NEC3 Engineering & Construction Contract

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

and **…….**
(Reg No. _____)

for **Integrated Access Control**

Contents:

CONTRACT No. _____

Part C1: Agreements & Contract Data

Contents:

C1.1 Form of Offer & Acceptance

Offer

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

Integrated Access Control

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

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

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

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)		
Capacity		
for the Employer	**Eskom Holdings SOC Limited**	
	(Insert name and address of organisation)	
Name & signature of witness		Date

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

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

Note:

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

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		

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

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

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

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

[Instructions to the contract compiler: (delete these two notes in the final draft of a contract)

1. Please read the relevant clauses in the conditions of contract before you enter data. 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.

1. Some ECC3 options are always selected by Eskom Holdings SOC Ltd. The remaining ECC3 options are identified by shading in the left hand column. In the event that the option is not required select and delete the whole row. Where the following symbol is used "**[●]" -** data is required to be inserted relevant to the specific option selected.]

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

Clause	Statement	Data	
1	**General**		
	The *conditions of contract* are the core clauses and the clauses for main Option		
		A:	**Priced contract with activity schedule**
	dispute resolution Option	**W1:**	**Dispute resolution procedure**
	and secondary Options		
		X2	**Changes in the law**
		X5:	**Sectional Completion**
		X7:	**Delay damages**
		X16:	**Retention**
		X17:	**Low performance damages**
		X18:	**Limitation of liability**
		Z:	***Additional conditions of contract***
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)		
10.1	The *Employer* 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 *Project Manager* is: (Name)		
	Address	**1 Impala Road Hendrina Power Station**	

		Pullenshope **1096**
	Tel	
	Fax	**N/A**
	e-mail	
10.1	The *Supervisor* is: (Name)	
11.2(13)	The *works* are	**Integrated Access Control**
11.2(14)	The following matters will be included in the Risk Register	**PSR Authorisation with regards to Permit to Work.** **Any other matter posing a risk to the contract will be discussed amongst the Parties and agreed upon before being inserted on the Risk Register.**
11.2(15)	The *boundaries of the site* are	**Areas within the borders of Hendrina Power Station.**
11.2(16)	The Site Information is in	**Part 4: Site Information**
11.2(19)	The Works Information is in	**Part 3: Scope of Work and all documents and drawings to which it refers.**
12.2	The *law of the contract* is the law of	**the Republic of South Africa**
13.1	The *language of this contract* is	**English**
13.3	The *period for reply* is	**3 working days.**
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 *completion date* for the whole of the *works* is	**12 months after awarding contract.**
11.2(9)	The *key date*s and the *condition*s to be met are:	***Condition* to be met** / ***key date***
		1 **Safety file Approval** — **One week after the kick off meeting**
		2 **Submission of the program** — **4 working days after the kick off meeting**
		3 **Submission of the FRI that aligns with the program** — **4 working days after the kick off meeting**
30.1	The *access dates* are:	**Part of the Site** / **Date**

		1	**Site Access**	**After Safety file approval**
31.1	The *Contractor* is to submit a first programme for acceptance within	**5 days after the Contract Start Date.**		
31.2	The *starting date* is	**01 March 2024**		
32.2	The *Contractor* submits revised programmes at intervals no longer than	**No longer than one week. A revised programme shall be submitted on a weekly basis during the executions of the *works* provided there is an alteration.**		
35.1	The *Employer* is not willing to take over the *works* before the Completion Date.	**Only after the Completion of the whole works as per the program.**		
4	**Testing and Defects**			
42.2	The *defects date* is	**52 weeks after Completion of the whole of the *works*.**		
43.2	The *defect correction period* is	**3 days after notification.** **Will also be subject to the nature of the defect.**		
5	**Payment**			
50.1	The *assessment interval* is	**On completion of activities as assessed and agreed upon on the assessment date as per task order/activity schedule.**		
51.1	The *currency of this contract* is the	**South African Rand.**		
51.2	The period within which payments are made is	**14 working days after assessment and tax invoice submission.**		
51.4	The *interest rate* is	**zero percent above 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 (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**		
6	**Compensation events**			
60.1(13)	The place where weather is to be recorded is:	**Hendrina Power Station**		
	The *weather measurements* to be recorded for each calendar month are,	**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 09:00 hours South African Time**		

		and these measurements:
	The *weather measurements* are supplied by	**Refer to part 4 C4 of site information**
	The *weather data* are the records of past *weather measurements* for each calendar month which were recorded at:	**Hendrina Power Station**
	and which are available from:	**the South African Weather Bureau and included in Annexure A to this Contract Data provided by the *Employer***
60.1(13)	Assumed values for the ten year return *weather data* for each *weather measurement* for each calendar month are:	**As stated in Annexure A to this Contract Data provided by the *Employer*.**
7	**Title**	**The *Contactor* has no title to site materials purchased by the *Employer for* the project.**
8	**Risks and insurance**	
80.1	These are additional *Employer*'s risks	**As per *Employer* 's Risk Assessment.** **The *Project manager* compiles the Risk Register and refers to the *Contactor* on how to mitigate.**
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**	
A	**Priced contract with activity schedule**	**There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.**
11	**Data for Option W1**	
W1.1	The *Adjudicator* is	**Will be appointed when a dispute arises and other details to be advised in the event of a dispute.**
W1.2(3)	The *Adjudicator nominating body* is:	**the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.**
W1.4(2)	The *tribunal* is:	**Arbitration.**
W1.4(5)	The *arbitration procedure* is	**the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.**
	The place where arbitration is to be held is	**Johannesburg 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

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.**
X5 & X7	**Sectional Completion and delay damages used together**	
X7.1 X5.1	Delay damages for late Completion of the *section*s of the *works* are:	

section	**Description**	**Amount per day**
1	**Turnstiles of entrance**	**R 10 000**
2	**Turnstiles of exit**	**R 10 000**
Remainder of the *works*		

	The total delay damages payable by the *Contractor* does not exceed:	**10% of the contract value.**
X16	**Retention (not used with Option F)**	
X16.1	The *retention free amount* is	**0%.**
	The *retention percentage* is	**10% of the total task order.**
X18	**Limitation of liability**	
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**R0.0 (zero Rand)**
X18.2	For any one event, the *Contractor*'s liability to the *Employer* for loss of or damage to the *Employer*'s property is limited to:	**the amount of the deductibles relevant to the event described in the insurance policy format selected in the data for clause 84.1 above, which policy is available on** *http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx*
X18.3	The *Contractor*'s liability for Defects due to his design which are not listed on the Defects Certificate is limited to	**The greater of** • **the total of the Prices at the Contract Date and** • **the amounts excluded and unrecoverable from the *Employer*'s assets policy for correcting the Defect (other than the resulting physical damage which is not excluded) R3M first amount payable in terms of the *Employer* 's assets policy..**

X18.4	The *Contractor*'s total liability to the *Employer* 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 *Contractor's* total liability for the additional excluded matters is not limited.** **The additional excluded matters are amounts for which the *Contractor* is liable under this contract for** • **Defects due to his design 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 *works*, Plant and Materials),** • **death of or injury to a person and** • **infringement of an intellectual property right.**
X18.5	The *end of liability date* is	**(i) Three years after the *defects date* 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 *Employer* or the *Supervisor* before the *defects date*, without requiring any inspection not ordinarily carried out by the *Employer* or the *Supervisor* during that period. If the *Employer* or the *Supervisor* do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the *Employer* or the *Supervisor* to have discovered the Defect.**
Z	**The *Additional conditions of contract* 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 *Contractor* or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the *Contractor*, or any member thereof in the case of a joint venture, or its employees, agents, or 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 Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
Prohibited Action	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

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

employment in connection with this contract	

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 l 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 44 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 44 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 *Employer*'s 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 for [weather station]

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.

	Weather measurement				
Month	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	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
February	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
March	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
April	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
May	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
June	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
July	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
August	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
September	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
October	Data obtained from SA	Data obtained from SA	Data obtained from SA	Data obtained from SA	

	Weather Bureau	Weather Bureau	Weather Bureau	Weather Bureau	
November	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	
December	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	Data obtained from SA Weather Bureau	

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*

[Instructions to the contract compiler: (delete this notes before issue to tenderers with an enquiry) Whenever a cell is shaded in the left hand column it denotes this data is optional. If not required select and delete the whole row, otherwise insert the required Data.]

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 *Contractor* is (Name): Address Tel No. Fax No.	
11.2(8)	The *direct fee percentage* is The *subcontracted fee percentage* is	**%** **%**
11.2(18)	The *working areas* are the Site and	
24.1	The *Contractor's* key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job Responsibilities: Qualifications:	

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

	Experience:	**CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .**	
11.2(3)	The *completion date* for the whole of the *works* is		
11.2(14)	The following matters will be included in the Risk Register		
11.2(19)	The Works Information for the *Contractor*'s design is in:		
31.1	The programme identified in the Contract Data is		
A	**Priced contract with activity schedule**		
11.2(20)	The *activity schedule* is in		
11.2(30)	The tendered total of the Prices is	**(in figures)** **(in words), excluding VAT**	
B	**Priced contract with bill of quantities**		
11.2(21)	The *bill of quantities* is in		
11.2(31)	The tendered total of the Prices is	**(in figures)** **(in words), excluding VAT**	
C	**Target contract with activity schedule**		
11.2(20)	The *activity schedule* is in		
11.2(30)	The tendered total of the Prices is	**(in figures)** **(in words), excluding VAT**	
D	**Target contract with bill of quantities**		
11.2(21)	The *bill of quantities* is in		
11.2(31)	The tendered total of the Prices is	**(in figures)** **(in words), excluding VAT**	
F	**Management contract**		
20.2	Work which the *Contractor's* 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).*	

A	**Priced contract with activity schedule**	**Data for the Shorter Schedule of Cost Components**		
B	**Priced contract with bill of quantities**	**Data for the Shorter Schedule of Cost Components**		
41 in SSCC	The percentage for people overheads is:	**%**		
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	**Minus %**		
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**	**Category of employee**	**Hourly rate**	
62 in SSCC	The percentage for design overheads is	**%**		
63 in SSCC	The categories of design employees whose travelling expenses to and from the Working Areas are included in Defined Cost are:			
	If Option C, D or E is used	**Data for Schedule of Cost Components**		
23 in SCC	The listed items of Equipment purchased for work on this contract, with an on cost charge, are:	**Equipment**	**Time related charge**	**Per (time period)**
24 in SCC	The rates of special Equipment are:	**Equipment**	**Size or capacity**	**Rate**

44 in SCC	The percentage for Working Areas overheads is:	: **%**	
51 in SCC	The hourly rates for Defined Cost of manufacture or fabrication 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**	**Category of employee**	**Hourly rate**
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**	
61 in SCC & 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**	**Category of employee**	**Hourly rate**
62 in SCC & SSCC	The percentage for design overheads is	**%**	
63 in SCC & SSCC	The categories of design employees whose travelling expenses to and from the Working Areas are included as a cost of design of the *works* and Equipment done outside the Working Areas are:		
	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:	**%**	
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	**%**	

22 in SSCC	The rates of other Equipment are:	**Equipment**	**Size or capacity**	**Rate**

PART 2: PRICING DATA
ECC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	2
C2.2	The *activity schedule*	1

C2.1 Pricing assumptions: Option A

How work is priced and assessed for payment

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

Identified and defined terms	11 11.2	(20) The Activity Schedule is the *activity schedule* unless later changed in accordance with this contract. (27) The Price for Work Done to Date is the total of the Prices for • each group of completed activities and • each completed activity which is not in a group. A completed activity is one which is without Defects which would either delay or be covered by immediately following work. (30) The Prices are the lump sum prices for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

This confirms that Option A is a lump sum form of contract where the work is broken down into activities, each of which is priced by the tendering contractor as a lump sum. Only completed activities are assessed for payment at each assessment date; no part payment is made if the activity is not completed by the assessment date.

Function of the Activity Schedule

Clause 54.1 in Option A states: "Information in the Activity Schedule 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 Activity Schedule 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 Activity Schedule. The Activity Schedule is only a pricing document.

Link to the programme

Clause 31.4 states that "The *Contractor* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Ideally the tendering contractor will develop a high level programme first then resource each activity and thus arrive at the lump sum price for that activity both of which can be entered into the *activity schedule*.

Preparing the *activity schedule*

Generally it is the tendering contractor who prepares the *activity schedule* by breaking down the work described within the Works Information into suitable activities which can be well defined, shown on a programme and priced as a lump sum.

The *Employer*, in his Instructions to Tenderers or in a Tender Schedule, may have listed some items that he requires the *Contractor* to include in his *activity schedule* and be priced accordingly.

It is assumed that in preparing his *activity schedule* the *Contractor:*

- Has taken account of the guidance given in the ECC3 Guidance Notes pages 19 and 20;
- Understands the function of the Activity Schedule and how work is priced and paid for;
- Is aware of the need to link the Activity Schedule to activities shown on his programme;
- Has listed and priced activities in the *activity schedule* which are inclusive of everything necessary and incidental to Providing the Works in accordance with the Works Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;
- Has priced work he decides not to show as a separate activity within the Prices of other listed activities in order to fulfil the obligation to complete the *works* for the tendered total of the Prices.

- Understands there is no adjustment to the lump sum Activity Schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event.

An activity schedule could have the following format:

Item No.	**Programme Reference**	**Activity description**	**Price**

C2.2 the *activity schedule*

Use this page as a cover page to the *Contractor*'s *activity schedule*.

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
	This cover page	1
C3.1	*Employer*'s Works Information	59
C3.2	*Contractor*'s Works Information	1
	Total number of pages	61

C3.1: EMPLOYER'S WORKS INFORMATION

Contents

1 Description of the *works*

Installation of the Integrated access control

2 Executive overview

The physical access control system currently in use at Hendrina Power Station is a manual system in which details of employees, visitors and contractors are manually recorded and stored. The respective personnel will then access the station by only producing the access card to the security personnel. This system has proven to be ineffective in monitoring movement of personnel into and out of the station and does not comply with the Eskom Access Control Policy and the NKP Act 102 of 1980. The Works includes the procurement, delivery, installation, commissioning of an Integrated Access Control system at Hendrina Power Station.

