and topsoil removal.
 - Civil bulk earthworks, intermediate excavation, removal of boulders where applicable, and backfilling with approved material.
 - Setting out of PV carport positions and earthing system locations.
 - Excavation and installation of 50 mm x 3.15 mm flat copper conductor within foundations for equipotential bonding and connection to the common earthing system.
 - Establishment and casting of carport foundations and equipment enclosure support foundations.
 - Installation of earth rods, inspection pits and 10 mm diameter round copper conductor for earth rod interconnection and connection to the common earthing network.
 - Erection of galvanised steel PV carport structure.
 - Installation of equipment enclosure support structure.
 - Installation of air termination rods on PV carport structure.
 - Bonding of all four corners of the PV carport structure and the equipment enclosure support structure to the main earthing system.
 - Provision of AC and DC SPD earthing and bonding connections.
 - Installation and placing of Solar PV panels, equipment and associated connections.
 - Installation, configuration and communication verification of telecommunications and remote monitoring equipment.
 - Pilot SHS testing and commissioning, including earth resistance testing and corrective works if required.
 - Testing and commissioning of all installed equipment and systems.
 - Site rehabilitation and handover documentation submission.
-

Giving notice of work to be covered up

State the procedure for notifying the *Supervisor*

Hook ups to existing works

State any constraints

Completion, testing, commissioning and correction of Defects**Work to be done by the Completion Date****Defects liability obligations**

As part of the defect's liability period, the Contractor shall correct defects attributable to any of the following:

- Poor workmanship.
- Incorrect installation.
- Defective materials.
- Failure to achieve the specified performance requirements

Use of the *works* before Completion has been certified

Clause 35.2 in ECC3 provides that the *Employer* may use any part of the *works* before Completion has been certified but if he does so he takes over the part of the *works* except if the use is for a reason stated in the Works Information. State the reason here if this applies.

Materials facilities and samples for tests and inspections

State what materials facilities and samples for tests and inspections the *Contractor* and the *Employer* are to provide, per core clause 40.2.

Commissioning

- Perform testing and commissioning of the earthing and lightning protection system, including earth continuity testing, bonding verification, earth resistance measurements and verification of overall system functionality.
- Undertake preliminary testing of cables to prove correct installation.
- Ensure final testing and commissioning of installed electrical equipment is performed by the manufacturer, Eskom, or an Eskom appointed contractor where specified.
- Verify successful operation of all GPRS communication equipment.
- Verify connectivity between field equipment and the inverter monitoring platform.
- Verify functionality of alarms, status reporting and communication interfaces.
- Verify reliable transmission of operational data from each SHS to the monitoring platform.
- Complete concrete cube testing in compliance with SANS 5860, SANS 5861 and SANS 5863 where applicable to the concrete works.
- Submit all relevant test results for materials, workmanship and commissioning to the Engineer / Project Manager for review and acceptance.
- The earthing system may only be buried after acceptance of the earthmat jointing and testing by the Design Engineer and/or Clerk of Works.

Start-up procedures required to put the *works* into operation

In order to put the *works* into operation the *Employer* may require the *Contractor* to either do this for him or be in attendance whilst he does it, depending on who is the responsible person. State requirements of the *Contractor* here together with any special arrangements associated with operating plant and machinery.

Take over procedures

Take over is after or at the same time as Completion. The *Employer* may require the *Contractor* to provide assistance, security personnel on a temporary basis etc.

Access given by the *Employer* for correction of Defects

Clause 43.4 requires that the *Project Manager* arranges for the *Employer* to allow the *Contractor* access to and use of a part of the *works* which has been taken over if needed to correct a Defect. After the *works* have been put into operation, the *Employer* may require the *Contractor* to undertake certain procedures before such access can be granted (for example barricading a motorway or in a nuclear power station). Include these here.

Performance tests after Completion

Many design and build or turnkey projects require the *Contractor* to demonstrate that the *works* can operate as guaranteed by the *Contractor* (in *Contractor's Works Information*) or specified by the *Employer* either here or elsewhere in this Works Information. State here the procedures for carrying out such proving tests. These details should link up with any performance levels stated in Contract Data if secondary proving Option X17 in ECC3 applies.

Training and technology transfer

Include if the *Employer* requires the *Contractor* to provide training in the use and maintenance of the *works* or any associated transfer of technology from him to the *Employer*.

Operational maintenance after Completion

The Contractor shall create a preventative maintenance schedule, a corrective maintenance plan and provide maintenance services during the defect's liability period, including the following as applicable conjunction with 240-171000351:

- Quarterly Scheduled inspections.
- Quarterly cleaning of relevant Solar PV and enclosure components.
- Preventive maintenance activities (this can also be initiated by poor system performance).
- Monitoring of system performance and alarms.
- Firmware and software updates were required by the equipment manufacturer or Eskom.
- Download and backup monthly to be handed over to Eskom Engineering.
- Battery health checks.
- Quarterly corrosion inspections of the support structure, enclosure, fixings, fasteners, electrical terminations and associated components.

Plant and Materials standards and workmanship

This section of the Works Information contains all the specifications for the work which is left behind; the permanent works. It is likely to be the largest section by far and may even be compiled in volumes, e. g. Section 6 Volume 1: Civil Engineering Works. In design and construct contracts, it may be compiled in accordance with systems within the *works*; e. g. Section 6 Volume 4: Crushers.

Because practice varies widely between employers it is not practical in a general template such as this to deal with all arrangements. Only the discipline based section subheadings are provided below in the order the *works* are likely to be constructed together with some notes of a general nature.