The proposed change entails the addition of an electronic access control system which utilises both biometric card and card/pin access system at the North, South and Coal gate of Hendrina Power Station. This system will ensure that only authorised personnel are allowed into the station and that an audit trail of access to the station is available. The system will be designed, constructed, and commissioned as per site specifications, with minimal modifications of the infrastructure to increase the security levels. The system must employ readers, reader controllers and servers to achieve full functionality, as well as metal and X-ray scanning. Physical barriers will be employed in a form of turnstiles which will also be constructed through civil works, this means repurposing of the unused part of the induction room as a control room as well as repurposing of the current control room as a server room.

3 *Employer*'s objectives and purpose of the *works*

Access is to be controlled and monitored to ensure the ability to track movement into and out of Eskom Premises (32-1134: Access Control at Eskom Premises Policy). The IAC system will be a class 4 system, meaning BIOMETRICS AND/OR UNIQUE ACCESS CARD will be utilised to be granted access into the station, the supplier of the system shall indicate the classification of the system in accordance with Global Accepted Security Standards 4.1 of SANS 2220-2-1. Priority is given to the biometric system

This system will ensure that only authorised personnel are allowed into the station and that an audit trail of access to the station is available. Based on the design inputs from stakeholder requirements, NKP requirements, and mostly the Specification for Integrated Access Control System (IACS) for Eskom Sites the integrated access control system must comply with the Eskom Access Control Policy and the NKP Act 102 of 1980.

A description of the system processes is as follows as depicted in figure 1:

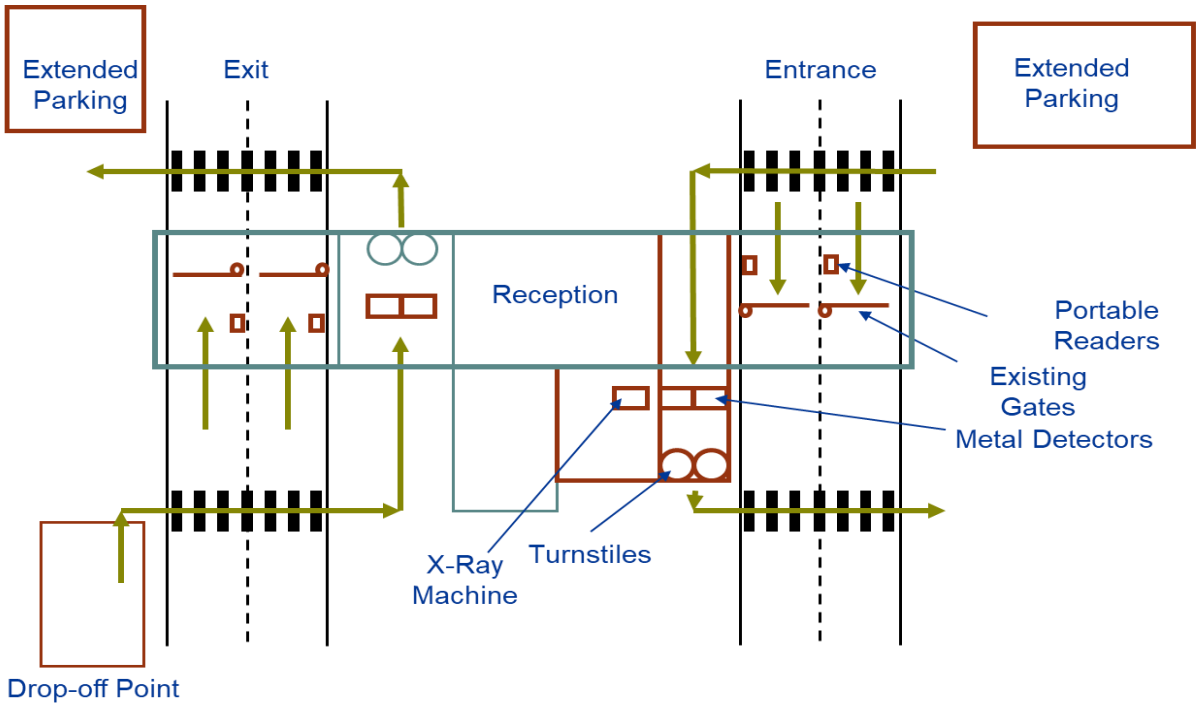

Figure 1: Proposed Access control infrastructure changes.

Vehicles enter and leave through gates by scanning the driver's access attributes.

- Passengers and pedestrians enter through turnstiles with a biometric/card tap system
- Attribute contains employee information including information from HR and Medical Centre.
- Employees will not be permitted through the turnstile in the case of expired medical examination or expired safety induction. In this case security will be able to grant access to the employee so that their documentation may be updated.
- The time of entry/exit of the employee will be logged and this information will be available to HR
- Visitors are required to first go to the reception and obtain a visitor's card for entry after induction. This card must be returned to security via a drop-box upon leaving the station.
- Turnstile gates must be accompanied by bag scanners walk-through metal detectors. These will require security personnel to manually check for unauthorised objects entering or leaving the station
- Temperature scanning will be manually checked before entry into the station as per Covid-19 regulations
- In the case of an emergency turnstiles can be manually operated.

4 Interpretation and terminology

Definition	Description
Critical Asset	Facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of the electricity supply network.
Critical cyber assets	Cyber assets essential to the reliable operation of critical assets.
Cyber Asset	Programmable electronic devices and communication networks including hardware, software, and data.
Cyber Security	Cyber security is the collection of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies that can be used to protect the cyber environment and organization and user's assets. Organization and user's assets include connected computing devices, personnel, infrastructure, applications, services, telecommunications systems, and the totality of transmitted and/or stored information in the cyber environment. Cyber security strives to ensure the attainment and maintenance of the security properties of the organization and user's assets against relevant security risks in the cyber environment. The general security objectives comprise the following: Availability Integrity, which may include authenticity and non-repudiation Confidentiality
Fail Safe	A device or practice that in the event of a specific type of failure, responds or results in a way that will cause no harm, or at least minimizes harm, to other devices or to personnel
Fail Secure	A device which, if (or when) it fails, does so in a way that will cause no harm or at least a minimum of harm to other devices or danger to personnel, and doesn't cause the system to be insecure
Gooseneck	Pedestal used to install card readers or intercoms at drive-up and pedestrian access points
Access Control	In physical security, refers to the practice of restricting entrance to, exit from, and within a property, building or designated area to authorized persons, vehicles, tools, equipment and materials. Access control can be achieved through manual or technological means, or in combination. The principles of access control require the integration of hardware (physical barrier devices), software, people and procedures.
Access Control System	Access Control Systems are designed to determine who and what are allowed to enter or exit, and when they are allowed to enter and exit. These systems will normally keep a record of authorised entry and must also identify attempts of unauthorised access or egress. They also provide real-time data on persons/machinery on the premises to assist responders in the event of an emergency.
Application System	An Application System is a computer program designed to solve a particular business problem or to be used for a particular user-defined requirement. It could be in-house developed or bought and customized, configured for Eskom e.g. SAP, Maximo.
Basic Design	Describes the stakeholder needs (with a process focus), to be delivered by the proposed business solution. Defines the business solution requirements in terms of narratives, information flow, business rules, people, application systems and the required governance elements.
Conceptual Design	High level statements of the business need, aligned to the organisational strategy, with a focus on the high-level processes, linking it to the business objectives and the process objectives.
Functional Responsibility	Process owner

General Access	Security permissions which allow access to Eskom general areas.
Group Security	Formulates security policy and strategy and establishes security governance mechanisms.
Informative Reference	Refers to documents that are used as additional information or useful information that relates to the PCM.
Measure	A unit of information that provides meaningful insight into an activity or event. It may be an aggregate or summation.
Normative Reference	Normative references are references that are indispensable for the application of this document, i.e., documents to be used together with this document. This refers to the Eskom Policies, Procedures, Standards and Guidelines, or legislation that establishes the governance over the process and to which users of the PCM must comply.
Record	A Record is defined as data generated as a result of business activities. A class of records can be added to a Records register. Content based records cannot be amended, as this would invalidate their content. The information is historical and it includes documents stating results of activities performed (examples: archived e-mail, previous versions of controlled documents, minutes of meeting, Correspondence, Data files, Drawings, Lists, Checklists, Logs, Meeting documents, Registers, Reports, Source code and Statements).
Risk	A Risk is defined as an event, hazard, variance, or an opportunity, which could influence the achievement of Eskom's strategic, operational and compliance objectives, for example noncompliance with legislation, fraud, natural disasters or competition. Risk is a measure of uncertainty. The chance of something happening that will have an impact on objectives. In the business process, the uncertainty is about the achievement of objectives.
Security Operations	Provide security services to the organization.
Security Solution	A security solution is the appropriate solution, method, technique or skill to address a security gap / deficiency or satisfy a need or objective. A security solution could include a physical, logical, technical system, application, barrier, procedure, guard force, monitoring, response, executive protection programme.
Security Technical System	A security technical system relates to a specific field or subject in Security Management, and it consists of a combination of interrelated interacting artefacts and components designed to work as a coherent entity to limit, prevent or eliminate the exposure to a security threat.
Specific Access	Refers to security permissions which allow access to any Eskom areas above general areas, requiring additional authorization.

The following abbreviations are used in this Works Information:

Abbreviation & Acronyms	**Description**
C&I	Control and Instrumentation
CCCC	Central Change Control Committee
EC	Engineering Change
ECM	Engineering Change Management
IAC	Integrated Access Control
NKP	National Key Point
PCM	Process Control Manual
OEM	Original Equipment Manufacturer

Abbreviation & Acronyms	Description
RACI	Responsibility, Accountability, Consult and Inform
RFID	Radio Frequency Identification
ROC	Required Operational Capability
SANS	South African National Standards
SHE	Safety, Health & Environmental
SRD	Stakeholders Requirements Definition
VPN	Virtual Private Network
QIP	Quality Inspection Plan

5 Management and start up.
6 Management meetings

After contract award*, Project Manager schedules* a kick-off meeting to discuss the execution requirements.

Kick-off meting specifies how the *Contractor* will meet the project objectives and confirm that the *Contractor* understands the required works, and programme to execute the requirements of this contract.

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

Title and purpose	Approximate time & interval	Location	Attendance by:
Overall contract progress and feedback	Every second week on a day and time agreed upon by Parties. This is subject to change depending on the requirement.	To be confirmed by the *Project Manager*	*Contractor/s, Project Manager, and other Project stakeholders.*
Early Warning, Risk register, risk reduction and compensation events meeting	As and when required	To be notified by the *Project Manager*	*Contractor/s, Project Manager, and other Project stakeholders.*
Kick-off meeting	To be notified by the Project manager after official contract is placed.	To be notified by the *Project Manager*	*Contractor/s, Project Manager, and other Project stakeholders*
Interfacing meetings	As and when required	To be confirmed by the *Project Manager*	*Contractor/s, Project Manager, and other Project stakeholders*

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

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

7 Documentation control

All contractual communications are in pdf format or forms attached to emails and not as a message in the email itself. Letters are typed and signed by the Contractor and delivered either in e-mailed to the Project Manager.

Standard NEC templates adhere to and are used for letters and to issue communication.

The routing of all written communications is between the Project Manager and the Contractor only. Any agreement between the Contractor and any other person representing the *Employer* which has not been routed via the Project Manager is unacceptable and invalid.

Any instructions written or verbal resulting in any changes to the duration, quality, and cost of the project to only be received from the Project Manager.

All reports are compiled in Word format, in English, and submitted electronically as pdf to the Project Manager. Hardcopy reports (which are deemed originals) are counter signed by the Contractor's line of authority for authenticity and quality verification after finalisation for purposes of record keeping.

Note: All drawings are created in the required format which is Microstation version 7/8 SE, according to the specified drawing format and standards 36-945, 36-945, 36-946. Accompanying the new drawings is the item list with full component descriptions. *Contractor* refers to the drawing standard issued by the Project Manager. The drawing is approved and officially handed over (original signed copy & editable soft copy on CD), via the Project Manager, to the *Employer.*

Copies of all documents relating to the works are retained by the *Contractor* in hardcopy format as well as electronic format (pdf format for signed documents) for 5 years

8 General

- The *Contractor* is informed that documentation control is a crucial element in the project and the sign-off of the project and various stages will depend on the available, submitted and approved documentation in the possession of the *Project Manager* so signed off by the *Project Manager*, Engineering representative and *Documentation Centre Configuration Manager* of Hendrina Power station. Documentation not complying with the set standards and requirements of the Eskom Hendrina Power Station's Configuration management guidelines, procedures will not be accepted and will constitute non-payment and breach of contract.
- The *Contractor's* document system complies with ISO 9001 requirements and is comprehensive in management and control of the documentation for each of the units based on a master document. The documentation requirements cover the various engineering stages, from the design stage through fabrication, installation, testing, commissioning,

operating, maintenance and training stage of the project. Not only must these documents be comprehensive and complete but must comply with strict document control and revision procedures.

- The *Contractor* provides the configuration management (CM) plan, at tender, that will be implemented in line with the ISO 10007 Guidelines for Configuration Management. The CM plan should reflect where Configuration Management is in the project Structure, a technical document and record management procedure as well as the Change management procedure the *Contractor* will be using.

- The *Contractor* plans the supply of the documentation during the various project stages and provides the documents in accordance with the key scheduled project milestone dates.
- All the drawings issued by the *Employer* for this contract is copyright protected and are not to be copied by the *Contractor* or shared with any third party without the *suppliers* consent.
- The *Contractor* submits all documentation on a formal transmittal form in triplicate to the *Project Manager.* All manuals, guidelines, procedures, general documents and formal engineering documentation shall be presented in British English.

The following general assumptions are made:

- The *Contractor* will be able to understand the historic documentation and provide a solution to the proposed changes required to the plant
- The *Contractor* understands that this is a live plant that will be running and that the works needs to be planned to ensure that the plant switchover is smooth and without incident as this could result in environmental excursions, production loss and injury.
- The *Contractor* understands the dynamics of control system to the extent that the software will not pose a threat to the operations and safety of the site and operating staff alike.

9 Documentation Control and Management

- A comprehensive documentation management system is provided. All documentation is maintained and updated until *Completion*. Any change is propagated automatically to all related documentation. All documentation forms an integral part of the documentation system.
- The KKS plant position codes are identified in the documentation. KKS codes, down to third level, are to be used. The *Contractor* includes the *Project Manager* accepted drawing head on all drawings submitted to the *Project Manager*. The format of all documents is submitted to the *Project Manager* for acceptance.
- Automatic prevention of duplication of numbering or ambiguity is built into the system.

10 Process for Documentation Submission

The layout and format of all documentation deliverables must be in accordance with the Gx Projects Documentation Deliverable Requirements Specification (240-65459834) and Engineering Drawing Standard (240-86973501). All documentation submitted must be accompanied by the completed transmittal with the following fields as a minimum: (Refer to 240-71448626 - Project Plant Specific Technical Documentation Transmittal Template.)

i. Name of the Package and system
ii. Name of Contractor
iii. Transmittal Number
iv. Contractor Details
v. Date of Submission
vi. Description of Document
vii. Document Number
viii. Document revision
ix. Document type
x. Document media type
xi. Number of copies
xii. Purpose of submission
xiii. Document PBS
xiv. Signed by and date

For review purpose, all documentation is submitted, by the *Contractor*, in native electronic format and PDF format as described in Gx Projects Documentation Deliverable Requirements Specification (240-65459834), and all drawings as prescribed in the Engineering Drawing Standard – Common Requirements (240-86973501), Final documentation is submitted in both electronic and hard copies to the Project and Hendrina Power station Documentation.
The *Contractor* is to supply four (4) hard copies and two (2) electronic copies of all drawings, specifications, operating manuals and instructions that are required to maintain and operate the assembly prior to commissioning of the plant.
Submission of documentation deliverables must be in accordance to the task completion or no later than 14 calendar days after completion of task.
The Contractor submits all documentation to the Project Manager and/or the Configuration Manager:

i. Electronic copies shall be submitted to the *Project Manager*. The email subject as a minimum has the following: ***(Station_Project Name_Discipline_Subject)***. The project's Document Controller is copied on submission. Electronic copies that are too large for email is delivered on CD/DVD, large file transfer protocol and/or hard drives to the Project Documentation Centre.
ii. All the submission by the *Contractor* must be accompanied by the Transmittal note.
iii. By acknowledging receipt, the *Contractor* signs and sends the transmittal note back to the *Employer* within 2 working days.

11 CAD Systems

The *Employer* uses an Intergraph Micro Station as the CAD system. All drawings supplied under this contract will be in the required Micro Station CAD format Acceptance is obtained from the

Project Manager for the format, content, layout and quality of all drawings supplied as part of the *Works* and is included in the documentation synopsis.
The *Contractor* shall supply all drawings in the required format which is Microstation version 7SE/8i, according to the specified drawing format and standards 36-945, 36-945, 36-946. Accompanying the new drawings will be the item list with full component descriptions. Drawings not complying with the Standards will not be accepted by the *Employer*. The *Contractor* should factor the cost of creating the drawings in the in the required format as part of the quotation submitted for tender approval.
The *Contractor* shall contact the *Supplier's Project Manager* or drawing office *Configuration* manager in writing for other related information or clarity on drawings related matters.
At the completion of the last stage of the *Works*, the *Contractor* supplies a copy of uncompressed data files reflecting all latest revisions of all drawings. Any programme software licenses and agreement for software packages that are used for the *Works* form part of the *Works* and are handed to the *Project Manager*.

After completion of the drawings all shall be submitted to the *Project Manager* for approval by the *Engineer* during this time request shall be made for:
1. Verification of the application of the drawing standard and format.
2. Allocation of drawing numbers.
3. Allocation of KKS codes.

The *Supplier* approves/signs all blocks in the title blocks except for "KKS APP" block. The *supplier* will sign the following blocks prior to final submission after approval of all the concerned parties:

AUTH BY: by the *Supplier s Engineer*

CHCKD BY: by the *Supplier Engineer / Technician*

APPROVED BY: by the Supplier Senior / Site Manager
The *Contractor* shall ensure that the final Drawings are officially approved, signed and handed-over to the *Project Manager* in the correct size accompanied by an editable soft copy in DNG on a CD. The *Project Manager* shall ensure that the all documental data is handed over the design and specifications department.

12 Cabling Documentation

The *Contractor* provides the cabling documentation for the control and power cables for the monitoring and protection systems. The *Contractor* provides the cable schedules inclusive of origin, target, type and size specification for all new cables required for the *Works*. The *Employer* assists with the assignment of cable numbers for all cables installed.
The *Contractor* provides a cable management system for duration of the *Works*, for acceptance by the *Project Manager.*
The *Contractor* provides the termination schedules for all cables that form part of the *Works*. The *Contractor* transfers all cable schedule information in electronic format (MS Office). A printout of the cable information contained on the disk serves as the official documentation.
The cable information supplied by the *Contractor* should also include all the relevant information regarding the cables that are decommissioned as part of the *Works.*

13 Documentation Review and Turn-around

All document review periods are as the reply period in the Contract data. Design review, as per design review procedure (240-53113685), response period will be 2 weeks.

All correspondences are recorded in a formal letter with the letter head and must have correspondence number as agreed with the *Project Manager* A register of all correspondences is kept by both the *Project Manager* and *Contractor*. The *Contractor* submits a report of the updated register to the *Project Manager* on a monthly basis. The correspondence register must contain the following information as a minimum:

i. Correspondence number
ii. Date of issue
iii. Description of the correspondence
iv. Reference numbers to previous correspondences
v. Package specific email address need to be created and referenced to.

14 Data

The *Contractor* supplies descriptive data including but not limited to equipment list, price schedules, and speciality item lists in Ms Excel compatible to the ***Employer's*** latest version. Compliance to this requirement does not constitute compensation event. The aforementioned lists contain the following fields for each item as a minimum:

i. Functional location
ii. Tag ID (consistent with *Employers* specifications)
iii. Description
iv. Associated drawing and document names (that contain references to this item)
v. Approval status

15 Health and safety risk management

Contractor:

- Provides qualified Safety Officer to be on site for the duration of the project
- Provides a risk management plan identifying measures used to preserve safety.
- Provides a detailed risk assessment identifying all safety hazards and mitigation measures. Reference to be made to the *Employer 's* Risk Assessment for all risks related to the work.
- Complies to take responsibility that all risks associated with executing the required *works* are identified, recorded and managed.
- The *Contractor* ensures that all his personnel attend a Health and Safety Induction Course presented by Safety Officers, Monday to Friday – 09:00 to 10:00, free of charge prior to commencement of any works. This is a two (1) hour course and is valid for the duration of one (1) year at Hendrina Power Station.
- Conducts Toolbox Talk and inspects all PPE before any work commences and retains written proof of such actions.
- Performs daily activity safety risk assessment in line with a daily site register. Upon request by the *Employer,* this is to be provided to the *Project Manager.* The *Contractor* works strictly to regularly updated risk assessment. No work shall be carried out without the risk assessment identifying all the risks and the mitigating strategies in place in order to address the identified risks.

- *Employer compiles* a baseline safety risk assessment to identify all the possible risks during the implementation of the project. The risk assessment includes all the mitigating strategies in order to minimise all the possible risks.

- *Employer provides* the *Contractor* with the baseline risk assessment to use it as a minimum requirement to compile a risk assessment identifying all the risks before the implementation commences the risk assessment compiled by the *Contractor* will clearly show all the mitigating strategies to minimise all the possible risks.

- *Contractor* complies with the health and safety regulations prescribed by law of any statutory authority. In particular, this is the Occupational Health and Safety Act (No 85. of 1993, as amended), and all regulations and operating procedures made thereafter.

- The *Contractor* ensures safety awareness at all times through continuous training

- The *Contractor* is at all times responsible for the supervision of his employees, agents and Sub-Contractors and takes full responsibility and accountability for ensuring that they are competent, compliant and aware of the legal requirements and other requirements and execute the *works* accordingly.

- The *Contractor* immediately reports any incidents, disabling injury, near miss, first aid incident as well as any threat to health and safety of which it becomes aware at the *works* or on the Site to the Project Manager.

Furthermore, *Contractor* complies with the health and safety requirements prescribed as follows:

i. Hendrina Power Station Safety, Health and Environmental Specifications for Principal Contractors (HSPHO/058).
ii. Provision of a First Aid service to his/her employees. In the case where these prove to be inadequate, like in the event of serious injury, the *Employer 's Medical* centre and facilities will be available. Outside the *Employer 's* office hours, *Employer 's* First Aid services are only available for serious injuries and life-threatening situations. *Employer recovers* the cost incurred, in the use of the above *Employer 's* facilities from the *Contractor.*
iii. Complies that no personnel are transported on any open vehicles. Personnel may only travel in a vehicle with SABS seating and safety belts.

The *Employer,* or any person appointed by the *Employer,* may, at any stage during the term of the contract:

i. Conduct health and safety audits by a competent person regarding all aspects of compliance with the SHEQ Requirements, at any off-site place of work, or the site establishment of the *Contractor.*
ii. Refuse any employee, Sub-Contractor or agent of the Contractor access to the premises if such a person has been found to commit an unsafe act or any unsafe working practice or is found not to be competent or authorized.
iii. Issue the *Contractor* with a stop order, should the *Employer* become aware of any unsafe working procedure or condition or any non-compliance.

The *Contractor* immediately reports any incidents, disabling injury, near miss, first aid incident as well as any threat to health and safety of which it becomes aware at the *works* or on the Site to the Project Manager.

The *Contractor* agrees that the *Employer is* relieved of any and all of its responsibilities and liabilities in terms of the Occupational Health and Safety Act no 85 of 1993 in respect of any acts or omissions of the *Contractor*, and the Contractor's employees, agents or Sub-Contractors, to the extent permitted by the Occupational Health and Safety Act no 85 of 1993.

The *Contractor* ensures supervised and authorised entry into the plant.

16 Environmental constraints and management

- *Contractor* provides strategy identifying measures how the execution of the *works* does not contravene environmental compliance.
- All *works* are executed within the site boundaries provided by the *Employer*
- Non-hazardous waste and rubble induced from executing the works is disposed at the landfill site.
- Hazardous material to be disposed at a permitted landfill site, at which *Contractor* provides safe disposal certificate, this to be approved by the *Project Manager.*
- Contractor submits environmental requirements compatible with the site conditions and constraints of the project.
- Contractor submits Environmental Management Plan (EMP) before the execution works start. EMP how environmental risks and impacts of the road rehabilitation works are prevented and mitigated. Project Manager approves.
- The *Contactor* takes note of the road conditions during this period.
- If there is uncertainty around the any environmental issues, the Environmental Department at Hendrina Power Station may be contacted on 013 296 3011 or 013 296 3910 or 013 296 3013.

Contractor complies that all machinery/equipment used during execution of the *works* conform to all applicable environmental legislation. In particular, the *Contractor* complies with the:

i. Environmental Management System (ISO 14001:2004)
ii. Hendrina Power Station Environmental policy (HSPPPIN005)
iii. Hendrina Power Station Environmental Emergency Preparedness Procedure (HSPPIN032)
iv. Hendrina Power Station Waste Management Procedure (HSPPIN003)

EMS Non-Conformance, Corrective and Preventative Action (HSPPIN034)

17 Quality assurance requirements

The supplier of the system shall indicate the classification of the system in accordance with Global Accepted Security Standards; 4.1 of SANS 2220-2-1, the classification being related to the nature of the risk, level of security that the client has specified and the level of security that is provided. The contractor should provide the detail QIP that meets the operational plan of the system. All the stages of the system development need to be to communicate and observed by the system engineer or any representative of the employer. The final design needs to be approved by the system engineer prior construction can commence with all the relevant documentation, such as the drawings, manuals, etc.

The following documents contain provisions that, through reference in text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. These documents are subject to revision, parties using this document are encouraged to apply the most recent edition of the documents listed in the following paragraphs.