Investigation, survey and Site clearance

Some contracts may require the *Contractor* to carry out further investigation of existing facilities or of the Site before commencing final design. There could be constraints on Site clearance especially in pipeline or transmission grid servitudes.

Building works

Reference could be made to the latest Model Trade Preambles published by the Association of South African Quantity Surveyors. However these have been developed for use with the JBCC series of contracts and an approach where description of the work is made part of the bill of quantities, which is not the case in other forms of contract. Only parts of the Model Trade Preambles could be referenced by an ECC contract, with a covering note dealing with the changes in terminology. Further changes are required depending on which parts are to be selected.

This subsection would typically comprise

- a) Particular specifications provided by the *Employer*
- b) List of standardised specifications applicable to the *works* and
- c) Variations to the standardised specifications

Civil engineering and structural works

Reference could be made to the SANS1200 series of specifications developed and published by South African National Standards. However these are now very out of date and originally developed for use with SAICE general conditions of contract for works of civil engineering which have themselves been superseded twice.

All SANS 1200 specifications are in the process of being updated to make them more compatible with a wider range of contracts, including NEC, and users should check availability of the new SANS 2000 series of specifications.

Sections 3, 4 and 5 of SANS1200A are probably already covered in section 5 of this Works Information.

This subsection would typically comprise

- a) Particular specifications provided by the *Employer*
- b) List of standardised specifications applicable to the *works* and
- c) Variations to the standardised specifications

If use is made of the 1200 series, users should include a covering note dealing with the changes in terminology, such as the one provided below. Further changes are required depending on which specifications in the 1200 series are selected.

Electrical & mechanical engineering works

As per the Scope of Works

Process control and IT works

Upon completion of the Project the Customer Data to be submitted to Eskom utilising EDA system.

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List of drawings

Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Drawing number	Revision	Title
		KZN-EBC-2403-1190868-S1
		KZN-EBC-2403-1190868-S2
		KZN-EBC-2403-1190868-S3
		KZN-EBC-2403-1190868-S4

C3.2 *CONTRACTOR'S* WORKS INFORMATION

- The project provides off-grid Solar Home Systems (SHSs) as an electrification solution for 59 households and Maqhashiya Primary School in Maqhashiya Village, located approximately 20 km south of Melmoth in KwaZulu-Natal.
- The objective is to provide a reliable, sustainable and cost-effective electrification solution, supported by a practical, safe and SANS 62305-compliant earthing and lightning protection system to ensure personnel safety, equipment protection and continuity of electricity supply.
- The project area is rural and includes dispersed homesteads across uneven, rocky and elevated terrain. Access is mainly via local gravel roads, with some households requiring river crossing and pedestrian bridge access.
- The proposed SHSs will be installed within individual household yards. The site includes residential dwellings, Maqhashiya Primary School, local access roads and a pedestrian bridge.

1. Solar Home System Description

Each Solar Home System (SHS) installation shall comprise, as applicable, a 5.4 kWp Solar PV array, 5 kW hybrid inverter, 5.3 kWh lithium battery system, telecommunications equipment, AC and DC protection systems, customer reticulation and metering interface equipment, and all associated civil, structural, electrical, earthing and lightning protection infrastructure required to provide a complete operational installation.

2. Contractor scope statement

The Contractor shall procure, supply, deliver, install, test, commission, document and hand over the complete Solar Home System works, including all associated civil, structural, earthing, lightning protection, equipment installation, quality control, health and safety, environmental management and rehabilitation requirements needed to provide a complete and compliant installation at each approved installation site.

The Contractor shall execute the works in accordance with the approved design drawings, project specifications, Eskom standards, applicable SANS requirements, manufacturer requirements, the Health and Safety Specification, and written instructions issued by the Engineer / Project Manager.

PART 4: SITE INFORMATION

Document reference	The Provision of Supervision, Labour, Equipment, Material (except for the Eskom Free Issue material, i.e Wooden Poles, Concentric Cable, Meters and Pole Top Split Meter Boxes) for the Electrification of 60 Off-Grid Connections at Maqhashiya Village using Solar PV and a further 12-month post installation maintenance in the KZN Operating Unit, Central East Cluster.	No of pages
C4	Site Information Description of the Site and Access Maqhashiya Village is a remote village about 20km South of Melmoth Town. Purpose is to Supply electricity to a residential Customers. There are a total of 59 household + 1 primary school (Maqhashiya Primary School) The community has been identified for potential electrification, using PV Solar Home Systems.	1

PART 4: SITE INFORMATION

The Provision of Supervision, Labour, Equipment, Material (except for the Eskom Free Issue material, i.e Wooden Poles, Concentric Cable, Meters and Pole Top Split Meter Boxes) for the Electrification of 60 Off-Grid Connections at Maqhashiya Village using Solar PV and a further 12-month post installation maintenance in the KZN Operating Unit, Central East Cluster.

Core clause 11.2(16) states

“Site Information is information which

- describes the Site and its surroundings and
- is in the documents which the Contract Data states it is in.”

In Contract Data, reference has been made to this Part 4 of the contract for the location of Site Information

General description

Maqhashiya Village is a remote village about 20km South of Melmoth Town. Purpose is to Supply electricity to a residential Customers. There are a total of 59 household + 1 primary school (Maqhashiya Primary School)

The community has been identified for potential electrification, using PV Solar Home Systems.

Existing buildings, structures, and plant & machinery on the Site

There are a total of 59 household + 1 primary school (Maqhashiya Primary School)

Hidden services

Not applicable

Other reports and publicly available information

Detailed in the Geotechnical Report, and all other Technical Documents uploaded as part of the enquiry documentation.