18 Normative

[1] ISO 9001 Quality Management Systems.
[2] SANS 2220-2-1 - Access control systems Part 2-1: General characteristics
[3] SANS 2220-2-2 - Access control systems Part 2-2: Central processors
[4] SANS 2220-2-3 - Access control systems Part 2-3: Card readers
[5] SANS 2220-2-4 - Access control systems Part 2-4: Reader controllers
[6] SANS 2220-2-5 - Access control systems Part 2-5: Biometric readers
[7] SANS 2220-2-6 - Access control systems Part 2-6: Access cards

[8] SANS 2220-1-7 - Electrical security systems Part 1.7: Intruder alarm systems: Power units
[9] SANS 61000-1-2 - Electromagnetic compatibility (EMC) Part 1-2: General – Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena
[10] 240-55410927 - Cyber security standard for Operational Technology
[11] 240-55683502- Definition of Operational Technology (OT) and OT / IT Collaboration Accountabilities
[12] 240 – 56872313 - Radio Station Earthing and Bonding
[13] 240 – 56356396 - Earthing and Lightning Protection Standard
[14] TST41-877 - Transmission Substation Design Earthing Standard
[15] 240-56360034 - Stationary Vented Lead Acid Standard
[16] 240-56360086 - Stationary Vented Nickel Cadmium Batteries Standard
[17] 240-51999453 - Specification for Valve Regulated Lead Acid Cells
[18] 32-1203 - Eskom Telecommunications User Requirements Specification
[19] 240-94136376 - IP Voice and Data Network Design Guideline
[20] 240-79669677 - Demilitarised Zone (DMZ) designs for Operational Technology
[21] 240-46264031 – Fibre Optic Design Standard – Part 2: Substations
[22] 32-438 - Information Security Systems Classification Standard
[23] IEC 62645 - Nuclear Power Plants – Instrumentation and Control Systems-Requirements for Security Programme for Computer-based Systems
[24] 240-71432150 - Plant Labelling and Equipment Description Standard
[25] 240-86738968 - Specification for Integrated Security Alarm System for Protection of Eskom Installations and its Subsidiaries

19 Informative

[26] 240-78980848 - Specification for Non-Lethal Energized Perimeter Detection System (NLEPDS) for protection of Eskom Installations and its subsidiaries
[27] 240-79537982 - Security Threat and Risk Assessments
[28] 240-44175038 - Control of Non-Conforming Product or Service Procedure
[29] 240-91190304 - Specification for CCTV Surveillance with Intruder Detection
[30] 240-56737448 - Fire Detection and Life Safety Design Standard
[31] 240-64720986 - Emergency Preparedness Public Address System - For Large Area Deployment
[32] 240-64636794 - Standard for Wiring and Cable Marking in Substations
[33] 240-70413291 - Specification for Electrical Terminal Blocks

20 Programming constraints

Submission of revised programmes and progress reporting

On a weekly basis, *Contractor* submits electronic copies (pdf and MS Project Format) of the revised programme and schedule progress report to the *Project Manager* for acceptance. All formally issued reports follow the progress reporting requirements as stated below.

Daily Site register/dairies

i. *Contractor* develops a daily site register/diary detailing the works to be carried out on daily basis and to be in line with the accepted programme
ii. Daily site register/diary is signed by both the *Contractor* and the *Project Manager.*
iii. *Contractor* complies that all workers are accounted for in the daily site register/diary with their signatures

Monthly progress report

The contents of the report may vary from month to month depending on the phase of the project and/or the items of management focus. The basic framework of the report consists of the following:

i. Narrative in an executive summary format identifying major movement within the reporting period.
ii. Programme summary narrative
iii. Progress and performance summaries
iv. Sectional completion and Key Milestone status
v. Key issues/items of concern and corrective actions
vi. Cost and cash flow
vii. Early warning log
viii. Compensation event log

21 *Contractor*'s management, supervision and key people

Contractor submits an organogram to the *Project Manager with* key personnel. *Contractor* appoints qualified and competent site manager, technician/s, safety officer and foremen. Resource allocation abides to their respective function. These resources are present for the duration of the *works*. Daily site register to be signed with all the resources specified.

Contractor complies with provision of key people required to successfully execute the *works*. Resource allocation is clearly reflected on the activity programme they are required to execute, and duration stipulated. During the execution of the *works*, registers or time sheets of the *Contractor's* employees is kept for contract records.

Management indicated on the *Contractor's* organogram avail themselves immediately when required to resolve matters that may impact on the accomplishment of the works.

Reference is to be made to the technical evaluation criteria for further requirements documenting the control measures to mitigate technical risks.

22 Invoicing and payment

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)

23 Insurance provided by the *Employer*

As per ECC3 Core Clause 87.1.

24 Contract change management

Contractor communicates any contract change to the *Project Manager* for approval.

25 Provision of bonds and guarantees

The form in which a bond or guarantee required by the *conditions of contract* (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer*'s right to termination stated in this contract.

26 Records of Defined Cost, payments & assessments of compensation events to be kept by the *Contractor*

Contractor keeps all records of costs incurred during the *works* and makes it available to the *Project Manager* upon request.
No standing time claims will be entertained without the relevant proof of presence and activity in the form of a time sheet.
Proof of expenses must be provided to the *Employer* as a hard copy as well as a soft copy.

27 Training workshops and technology transfer

The *Contractor* to offer training after the completion of the works before the project is handed over to the *Employer*.

28 Engineering and the *Contractor*'s design

This section of the document provides the scope for the design, procurement, fabrication, delivery to site, erection, modification of existing infrastructure, cold and hot commissioning, performance testing and documentation of the entire engineering *Works* to ensure a fully functional Integrated Access Control system at Hendrina Power Station, herein after referred to as the *Works*.

The Contractor designs, supplies, delivers, construct, tests, commissions and hands-over all aspects as mentioned in this document and supporting for the fulfilment of the Works.

The engineering change focuses on the installation of Access Control Equipment at the main access points to Hendrina Power Station. The Contractor will be required execute the system upgrade and his work will include, complete design, provision of all required materials, installation and commissioning including the decommissioning of the existing system, as well as to address defects identified during the process.

29 Background

Eskom is a high-performance entity that consists of valuable information, equipment and staff members. The Eskom policy for access control states that access is to be controlled to ensure the ability to track movement into and out of Eskom Premises as well as to ensure that only authorised personnel and equipment are permitted on site. The implementation of the access control policy aims to mitigate risk on Eskom premises. Assessment of the current physical access control system has proven that the manual physical access control methods are insufficient in monitoring

and controlling movement of personnel and equipment into and out of the station. This project lays a foundation for future implementation of a complete IAC security system at these access points.

The scope of this project entails the implementation of a security system that must ensure an increased standard of safety for personnel and equipment defined for this project. The success of this project will depend on the installation of new equipment to limit access and log events as they occur. To successfully achieve this outcome, the following must be done:

- Standardise access control measures, systems, procedures and processes at station access points.
- Use a standardised and integrated access control system at station access points.
- Enhance safety and security at Hendrina Power Station.
- Improve integrity and accuracy of access control data / information as per Eskom defined standard.
- Reduce opportunities for crimes to be committed e.g. theft, fraud and trespassing.
- Ensure compliance to legal and regulatory requirements applicable to physical security.
- Ensure confidentiality of obtained personal information is maintained across Eskom.

Based on the recommendations from Group Security and requirements from Hendrina Site the relevant design requirements were developed, design specifications were also developed from stakeholder requirements, NKP requirements, and mostly the Specification for Integrated Access Control System (IACS) for Eskom Sites.

30 *Employer*'s design

As per technical specification report.

31 Functional Requirements

The functional requirements refer to what the system should do.

The system is required to have capability to:

- Store and record the history of access to the various entry points by:

1. Time
2. Date
3. Personnel identification number (Unique number)
4. Tell whether the person entered the site and left or not.
5. Number of entries, per day, week and month.
6. Image of the person.

- Locally as well as remotely access the system. The master server will be able to add and remove personnel from the list of access, and to view history.
- Incorporate information from HR and medical centre to prevent employees with expired medicals from entering the station.
- Incorporate information from Safety such as Safety induction. Be able to warn employees and manager one month prior the expiry of safety induction and prevent employees with expired induction from entering the station
- Automatically suspend access after a predetermined time or emergency conditions.
- Enable easy access (manual operation) in the case of an emergency.
- Control access via access cards and biometrics in a redundant format as per location, and the ability to perform random spot checks
- Incorporate thermal scanners to monitor temperature of employees entering or exiting the station as per covid-19 regulations.

- Allow reprogramming of access attributes, by security personnel if necessary.
- Transfer data to SAP for Time and attendance data.
- There shall be time synchronization between field devices and server network such that transaction records are automatically uploaded from each reader to the relevant database.
- Automatically suspend access after a predetermined time or emergency conditions.
- Ensure that card pass-backs and tailgating at the turnstiles does not occur.
- Physical barriers are supposed to be installed.

3.2.2 Performance Requirements

- Full system redundancy. This will allow local systems to function independently of one another in the event of system failure or loss of power. Thus, a redundant system on all hardware/software dependent systems will ensure 100% up time.
- Monitoring of system health to determine for example, if hardware is still within life cycle and undamaged, and to indicate when a system redundancy is compromised.
- Manual override/bypass for cases of emergency or system failure.
- Must be user friendly to operators and personnel entering/leaving the station.
- The system must be designed to allow for future expansion of the IAC system and interfacing of other security/monitoring equipment.
- Servers will have a capacity to store data for a minimum of 5 years.
- Redundancy measures will be used to ensure that the data is not lost. This includes redundant servers, power supplies and UPS.

32 Design Assumptions

The IAC system will be a class 4 system, meaning biometrics and/or unique access card will be utilised to enter the station, the supplier of the system must indicate the classification of the system in accordance with Global Accepted Security Standards 4.1 of SANS 2220-2-1. The already existing infrastructure will be utilised with minimal modifications to fit in the installation of the IAC, no boom gates will be installed since a portable scanner will be used to scan the driver's access card and license disc of the vehicle, this will be registered together in order to monitor and account accordingly. Storage of data will be on servers located in the server room.

A minimal change on the infrastructure will introduce two turnstiles at the entry side of the North gate, hence in total there will be four turnstiles, then two more at the South Gate for entry and exit. Each turnstile will be equipped with walk-through metal detectors, a fixed card reader and the temperature scanning will be manually checked before entry into the station as per Covid-19 regulations. There will be no boom gates, hence only the vehicle and the driver will use the vehicle entrance/exit section, a portable scanner will be used to scan the driver's access card and license disc of the vehicle, this will be registered together in order to monitor and account accordingly. The latter concept will be applied at the coal gate where a portable scanner that will be used to scan the driver's details and the corresponding license disc of the truck. The scanners/readers and controller forms part of the major components of the first sub-system of the whole system.

The second sub-system is the communication network between the readers and controllers as well as the communication with the servers for processing and the database for storing of information. The major components of the communication network are the switches, cabling in between the readers and controllers and between the controllers and the servers. This is categorized as a sub-system since the effectiveness of the IAC system solely depends on how fast the transmitting of information from one sub-system to the next is. The third and fourth sub-system are the processing servers with the data bases for information storage and the registration stations with the client stations, respectively. The graphical representation of the system is assumed to be depicted in figure 2.

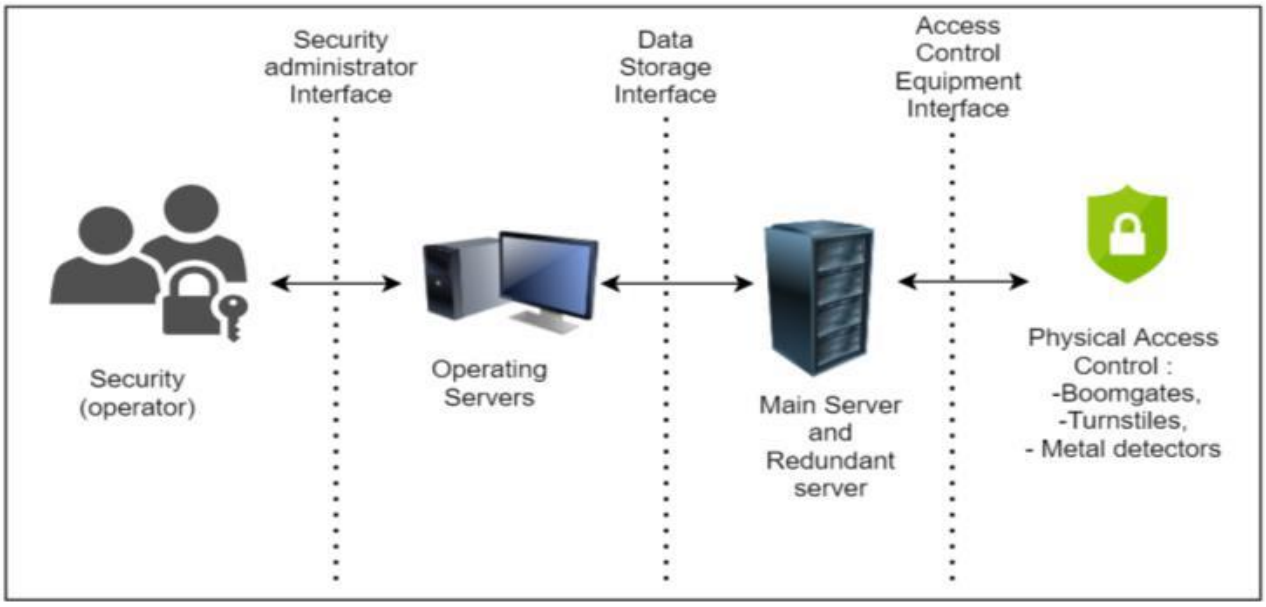

Figure 2: Key functional processes and their interfaces.

The system will compromise of the following major components, with the system topology depicted in figure 3.

- Servers
- Biometric Wiegan readers
- Reader/Door Controllers.
- Network switches
- Registration workstation
- Enrolment readers
- Card printers
- Webcam
- Client Workstation
- Physical barriers and controls
- UPS

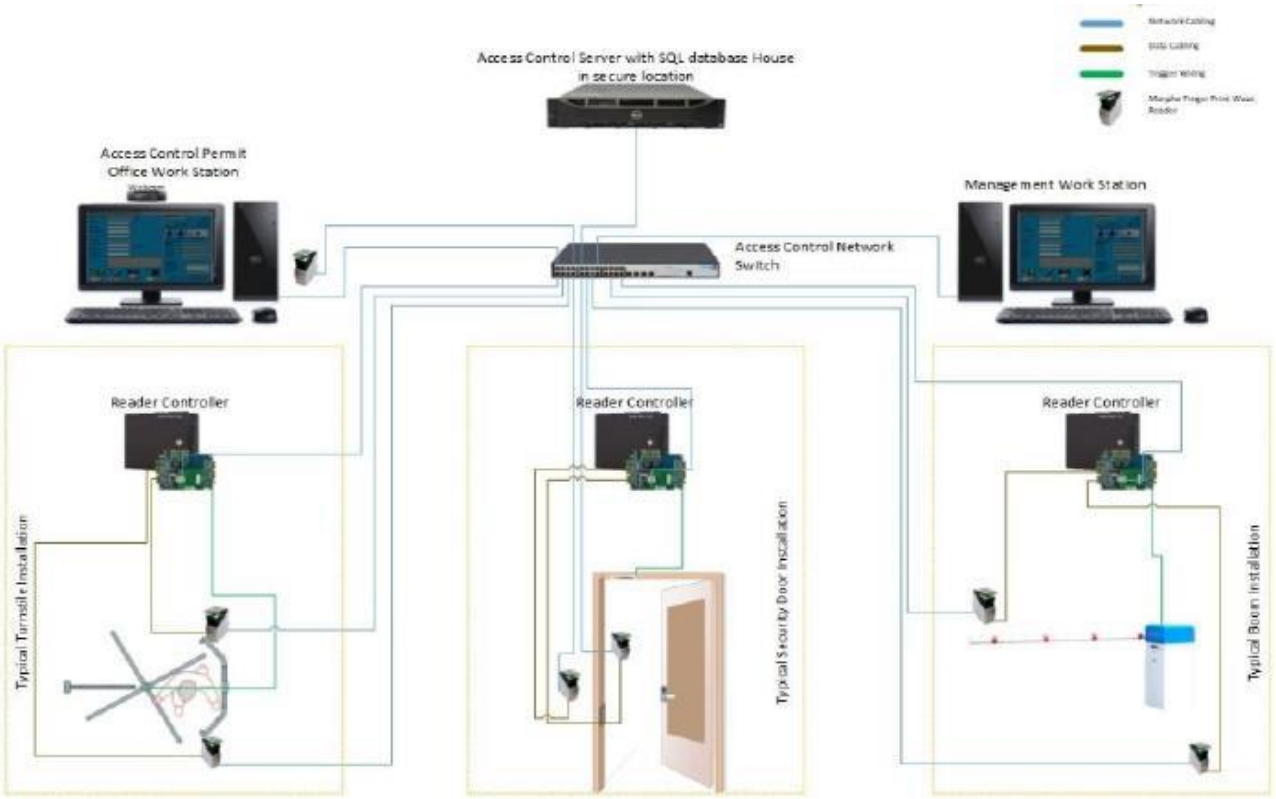

Figure 3: Access control system architecture overview.

The server must comply with the SANS2220-2-2 (Electrical security systems part 2-2: Access control systems. It will be housed in a well-conditioned and restricted room or equipment cabinet, of which the software suite will run from and integrated to the system database, configuration, administration.

33 Design Specifications

Readers and controllers
The reader will use visual confirmation like light-emitting diodes to show whether access was granted or denied. The response will be within 100 milliseconds of presentation of the attribute. The readers will be capable of reading access cards and send data to a controller. A biometric device shall contain a sensor that recognizes a person's physical characteristics, which is the fingerprint and read access cards presented to it through proximity reading. If a PIN keypad is included in the reader, it will be used as a hard reset function or a redundant system to bypass the biometrics or card reader. The MTBF (mean time between failures) under normal operating conditions must be at least 8 000 h.

Servers and Database
There will be a primary server hosted at the main Security control centre which shall act as a single source for the system. The primary server shall have redundancy with real time synchronisation with the secondary/ back-up server. The system shall comply with Eskom' Cyber Security standard for Operational Technology. The server will be able to handle the deletion and removal of redundant account/profile based on information received from an administrator workstation. Cabinets with minimum IP 65 rating shall be used for servers. The server will have 99.99 % availability. The server will contain a real-time clock circuit synched with a GPS time clock, capable of maintaining and displaying real time (month, day, hour, minute and second). Interface between

the server and the peripheral devices (such as readers and reader controllers) by means of a standard communications protocol. The server shall allow entry to the system parameters by password only, and there shall be at least three levels of password to allow three levels of access. The server software shall maintain a real-time sequential record (on the hard disk) of reader events, alarm events and all operator programming events. If so required, these events shall be stored in such a format that it is possible for other operators to sort and analyse them.

Registration and client stations
The Security Manager shall be the owner and main operator of the system responsible to provide any changes and permissions to the system. the access control administrator shall be required to fingerprint in order to login to the registration application. The software installed on the client stations shall cater for the following requirements:

- Screen modification programs.
- Menu modification programs.
- Keyboard modification programs
- Colour modification programs
- Icon menu modification programs
- System monitor programs
- Logbook reset program
- Graphical font modification program
- System message modification program.

Communication Technology
The System shall at minimum cater for Ethernet 10/100/1000 with auto negotiation, the supplier shall also indicate if their equipment supports the following I/O ports:

- RS-232
- RS-485
- Wiegand in/out
- TTL in/out
- Modem (to provide alternative Comms where there is no network infrastructure installed).

The system shall support open communication standards/protocols that will enable it to be integrated to the existing IACS backbone infrastructure. At minimum the following standards shall be supported:

- TCP/IP
- HTML
- LonWorks
- BACnet
- OPC
- MODBUS
- ODBC
- Wiegand
- UDP
- DDE
- GIOP
- TSL/SSL
- ICMP
- SOAP

35 Access Control Servers

The server must comply with the SANS2220-2-2 (Electrical security systems part 2-2: Access control systems. It will be housed in a well-conditioned and restricted room or equipment cabinet, of which the software suite will run from and integrated to the system database, configuration, administration.

36 Hardware Minimum Requirements

- 12th Generation Intel® Core™ i7 Processors.
- 16GB RAM.
- 512GB SSD Drive to run the OS and applications.
- 5TB HDD for data storage.
- 19” LCD Monitor.
- Keyboard and mouse.
- 3000VA Interactive UPS.
- Real-time clock.
- Local and remote network switches with enough LAN ports to connect with field devices.
- All relevant systems within the server should be password word protected.
- Data and transactions must be stored for a minimum of 3 years.
- Redundancy on both supply and server units.
- Cabinets can have a minimum rating of IP 65.

37 Minimum Functional Requirements

- It should run a SQL database.
- Store all the system data and configuration.
- Synchronised date and time on to the field devices.
- Automatically back-up data as per schedule, this data shall be stored for a minimum period of 36 months.
- It must always be in synchronization with the field devices such that transaction records are automatically uploaded to the relevant database.
- Fully integrated with all the workstations.
- Client/server architecture.
- Automatic deletion of visitor and contractor account/profile after the expiry date.
- The server software shall maintain a real-time sequential record of reader events, alarm events and all operator programming events.

38 Biometric Wiegand Readers

The readers shall comply with the requirements stated in SANS 2220-2-5 Electrical security systems – Biometric readers. As per specification in the basic design the readers should be capable of reading biometrics and cards whilst some will be fixed and others will be portable the basic functionality should be the same.

39 Hardware Minimum Requirements

- Communication: TCP/IP, RS485, WIFI or BLUETOOTH
- PoE for fixed readers.
- Multicolor LED’s and buzzer.
- Display: 128 x 64 OLED
- HID 26-bit Wiegand.
- Rugged Structure for outdoor installation and extra durability
- IP65 rated rugged waterproof and dustproof structure.
- Authentication: Finger or card.
- Hidden mounting screws deter vandalism.
- Vandal-resistant security and installation tool with every reader.

- Goosenecks for mounting reader with base plate and front mounting shall be provided if necessary.
- Rain covers should be fitted for outdoor installation.

40 Minimum Functional Requirements

- Fingerprint Capacity: 3,000 Fingerprints.
- Card Capacity: 30,000 Cards.
- Anti-pass back.
- Fast and accurate algorithm: Recognition must be less than a second.
- The readers will be capable of reading access cards and send data to a controller.
- The reader will use visual confirmation like light-emitting diodes to show whether access was granted or denied.
- The response will be within 100 milliseconds of presentation of the attribute.
- A biometric device shall contain a sensor that recognizes a person's physical characteristics, which is the fingerprint and read access cards presented to it through proximity reading.

41 Reader/Door Controllers

- Comply with the requirements stated in SANS 2220-2-4.
- Housed in an enclosure with IP65 for outdoor use and IP55 for indoors,
- Connected to the servers via IP or RS485 protocol.
- Intelligent controller with local database in order to perform stand-alone operations.
- A minimum of 10000 offline transactions must be performed.
- Configured to operate in anti-pass back and anti-time back modes.
- Redundant configuration should be achieved with other controllers.
- Time and attendance events shall be recorded sequentially in a separate record.
- It shall be possible to assign to any reader an IN or OUT function in any geographic area or any combination of areas.
- It shall be possible for the operator to declare any reader as either card only, card plus biometrics.
- Identifier to each reader to assist in identifying reader locations for record purposes.
- The processor software can enable or disable any reader at any time or to switch from one state to the other.

42 Access Cards

- Comply with the requirements stated in SANS 2220-2-6.
- Access shall be a proximity card format.
- Access cards shall be Eskom's approved corporate identity template and be made of a durable material that can display the following information, as required:
    - an ID photograph;
    - Employee number (unique number);
    - a company logo;
    - name and other information of bearer (e.g. vehicle permit information).
- Card printers shall be used to print the employee details and card layout directly to the cards before issuing.
- The standard card format shall at minimum have 128 Bit Encryption.
- The cards shall have support for random ID, each card shall have a unique serial number printed on the card.
- Dimensions of access cards shall comply with section 4.1.2 of SANS 2220-2-6.

- An ACS card encoder shall be used to encode cards by loading the required information regarding the card owner before issuing of the card. Any attempt to change the code shall destroy the card.
- A photograph of the card holder shall be captured using a digital HD camera before issuing the card.
- The card shall be water resistant and resistant to wear and tear caused by extended use.
- The location of the contacts and the microchip shall not cause surface irregularities on the back of the card or in the magnetic strip area.
- It shall be possible to print a list of all card numbers and their cardholder names which conform to a combination of specific and non-specific parameters.

43 Physical Barriers and Controls

Full height turnstile is the preferably solution as a physical barrier with its own locking device which must be controlled by the reader/door controller. The physical characteristics and possible dimension of the turnstiles are shown in figure 5, with galvanised steel used. The control mechanism for the turnstiles will be determined by the actual configuration and should only rotate in a single direction.

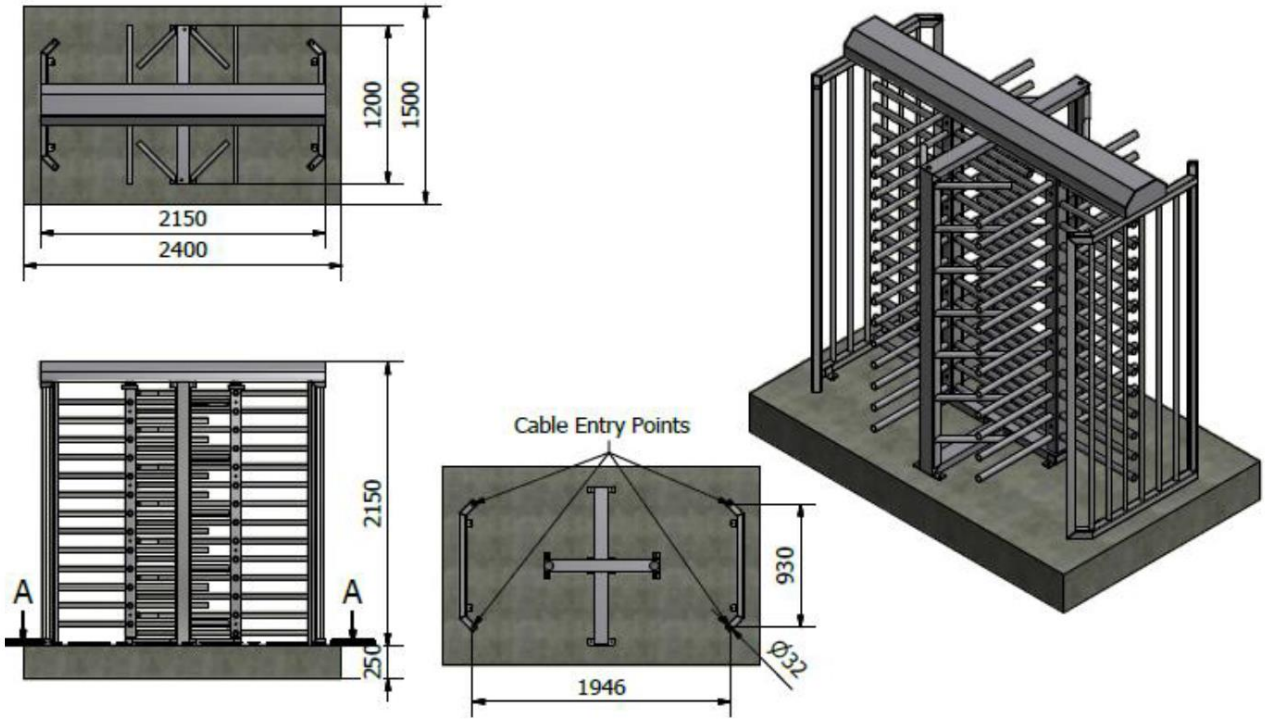

Figure 5: Full height turnstiles

- A panic/emergency alarm facility shall be provided on the inside of the turnstile.
- It shall be possible to unlock the door from the outside with an emergency key override.
- Turnstiles shall comply with section 4.7 of SANS 2220-2-7.
- A drop box shall be used for visitors to capture the card on exit.
- There are at least 100 000 operations with specified maintenance and 50 000 operations without maintenance.
- The operating mechanism of the access booth shall have a locked cover equipped with a tamper protection switch.

44 Workstations

Workstation must be defined by the role they play into the whole system, hence two types of workstations are required for the system to function and clearly have the boundaries in terms of the defined roles. The registration workstation will be used to capture the credentials of employees, contractors and visitors, whilst the client workstation view events and manage the system. Each of these shall the following minimum requirements with regard to the hardware:

- Intel i5, 11th Gen machine with 8GB RAM.
- 19” LCD Monitor.
- Keyboard and mouse.
- 1TB SSD Drive for the OS and IAC Software.
- Fully integrated into the main servers.
- Make the necessary changes to the relevant databases as defined by the role-based access into the servers.
- The structure of the current turnstiles’ width is 1310mm, hence to the new installation will fit in the current space which will also constitute addition of palisades and roofing structure.

45 Registration Station

- HD Webcam to capture image of personnel and save it as one of the credentials.
- Card printer for issuing access cards.
- Registration stations must be fingerprint protected.
- Enrolment readers
- Main function of the station is to register, disable, enable and change personnel details of employees, visitors and other personnel onto the access control system.
- Authorization must be given in order to register personnel.
- Contractors’ and sub-contractors access rights must be automatically disabled once the term that is recorded expires.
- A full audit-trail shall be provided for all registration transactions.

46 Client Stations

The software installed on the client stations shall cater for the following requirements:

- Screen modification programs.
- Menu modification programs.
- Keyboard modification programs.
- Colour modification programs.
- Icon menu modification programs.
- System monitoring programs.
- Logbook reset program.
- Graphical font modification program.
- System message modification program.

INTEGRATION SPECIFICATIONS

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

The Contractor designs all parts of the system as defined for the Employers objectives and meets all the System requirements for a successful project within the defined Eskom standards.

The Contractor designs, ensures the procurement of all components, ensures the complete fabrication of the defined works, ensure the delivery of the equipment to site, erects all the required structures, does all the necessary modification of existing infrastructure, cold and hot

commissioning, performance testing of the entire engineering Works to ensure a fully functional integrated access control at Hendrina Power Station, herein after referred to as the Works.

The Contractor is responsible for carrying out all activities and supplying everything necessary to provide the Works in accordance with the requirements of the Works Information. The Contractor ensures that the complete design is performed by, or under the direction, control and supervision of an Engineering Council of South Africa (ECSA) registered professional person for each discipline as required by the scope of the design. In instances where the design is performed under the direction, control and supervision of a professional person, the professional person shall be responsible for signing off the design as applicable to his field of registration.

The Contractor is required to perform a plant walk down and evaluates items described in the Works for inclusion in tender submission. The Contractor is required to develop a detailed design for acceptance by the Employer. The Contractor is required to adhere to Generation Plant Safety Regulations for all Works.

48 Power Supply

- The power unit of an access control system shall comply with the requirements of SANS 2220-1-7.
- There shall be an intelligent power supply that monitors incoming power, battery status and only supply power to the servers.
- There shall be a backup battery that ensures at least 24 hours autonomy.
- Each system or subsystem shall have a dedicated circuit breaker and supply circuit.
- There shall be UPS with sufficient capacity to support all ACS equipment for a minimum of 8 hours.
- Electro-magnetic radiation from the UPS shall not affect the operation of other electronic equipment in the equipment room
- The battery system shall be maintenance free with a 5 year guarantee.

49 General Database Requirements

- Database shall provide for regular reports and specific database queries.
- Copies of reports from the database shall be kept for at least three years or as long as required for legal proceedings.
- The system shall allow for Logbook entries with the following as minimum features:
    - Alarm logbook for alarmed events generated by the system or peripheral devices
    - System logbook for all actions performed on the system
    - Event logbook for all events generated by the peripheral devices or by programs that are started up automatically in the background
    - Access logbook from all the readers
    - Time logbook for all time management related readings received from all the readers
    - Trend logbooks
    - Error logbook which is used for system errors as well for unauthorized access requests
    - Visitor logbook
- The database shall allow for the following information to be included:
    - Eskom employee number (unique number)
    - Access ID (this shall be generated automatically by the system)
    - Full names and surnames
    - ID Number.

50 Cabling Requirements

- Compliance with the requirements of Eskom's Standard for Wiring and Cable marking in Substations (240-64636794).
- Terminal blocks must be in accordance with Eskom standard 240-70413291, Specification for Electrical Terminal Blocks.
- All wiring shall be concealed inside trunking or conduit. No exposed wiring will be accepted except at sites where suitable cable trays are installed.
- Cabling in roof or floor voids shall be installed in cable trays.
- Cabling in trays shall be tied off at a maximum of 1.5m interval.
- Data and low voltage (0-48V DC/AC) cable installations shall be separated from mains power installations by a minimum of 500mm.
- Where data and low voltage cabling has to cross power cabling, this shall always be at 90° angles.
- Cabling in manholes shall be kept above the manhole floor level to avoid water contact.
- Cable shall be handled with care and not pulled with excessive force that may cause internal damage.

51 Environmental Conditions

Equipment must be able to withstand different weather and other environmental conditions

EMC Requirements

- Signal, voltage and electromagnetic radiation levels in readily accessible areas shall not be dangerous.
- System and its components shall comply with requirements of SANS 61000-1-2.

Earthing

- The Earthing of the system shall comply with Eskom's earthing standards below:
- 240 – 56872313 – Radio Station Earthing and Bonding.
- 240 – 56356396 – Earthing and Lightning Protection Standard.
- TST41-877 - Transmission Substation Design Earthing Standard.

52 Maintenance Requirements

- Comprehensive training should be arranged for all maintenance personnel on how to work with the system and its components.
- Special tools required for maintenance should be supplied as part of the project.
- Clear boundaries should be established to mark the limits of responsibility when different departments are required to execute work on the system.
- Spares for the new system should be catalogued and made stock item before the project is handed to Maintenance.
- Maintenance strategy to be updated to include the newly installed components before handover to maintenance.
- Loop drawings and P&ID drawings to be updated to reflect as build plant status before hand over to maintenance.
- Quality inspection plans to be included in the hand over package to maintenance.

53 Safety Assessment

Safety personnel to ensure compliance with any required safety measures. The safety of the IAC system will be consolidated and demonstrated through the submission of the following design documentation:

- Type Test Certificates
- Design Calculations
- Material Selection
- Design Drawings
- Inspection and Routine Test Sheets

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

- The Contractor submits all designs to the Project Manager for acceptance.
- The Project Manager reviews the Contractor's submitted documents. The Contractor ensures adherence to the Works Information and that a technically sound design approach is incorporated.
- Specific information required from the Contractor during tender phase is set-out in the VDSS.
- Each document submitted to the Project Manager requires a transmittal note (refer to Employer's template 240-71448626 for minimum metadata requirements) from the Contractor. The Contractor includes interpretation of results in every report compiled. Project Manager review cycle is in-line with NEC contract requirements and is finalised during contract negotiations with the Contractor.
- 3.10.1 Design Review Documentation
- The Contractor conducts design reviews of the Contractor's design as per the Contractor's official design review procedure.
- The Contractor further takes note of the Employers Design Review Procedure (240-53113685) and participates in all design reviews as specified by the Employer. The Employer may "Authorise"; "Authorise with Comments" or "Not Authorise with Comments". If required, the Contractor makes the necessary revisions on the documentation and ensures acceptance is obtained from the Project Manager. The Contractor includes these design reviews as part of the schedule and suggests appropriate timing for such reviews.
- The following design reviews below are conducted, by the Employer, as per the design review procedure (240-53113685):
    - Contract Award Review
    - Design Freeze Review(s) (Detail Design)
    - System Integrated Design Review (Detail Design)
    - Pre-Commissioning Review (per unit)
    - Hand-over Review
- Design Freeze reviews can be conducted as End-of-Phase Design Reviews or as a series of Interim Design Reviews with the aim to design freeze a system or subsystem/asset in order to enable subsequent designs to progress. The number of design freeze reviews is accepted by the Employer.

Documentation Synopsis

The contract documentation synopsis, prepared by the Contractor, consists of documentation that is produced for the Works.

The Contractor's documentation synopsis is a summary and general overview of the whole documentation package forming part of the Works. It provides the Project Manager with a clear indication of its contents for assessment and acceptance.

The synopsis lays down the structure and content of documentation supplied as part of the Works and includes a list with test procedures and drawings allowing the Project Manager to visualise what is supplied during the various project phases and stages.

The format, content, layout and quality of all documentation are subject to acceptance by the Project Manager.

Failure to supply documentation and drawings

In the event of completed drawings, instruction manuals, procedures, switchover methodologies, schedules and programmes not being in the possession of the Project Manager within the specified period of five days (5 days) prior to Completion for each project phase, the Contractor does not proceed to the next project phase or stage until the documents are supplied by the Contractor and accepted by the Project Manager.
Dates of supply of documentation are planned by the Contractor and shown in the Accepted Programme.

Documentation and drawings of third party equipment
All third party equipment used by the Contractor to Provide the Works is accompanied by the following documentation and submitted in format as obtained from third party supply:

- All technical drawings (layout, etc.)
- Maintenance, operating manuals and engineering manuals.
- User manuals.
- Software copies of manuals, drawings etc.

Documentation and drawing general requirements
All the documentation and drawings are provided by the Contractor within the specified periods for the various project phases and stages as shown in the Accepted Programme.

The Contractor supplies the following as minimum:

- Standard brochures, catalogues, descriptions.
- Design standards, codes of practice, design guidelines.
- Installation, test, commissioning and optimisation procedures.
- Installation, test, commissioning and optimisation results.
- QA&QC documents as specified.
- Design modification procedure.
- Documentation that indicates all Hendrina Power Station specific settings of all components of the process control and monitoring system.
- Operating and maintenance manuals.
- Engineering manuals.
- Documentation detailing the verification, formulation and design & engineering of operating and control philosophies
- All drawings, manuals and schematics are uniquely identified and cross referenced with all related documents, whether produced by the forward documentation system or not
- Third party documentation, drawings, as built settings.
- Spares listings.

Contents requirements
All manuals are of good quality, prepared by experienced personnel and contain the following:

- General arrangement drawings
- Installation drawings and instructions
- Operating, maintenance and engineering instructions for all components.
- Detailed parts lists accompanied by exploded view type drawings clearly detailing and identifying each part for certain plants if available and not proprietary
- Technical descriptions of the equipment and component parts
- Spare part ordering and storage details
- All special tools required for maintenance and operating are identified in a scheduled included in the manual.

Manuals are in English, including all third party information, and each manual comes complete with:

- Power Station name and contract number
- Index including the following:

The final O&M and Engineering manuals and Project Manager acceptance thereof are a prerequisite to Completion of the whole of the Works.

Documentation control system

The Contractor implements an integrated and comprehensive document management system for control of all correspondence, drawings, procedures and manuals. It provides for information on document revision status, revision update motivations and the status of each document in relation to the “As Built” and “As designed” status on each plant.

Where modifications take place to address Defects that are found and notified by either the Supervisor or the Contractor after Completion of the whole of the Works and up to the defects date, the Contractor provides additional or amended pages for all the relevant documentation already provided to the Employer. These additional or amended pages are submitted to the Project Manager for acceptance within the period for reply.

Master drawing register

The Contractor establishes and maintains an updated drawing register. The register is updated continuously by the Contractor and submitted to the Project Manager for acceptance on a monthly basis.

Supply of drawings

Drawings supplied by the Contractor conform to the following:

- All drawings (are) shall be created in the required format which is Microstation version 7SE/8i, according to the specified drawing format and standards 36-945, , 36-946. Accompanying the new drawings will be the item list with full component descriptions. All other related information is available on requested from the Drawing Office.
- Documents that are A3 size(P&ID drawings, Civil drawings, Mechanical drawings, Electrical drawings, Process flow diagrams, all Process Control and Monitoring System drawings.
- Documents that are A4 size (Signal flow diagrams, Functional diagrams, I/O allocation drawings, and others)Drawing title blocks and format conform to the Employer’s standard
- All the types of drawings not listed to be clarified at the technical clarification stage regarding appropriate size namely A3 or A4. The Contractor makes provision for the worst case scenario regarding cost to produce hardcopies.
- Auto generated drawings of the control system will not be required to be on the Employers required format and will have to be hard issued as part of the documents in A4.

Four (4) copies of each drawing are supplied for approval and acceptance by the Project Manager as a prerequisite to Completion of the whole of the Works prior to the submission of the final copies.

Drawings to be submitted to the Project Manager for:

- Verification of the application of the drawing standard and format.
- Allocation of drawing numbers.
- Allocation of KKS codes.

Copyright

The Employer has full rights to make unlimited copies and use the material in any form or manner desired for use within Hendrina Power Station.

Confidentiality
All work done by the Contractor is confidential and may only be disclosed to third parties with the written consent of the Project Manager. The Employer treats this with the same confidentiality.

55 Other requirements of the *Contractor*'s design

Civil infrastructure and building design
A minimal change on the infrastructure will introduce two turnstiles at the entry side of the North gate, hence in total there will be four turnstiles: then two more at the South Gate for entry and exit. Details must be on the detail design and communicated by the auxiliary engineering department. Civil engineering is responsible for ensuring that the upgrades of the existing buildings to allow space for turnstile gates, walk-through metal detectors and x-ray machines meet the set specifications for the Employer. Repurposing of the unused part of the induction room as a control room as well as repurposing of the current control room as a server room.

Piping design
Further details must be available on the detail design since the piping will be utilised only for protection of cables.

Electrical design
As per requirement of the system, sub-system and major components the power supply must be designed. Existing electrical supply to North and South reception buildings will be used for access control equipment and supporting systems. The system should include a back-up power supply in case of unavailability of electrical supply, this can either come as a battery-unit or standard UPS as per recommendations from the relevant system engineer and detail design from the contractor.

Waste Storage and Transportation
Packaging material and other generated waste from the project must be disposed according to the Waste Management Procedure HSPPIN/003.

Maintenance requirements
Comprehensive training should be arranged for all maintenance personnel on how to work with the system and its components.
Special tools required for maintenance should be supplied as part of the project.
Clear boundaries should be established to mark the limits of responsibility when different departments are required to execute work on the system.
Spares for the new system should be catalogued and made stock item before the project is handed in.
Maintenance strategy to be updated to include the newly installed components before handover.
Loop drawings and P&ID drawings to be updated to reflect as build plant status before hand over.
Quality inspection plans to be included in the hand over package.

Reliability, maintainability, availability assessment
Full system redundancy will allow local systems to function independently of one another in the event of system failure or loss of power. Thus, a redundant system on all hardware/software dependent systems will ensure 100% up time.
Monitoring of system health to determine for example, if hardware is still within life cycle and undamaged, and to indicate when a system redundancy is compromised.
The system will have a manual override/bypass for cases of emergency, outages and system failure.

Construction
All junction boxes are of the totally enclosed free standing or wall mounted front access type.

Junction boxes are fabricated from sheet stainless steel having a minimum thickness of 2mm. A slanted roof is provided to allow material to slide off easily and to prevent material accumulating between the door and panel body. Free standing junction boxes are provided with a 75mm deep channel section base-frame, painted black. Refer to Eskom Standard 240-56355815.
Adequate access and space should be allowed for maintenance purposes. Cable entry is from the bottom. Bolts are of the correct size for the holes provided and fitted with matching sizes of washers and lock-washers. Self-tapping screws, captive head nuts or cage nuts must not be used in the construction of the boxes.
Effective measures are taken to prevent electrolytic corrosion. Wires passing through holes are protected by means of neoprene grommets. Bevelling of sheet steel is not acceptable.
The door has adequate points of hinging and latching. It is reinforced to prevent distortion when open. Stays are fitted to prevent over swing when opening.
Gland plates of pre-galvanised steel plate cover the complete cable gland area. Each cable is suitably sealed and protected by a gland and shroud.
An earth terminal (brass or bronze), 12mm diameter, to which all metal parts are connected, is provided at the bottom of each box. The earth terminal is connected to a set of earth links by means of a copper earthing strap on the inside of the box. The terminal and earth links are in an accessible position to allow for the earthing of cables. Refer To SANS 10142 – 2 for bonding requirements.
Provision is made for connecting the terminal to earth, externally to the box.

Corrosion protection
The surfaces are prepared by abrasive blast clean to grade Sa 2,5 or by degreasing, rinsing, pickling and phosphate application.
Primer coat: Apply one coat epoxy resin-based primer by spray. Dry film thickness 25 micro-meters.
Under coat: One coat polyamide cured epoxy undercoat by spray. Dry film thickness 25 micro-meters.
Final coat: Apply one coat twin pack polyurethane enamel by spray. Dry film thickness 25 micro-meters.
Nuts and bolts: After installation all nuts and bolts used for securing the box are patch primed with epoxy red oxide or zinc chromate and over coated with paint, matching the rest of the cabinet.
The colour of the final outside coating is G29 (colour to SABS 1091), with a high gloss surface finish. Inside surfaces is gloss white. Alternatively stainless steel panels are left as a brushed finch.

Termination of cables

- All cable screens are terminated on standard terminals at one end of the cable, or both ends depending on the design. Terminated cables wires must not have any slack other than 10% from distance of entry to termination in junction box.
- Terminals for signal cabling are clip-on spring-loaded type. Hooked blade type lugs are fitted. Lugs must fit cross-area of conductor to which they are crimped.
- The correct crimping tool is used.
- Terminals fit snugly together to avoid accumulation of foreign matter between them. End barriers are provided for open sided patterns.
- All terminal blocks are readily accessible.
- 20% spare terminals must be provided.

- Spare cores to be allowed for in all cables. The minimum number of spare cores requirements is as follows:
  - Cable 8 pairs : Minimum one spare pair
  - Cable up to 16 pairs : Minimum three spare pairs
  - Cable up to 32 pairs : Minimum five spare pairs
  - Cable up to 40 pairs : Minimum six spare pairs.

The redundant communication buses (fibre optic and co-axial cable) are run in different routes throughout the plant areas, i.e. no two cable sections forming part of the same communication loop is run along the same route.

- The routes for control and instrumentation, power supply cabling and the racking shall provide a consistent and integrated design together with the control system particularly taking into account different routes for common modes of failure and separate routes for the redundancy within in the control system physical distribution.
- The selection and installation method of cabling and associated equipment, such as racking and junction boxes shall be based on the environmental conditions it will operate in. (such as temperature, chemical, vibration, water ingress, mechanical damage etc,) All cabling insulation shall be fire retardant and halogen free.
- All cables are secured every 1.5 m with suitable cable glands, straps or clamps both on racks and in junction boxes, cubicles and control room equipment.

Test Equipment

- All test and calibration equipment necessary for checking the installation and calibration of the field equipment is provided and maintained to the required standard of accuracy.
- Test equipment for checking the calibration of instrumentation has an accuracy of better than ± 0.1%. Calibration equipment has to be recent (within 12 months) for certification by a SANAS accredited authority.

56 Use of *Contractor*'s design

- All documentation as specified in this document is supplied to the *Project Manager* by the *Contractor* this includes any detail design drawings, as well as fabrication drawings, that is required for maintenance or requested in this *Works* Information.
- The *Employer* reserves the right to issue the *Contractor's* design or drawings to *Other Contractor*s for purposes of maintenance, spares, verifications, modifications in future or any *Other* purposes required by the *Employer*; the *Employer* has total rights to use the design as the *Employer* requires.
- Any detail design drawings required for maintenance purposes is supplied to the *Project Manager*, by the *Contractor*. The detail design drawings or fabrication drawings supplied to

the *Project Manager* by the *Contractor* can be supplied to any maintenance partner that the *Employer* wishes to enter into a partnership with during the life of Hendrina Power Station.

- The *Contractor* notes that all GA, assembly and dismantling drawings become the property of the *Employer* upon Completion of the *Works*. The *Employer* is permitted to purchase replacement parts off these drawings from the lowest cost suppliers.

57 Design of Equipment

- The Contractor is required to furnish and maintain the necessary tools and Equipment to provide the Works (including all manual and power tools, cranes, elevators, lifts, etc.). The Contractor is encouraged to share Equipment use where possible and locate cranes in the main work areas based on coordination with Others. The Contractor is advised to mark all tools, scaffolds, and Other Equipment for ease of identification.
- The Contractor is responsible for all temporary Works that is used by the Contractor to complete the Works. The Contractor submits all designs or proposals for temporary Works to the Project Manager. The Project Manager reviews but does not accept the temporary Works. The Project Manager comments on the effectiveness, necessity or risk of the temporary Works or Equipment, to allow the Contractor to provide the Works efficiently and without delay. For details on expected temporary Works refer to section 5.1

58 Equipment required to be included in the *works*

- The Contractor provides all labour, installation tackle, gear and tools, vehicles, rigging tackle, consumables, site Workshops, site offices, stores and any Other facilities, equipment and cleaning materials required to provide the Works.
- The Contractor provides all the test equipment for testing the individual modules, the sub-assemblies and the functional groups for site testing, commissioning and performance testing.
- The Contractor provides all necessary scaffolding required to complete the Works.

59 As-built drawings, operating manuals and maintenance schedules

60 Drawings

The Contractor is required to ensure the following:

- The Contractor submits detailed drawings of all the separate items of the Works included in the specification for acceptance once the general arrangement drawings have been accepted. If Works or materials are supplied before such acceptance has been given, the Contractor shall modify or replaces such Works or material at his own expense if called upon by the Project Manager to do so.
- Submit All “as built” drawings with approval signatures at Completion by the ECSA registered professional engineer for each discipline as required by the design, backed up on the electronic medium, without delay on request by the Project Manager.

61 Technical, Operating and Maintenance manuals

- The Contractor provides good quality operating and maintenance manuals prepared by suitably experienced personnel. The maintenance manuals shall state explicitly the maintenance requirements for each piece of equipment. Four (4) copies of the first draft manuals as well as all “as built” drawings are submitted to the Project Manager for review and acceptance. Manuals shall be written in English and each manual front page should contain the Power Station’s name, contract number and index. - - - The Contractor also provides an electronic copy of these documents in Microsoft Word for Windows format as well as PDF format, two (2) electronic copies are required.
- All manuals are required to contain, as a minimum, all aspects required for training. The manuals should indicate the level of responsibility of the operating personnel for each action in the procedures. Included in these manuals are the following:
    - Design data including descriptions of control philosophy with alarms, set-points, interlocks and logics clearly explained.
    - Process and instrumentation diagrams.
    - Range, calibration factors, calibrations certificates, data sheets, etc., for all control and instrumentation equipment.
    - General arrangement and installation drawings and instructions.
    - Operating procedures and instructions for normal and emergency conditions, including flow diagrams.
    - Maintenance procedures and instructions for specific plant and equipment.
    - All drawings required for component location, dismantling and re-assembly for maintenance.
    - Equipment details such as make, model, type, and specifications
    - Detailed parts lists and ordering instructions pertaining to storage of spare parts or to their shelf life.
    - Exploded view type drawings clearly detailing the part and uniquely identifying it, technical descriptions of the equipment and component parts.
    - Troubleshooting and fault finding guide.
    - Safety procedures and instructions.
    - All special tools and equipment required for maintaining and operating the Works.

- The maintenance manuals shall be separated into mechanical, electrical and C&I volumes. The manuals shall be designed such that they can be clearly understood by technical, maintenance and operating personnel.
- The technical manuals shall include fully detailed descriptions, as-built drawings, diagrams, illustrations, schedules and data for use by Eskom technical staff to evaluate performance, trace faults, adjust, maintain and fully understand the plant and plant equipment and to allow satisfactory training of junior staff in conjunction with the operating manuals.
- The operating manuals shall be set out in simple terms in ordinal, tabular or pictorial form to provide factual and concise descriptions of:
    - How to carry out start-up, shut-down, and service operation of the plants by automatic, semi-automatic and by manual control.
    - What an alarm condition implies and how it is corrected.
    - What problems can occur and how they are overcome.
    - A routine visual plants inspection procedure.

- The operating manuals are intended for daily use and therefore shall be separated from the technical and maintenance manuals. Bold print, diagrams, illustrations, etc. shall be used. Materials shall be suitable for heavy duty, preferably covered with protective transparent material, and be in loose leaf form to allow substitution and addition of pages.
- The maintenance instruction manuals shall include schedules to cover plant inspection procedures, fully detailed maintenance programmes for plant and plant equipment services at daily, monthly, three monthly, six monthly, yearly and any Other necessary intervals, and contain manufacturer’s and supplier’s detailed maintenance and lubrication instructions,

diagrams, sectional drawings giving part numbers, descriptions, etc. Where spare parts have been provided theses should be coloured in, scheduled, and their filling procedure described. The manual shall also include minimum surveillance requirements for the plant.

- Detailed maintenance procedures, covering removal, dismantling, replacement of parts, re-erection, checking, and reassembly and re-commissioning shall be included for all equipment. The re-commissioning shall be included for all equipment. The maintenance manual shall be fully comprehensive and cover all plants and plant equipment installed. As the manuals will be frequently used for training and maintenance, they shall be prepared similarly to those described for the operating instruction manuals for use by operating personnel.
- The design material selection ensures low / minimal maintenance. The intention is to enable the maintenance personnel to specialise in similar type of designs and technology; hence standardisation of designs and suppliers is critical. The systems and layout shall be designed in a way that will make maintenance easier.

62 Procurement

63 People

64 Minimum requirements of people employed on the Site

As required to complete the scope of work and also as per CSI requirements.

65 BBBEE and preferencing scheme

Contractor is required at a minimum maintain their BBBEE status throughout the contract period.

66 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)

The *Contractor* complies with and fulfils the *Contractor's* obligations in respect of the Accelerated and Shared Growth Initiative - South Africa in accordance with and as provided for in the *Contractor*'s ASGI-SA Compliance Schedule stated below
.
[Insert the agreed ASGI-SA Compliance Schedule here]

The *Contractor* shall keep accurate records and provide the *Project Manager* with reports on the *Contractor*'s actual delivery against the above stated ASGI-SA criteria. [Elaborate on access to and format of records and frequency of submission etc.]

The *Contractor*'s failure to comply with his ASGI-SA obligations constitutes substantial failure on the part of the *Contractor* to comply with his obligations under this contract.

Supplier Development Localization and Industrialization (SDL&I)

SDLI Targets are as follows:

Job Creation : As per SDL&I and CSI obligations (Expected to create job opportunities for local community)
Skills Development : 2

67 Subcontracting

For any work to be subcontracting needs to be approved by the *Project Manager.*

68 Preferred subcontractors

Contractor submits the names and conditions of subcontracting contract to the *Project Manager* for approval.

69 Subcontract documentation, and assessment of subcontract tenders

The use of NEC document is compulsory. Specified constraints on how the *Contractor* prepares subcontract documentation and how subcontract tenders are to be issued, received, assessed (using joint report) and awarded.

70 Limitations on subcontracting

Contractor obtains approval from the *Project Manager. Employer* permits *Contractor* to subcontract other works, but not more than a specialised proportion of the whole contract. *Contractor* provides the majority of the works being 80% from own resources and all the necessary documentation for the works carried out by subcontracting is submitted to the *Project Manager* for approval.

71 Attendance on subcontractors

The main *Contractor* is responsible for the management of the duties and performance of the Subcontractor.

72 Quality

Contractor refers to section 4.3. After completion of every task QIP assessment is adhered to by the *Contractor*. *Employer approves*.

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

Contractor complies with providing

i. All labour and machinery/equipment to conduct the works. This is compatible with the site conditions and constraints of the project. No other machinery/equipment is issued, by the *Employer to* the *Contractor*, except for scaffolding.
ii. Their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.

74 *Contractor*'s procurement of Plant and Materials

Contractor procures transports, offloads and stores all plant and material to provide the works as per the Works Information of this contract.

75 Spares and consumables

Contractor makes provision for what is needed to provide the *Works*

76 Tests and inspections before delivery

Contractor does not bring to the Working Area those Plant and Materials which are to be tested or inspected before delivery. Contractor submits calibration certificates of equipment/machinery to the *Project Manager*, upon request.

77 Marking Plant and Materials outside the Working Areas

Contractor marks Plant and Materials which are stored outside the designated Working Area(s).Such storage spaces is clearly demarcated and include project/contract information and contract details of the *Project Manager. Project Manager* approves of such storage areas.

Contractor provides their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or thief of machinery and equipment.

78 *Contractor*'s Equipment (including temporary works).

Contractor complies with providing

i. All labour and machinery/equipment to conduct the works. This is compatible with the site conditions and constraints of the project. No other machinery/equipment is issued, by the *Employer to* the *Contractor*.
ii. Their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.

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

As per Protective Services – access control system procedure HSPHO/020 which is available from the *Project manager.*

78.1.1 Restrictions to access on Site, roads, walkways and barricades

As per Safety, Health and Environmental Specifications for *Principal Contactors* HSPHO/058 which is available from the *Project manager.*

78.1.2 Publicity and progress photographs

According to Eskom's ethics, Contractor may not take any photographs of the site without authorisation.

78.1.3 Excavations and associated water control

Any waste that is uncovered during excavation must be processed according Hendrina Waste Disposal procedure/policy ((HSPPIN003).

78.1.4 Control of noise, dust, water and waste

Contractor disposes waste as per waste management procedure. Misuse of water is not tolerated. Usage of noisy machinery is tested by the Occupational Hygienist to assess if noise level is acceptable. *Contractor* suppresses dust by applying dust suppression in the form of watering and application of Dust-A-side.
In terms of the National Environmental Management Act, section 28 “Every person who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring”. The Contractor is expected to ensure that the activities to be conducted shall comply with all applicable environmental legislation this includes section 24 of Constitution of South Africa 108 0f 1996, National Environmental Act 107 of 1998, National Water Act 36 of 1998 and other relevant Environmental Legislation.

78.1.5 Sequences of construction or installation

As per the *Contactor*’s programme which must align with the *Employer* s completion dates.

79 Cataloguing requirements by the *Contractor*

N/A

79.1 Completion, testing, commissioning and correction of Defects

79.1.1 Performance tests after Completion

The *Contractor* ensures that the system performs according to the specified requirements. The *Contractor* repairs all defects identified to the satisfaction of the *Employer*.

79.1.2 PSR (Plant Safety Regulations) Training

Contractor to supply people to be trained in ESKOM’s Authorised Supervisor and Responsible Person Course. No *work* will commence without an accredited Authorised Supervisor and accredited Responsible Person on site.

79.1.3 Operational maintenance after Completion

The Contractor submits an service level agreement (SLA) proposal for system maintenance and support in case of failure or malfunction.

The Contractor must provide a list of crucial spares for on-site storage.

The spare parts list will include the following items:

a. Strategic spares

b. Stock items

c. Spare parts on demand

d. Consignment stock

80 Construction

The Contractor incorporates risk allowance float in a project schedule to accommodate any potential changes/adjustments in the working area during construction.

81 Temporary works, Site services & construction constraints

Adhere to housekeeping requirements.

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

Hendrina Power Station is a national key point and is located within the Middleburg Magisterial District, approximately 35 km south-east of the town Middleburg and on the south-western border of the town Pullenshope. The power station is located south of the Optimum Colliery, which is the main supply of coal for the power station.

I. Hendrina Road (N11) taking the Pullenshope turn off and continue about 8km, then there is a sign Hendrina Power Station and turn left to the security gate.
II. Site coordinates: 26° 01' 00"S 29° 36' 20"E

Compulsory induction is required before gaining access to *Employer* 's site. Adherence to 'Life Saving rules' of *Employer* 's and other requirements re explained during the induction and in addition these rules are also indicated on signage within the perimeter of the Station. The rules and regulations for site access and security measures are contained in HSPHO020 'Access Control-Protective Services'. The Contractor adheres to this procedure at all times.

Failure to adhere to any of the access, security or "Life Saving" rules at any times will result in the suspension of the permit for the relevant person and may also lead to criminal prosecution for the violation of safety rules and regulations.

83 Restrictions to access on Site, roads, walkways and barricades

The *Project Manager* gives access to the project site

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

Working hours at *Employer are* 07:00-16:15 on Mondays to Thursdays and 07:00-12:00pm on Fridays. Collection and delivery of any plant or equipment would be within working hours.

During the execution of the *works*, Contractor keeps records of signed registers or time sheets of the *Contractor's* specific employees on site, including subcontractors. *Contractor* keeps the records and avail it to the *Project Manager* upon request.

85 Health and safety facilities on Site

The Medical Centre is used by all individuals on site for injuries and first aid related issues, however cost to perform medical services is covered by the Contractor. The fire department is also available for fire and other related emergencies. Their respective contact details to be provided during induction. However, the Contractor must have WCL2 forms(for reporting of injuries) readily available as well as their own medical facilities available and appointed safety supervisor.

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

For any environmental discoveries impacting the works, the Contractor contacts the Project manager for addressing.

87 Title to materials from demolition and excavation

Employer has the title deeds to the waste accumulated from conducting the works. *Contractor* complies with the following waste disposal requirements:

i. Ash debris/slurry is disposed at the ash dams.
ii. Construction rubble is disposed at the landfill site.
iii. Coal sediments is disposed at the designated dumping site at the ash dams
iv. Hazardous waste is disposed at a permitted landfill. Contractor submits disposal certificate to *Project Manager* for approval.

88 Cooperating with and obtaining acceptance of Others

Site access is granted by *Project Manager*. During contract period, *Contractor* works in parallel with other contractors.

The routing of all written communications is between the *Project Manager* and the *Contractor* only. Any agreement between the *Contractor* and any other person representing the *Employer* which has not been routed via the *Project Manager is* unacceptable and invalid.

Contractor takes charge of the work site and ensures no interference from other parties which may hinder the progress and completion of the works in the stipulated time frame.

89 Equipment provided by the *Employer*

The *Contractor* provides all the equipment required for the works

Contractor adheres to the site and services requirements and procedure

90 Site services and facilities

i. Potable water supply

The *Employer* supplies, free of charge, reasonable quantities of potable water required for the purposes of this contract from the existing points. *Contractor* provides, at his own cost, all connection fittings, pipe work, temporary plumbing, and pumps necessary to lead the water from the *Employer 's* point of supply to the various points where it is required.

ii. Electrical Power Supply

a. Power is available at the existing points
b. *Contractor* provides his own portable 380V electrical distribution boards, and supply cables to and from the boards, for all his power supply requirements to execute the works.

c. *Contractor's* electrical distribution boards comply with OHSA as referred to in the Electrical Installation Regulations and the Electrical Machinery Regulations. Each board brought onto site has a Certificate of Compliance issued by an accredited person.
d. *Contractor's* electrical distribution boards re installed at the works on a time negotiated with the *Supervisor*, prior to the possession date.
e. The *Employer* connects distribution boards to a 380V three-phase AC power supply, only after the *Contractor* has submitted the valid Certificate of Compliance. All *Contractor's* electrical distribution boards are unearthed to the steel structure of the plant.

Any additional electrical and lighting requirements around the work area shall be provided by the *Contractor.* The *Contractor* shall provide everything else necessary for providing the Works.

iii. Ablution Facilities

Employer provides *Contractor* access to identified existing toilet facilities when working within site boundaries. *Contractor* provides portable ablution facilities for site workers in close proximity to road rehabilitation sites.

iv. Medical Facilities

a. *Contractor* provides a First Aid service to his/her employees and *Subcontractors.* In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer 's* Medical Centre and facilities will be available.
b. *Employer* recovers the costs incurred, in the use of the above *Employer 's* facilities from the *Contractor.*

v. Site yard

a. *Employer* provides a site for the *Contractor's* yard at a location that is indicated to the *Contractor*. *Contractor* provides all the facilities required by him/her for such a site at their own cost (including fencing of area as per the requirements).
b. *Contractor* provides their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.
c. *Contractor* maintains the site to meet the requirements of the health and safety requirements as per the requirements of the *Project Manager* . *Contractor* restores the site to its original state i.e. clean rehabilitate the site. Inspection to be held and signed off by the *Supervisor*.

91 Facilities provided by the *Contractor*

Contractor provides:

i. All the necessary machinery/equipment and facilities to provide the *Works.* This includes machinery/equipment and facilities not issued by the *Employer*
ii. Their own resources to secure security of machinery and equipment that may be stored on site. *Employer* is not liable to account for any costs related to damages or theft of machinery and equipment.

Contractor keeps comprehensive records of the *Contractor's* equipment bought on and removed from site. *Contractor* complies with the *Employer 's* site access procedures.

92 Existing premises, inspection of adjoining properties and checking work of Others

For any interfacing works, the Project manager to be notified before commencing.

93 Survey control and setting out of the *works*

Contractor provides all the necessary equipment and facilities to execute the works

94 Underground services, other existing services, cable and pipe trenches and covers

This contract may include certain work relating to the moving and reinstating of existing services that may be affected by the construction of the works.

The *Employer* provides information (if available) regarding the location of existing utility services, if not available both parties assess the event before commencing around the area. The *Employer* does not accept responsibility for the accuracy of this information.

The Contractor shall check and determine on the site the positions of any services shown on the drawings (if available). This shall be done by visual inspections, using detecting apparatus, and by making excavations to expose the position of the service at critical points. This shall also be done where no services are shown on the drawings but where such services are nevertheless believed to be present. The positions of all services so detected shall be marked carefully and then drawn in on the drawings. These services will then be defined as known services. The Contractor shall take all reasonable precautions not to damage the services during the search, when the onus shall rest with *The Contractor* to prove that, in the event of damage being done to such services during the search, it was not his fault that they had been damaged.

The Contractor will be held responsible for any damage caused by him to know services, unless he can prove that he has taken all the above precautions and that the damage has nevertheless been caused because the position of the known service had deviated by more than one metre from the position as may reasonably have been deduced from the investigation made by him.

The Contractor shall take all reasonable precautions to protect existing services during construction and during the relocation of such services. Where protective measures involve the construction of permanent work, the Contractor shall execute the work in accordance with the engineer's instructions, and payment shall be made as provided in the project specifications.

All pipes, cables, conduits, or other known services of any nature whatsoever damaged as a result of the contractor's operations shall be repaired and reinstated forthwith by the Contractor or by the authority concerned, all at the expense of the Contractor and to the satisfaction of the engineer

It shall be clearly understood that, in certain instances, existing services can be relocated only after the Contractor has advanced sufficiently on or has completed certain sections of earthworks or certain structures.

Whenever services are encountered which interfere with the execution of the works and which require to be moved and relocated, the Contractor shall advise the engineer, who will determine the extent of the work, if any, to be undertaken by the Contractor in moving, relocating and reinstating or protecting such services.

Any work required to be undertaken by the Contractor in protecting, moving and relocating the services for which no provision has been made in the contract documents, or for which there are no appropriate tender rates, will be classed as a variation, as provided in the general conditions of contract.

95 Giving notice of work to be covered up

Contractor notifies *Project Manager* of works to be covered up

96 Hook ups to existing works

Contractor complies with working at heights requirements, of hook up heights above or below 2m during the execution of the *works*.

97 Work to be done by the Completion Date

On or before the Completion Date the *Contractor* shall have done everything required to Provide the Works except for the work listed below which may be done after the Completion Date but in any case, before the dates stated. The *Project Manager* cannot certify Completion until all the work except that listed below has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the *works* and Others from doing their work.

98 Use of the *works* before Completion has been certified

Take-over is after Completion through QIP assessment and authorization of every task, final approval and authorization of reports*.*

In the event of arising cases deviating from the above*, Project Manager* Issues instruction to *Contractor.*

99 Materials facilities and samples for tests and inspections

Contractor refers to Section 1, 2 and 3 of the issued Part C3.1 ECC3 *Employer* ’s Work Information

100 Commissioning

Contractor refers to Section 1, 2 and 3 of the issued Part C3.1 ECC3 *Employer* ’s Work Information

Take-over and/or commissioning is after Completion through QIP assessment and authorization of every task, final approval and authorization of reports*.*

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

Contractor refers to Section 1, 2 and 3 of the issued Part C3.1 ECC3 *Employer* ’s Work Information.

After completion of every task QIP assessment is adhered to by the *Contractor*. Completion of the works is certified after QIP assessment of every task:

i. By both *Employer* and *Contractor*,
ii. Approval by *Employer,* and authorization by *Employer* and *Contractor*

102 Take over procedures

Contractor refers to Section 1, 2 and 3 of the issued Part C3.1 ECC3 *Employer* 's Work Information.

Take-over and/or commissioning is after Completion through QIP assessment and authorization of every task, final approval and authorization of reports except when required otherwise by the *Employer*.

103 Access given by the *Employer* for correction of Defects

Contractor submits defect correction method statement, programme, and QIP. *Project Manager* approves. *Project Manager* provides *Contractor* access to and use of a part of the works which has been taken over if needed to correct a Defect.

104 Training and technology transfer

Contractor refers to Section 1, 2 and 3 of the issued Part C3.1 ECC3 *Employer* 's Work Information

Plant and Materials standards and workmanship

N/A

105 Investigation, survey and Site clearance

Contractor site de-establishes once take-over is completed through QIP assessment and sign off, final approval and authorization of reports. *Project Manager* approves *Contractor's* site de-establishment.

106 Building works

All work to be according to SANS 1200 series of standards

107 Civil engineering and structural works

N/A

108 Electrical & mechanical engineering works

All electrical installation complies with SANS 10142

109 Process control and IT works

All installation of cables complies with SANS 60794 & 10340

List of drawings

110 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

C3.2 *CONTRACTOR*'S WORKS INFORMATION

This section could also be compiled as a separate file.

PART 4: SITE INFORMATION

Document reference	Title	No of pages
	This cover page	1
C4	Site Information	1
	Total number of pages	

PART 4: SITE INFORMATION

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

Hendrina Power Station is located approximately 35km from Middleburg along the Middleburg – Hendrina road (N11) Taking the Pullenshope turn-off and continue about 8km follow the sign Hendrina Power Station & turn left to the security gates.

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

Includes all the boundaries of Hendrina Power Station

Subsoil information

Not Applicable

Hidden services

Underground cables. Cable detection to be done before any excavation

Other reports and publicly available information

Not Applicable