AIRPORTS COMPANY SOUTH AFRICA

NEC3 Engineering & Construction Contract

Between Airports Company South Africa
(Registration no: 1993/004149/06)

and
(Reg No. _____)

For the:

Design, Supply, Installation and Commissioning of Inert Gas Fire Suppression Systems and Replacement of Existing CO2 Systems at Cape Town International Airport Substations.

Contents: **Page No.**

CONTRACT NUMBER:

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:

Design, Supply, Installation and Commissioning of Inert Gas Fire Suppression Systems and Replacement of Existing CO2 Systems at Cape Town International Airport Substations

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.

The offered total of the Prices exclusive of VAT is	**R**
Value Added Tax @ 15% is	**R**
The offered total of the amount inclusive of VAT is	**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: .....

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 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		
	(Insert name and address of organisation)	
Name & signature of witness		Date

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

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		

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

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

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

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

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	
		X5 & X7: Sectional Completion and delay damages used together
		X15: Limitation of *Contractor's* liability for design to reasonable skill and care
		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:	**Airports Company South Africa SOC Limited (reg. no: 1993/004149/06), a juristic person incorporated in terms of the company laws of the Republic of South Africa**
	Address	**Administrative Building, Southern Office Block, Cape Town International Airport, Western Cape 7525**
10.1	The *Project Manager* is:	
	Address	**Administrative Building, Southern Office Block, Cape Town International Airport, Western Cape 7525**
	Tel	
	Fax	**N/A**
	e-mail	

10.1	The *Supervisor* is: (Name)	
	Address	**Administrative Building, Southern Office Block, Cape Town International Airport, Western Cape 7525**
	Tel No.	
	Fax No.	**N/A**
	e-mail	
11.2(13)	The *works* are	**Design, Supply, Installation and Commissioning of Inert Gas Fire Suppression Systems and Replacement of Existing CO2 Systems at Cape Town International Airport Substations**
11.2(14)	The following matters will be included in the Risk Register	**Not Applicable**
11.2(15)	The *boundaries of the site* are	**Cape Town International Airport (CTIA)**
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 makes reference.**
12.2	The *law of the contract* is the law of	**the Republic of South Africa**
13.1	The *language of this contract* is	**English**
13.3	The *period for reply* is	**Two (02) weeks**
2	**The *Contractor's* main responsibilities**	**Data required by this section of the core clauses is provided by the *Contractor* in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.**
3	**Time**	
11.2(3)	The *completion date* for the whole of the *works* is	**Twenty-four (24) months from the date of contract signing by ACSA**

30.1	The *access dates* are:	**Part of the Site**		**Date**
		1	**Landside Substations**	**Any day with prior arrangement**
		2	**Airside Substations**	**Any day with prior arrangement**
		3	**Terminal Building Substations**	**Any day with prior arrangement**

31.1	The *Contractor* is to submit a first programme for acceptance within	**Two (02) weeks of the Contract Date.**

31.2	The *starting date* is	Upon signing of the contract by ACSA
32.2	The *Contractor* submits revised programmes at intervals no longer than	**Two (02) weeks.**
35.1	The *Employer* is not willing to take over the *works* before the Completion Date.	**The employer will have access to the works during construction and prior to completion, however, such access will not relieve the contractor from liability for the completion of the works in accordance with the Works Information and in terms of this contract.**
4	**Testing and Defects**	
42.2	The *defects date* is	**Fifty-two (52) weeks after completion of the whole of the *works*.**
43.2	The *defect correction period* is	**Two (02) weeks**
47	The Contractor submits a quality plan for acceptance within:	**Two (02) weeks of the Contract Date.**
5	**Payment**	
50.1	The *assessment interval* is	**4 weeks**
51.1	The *currency of this contract* is the	**South African Rand.**
51.2	The period within which payments are made is	**After thirty (30) days from the invoice date.**
51.4	The *interest rate* is	**The prime lending rate of Nedbank as determined from time to time**
6	**Compensation events**	**No data required for this section of the conditions of contract.**
60.1(13)	The place where weather is to be recorded is:	**Cape Town International Airport**
	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	**N/A**
	The *weather data* are the records of past *weather measurements* for each calendar month which were recorded at:	**N/A**
8	**Risks and insurance**	
80.1	These are additional *Employer*'s risks	**No data required for this of the conditions of contract**

81.1	The Contractor's Risk	**Add:** *Definition of Force Majeure -* *The following additional conditions must satisfied:* *(1) The Contractor has engaged with the persons responsible for the riot, commotion, disorder, strike or lockout; has met with the persons or leaders; and has recorded the persons or leaders details, their grievances, the organisations involved, all threats made; and has requested the persons or leaders to cease all unlawful conduct; and* *(2) The Contractor has obtained proof of the riot, commotion, disorder, strike or lockout, and of any unlawful conduct; and* *(3) The Contractor has reported all threats and unlawful conduct to the South African Police Service; and* *(4) The Contractor has brought an urgent application to the court on an ex parte basis that correctly identify the respondents and define the unlawful conduct to be interdicted; and* *(5) The Contractor has ensured that the court order is enforced.*
84.1	The *Employer* provides these insurances from the Insurance Table	Refer appendix 3 for insurance requirements
84.1	The *Employer* provides these additional insurances	Refer appendix 3 for insurance requirements
84.1	The *Contractor* provides these additional insurances	Refer appendix 3 for insurance requirements
84.2	The minimum limit of indemnity for insurance in respect of loss of or damage to property (except the *works*, Plant, 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 for any one event is	Refer appendix 3 for insurance requirements
84.2	The minimum limit of indemnity for insurance in respect of death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with this contract for any one event is	**As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the *Contractor's* common law liability for people falling outside the scope of the Act with a limit of Indemnity as prescribed.**
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 (Name)	**The person selected from the panel of adjudicators listed in Annexure C of this Contract Data, by the party intending to refer a dispute to him.**
W1.2(3)	The *Adjudicator nominating body* is:	**The Chairman of the Johannesburg Society of Advocates, or his successor or his nominee.**
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	**In the city where the Site is located, within 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 Sectional Completion

X5.1 The *completion date* for each *section* of the *works* is:

Section	**Description**	***Completion date***
1	**Procurement of Equipment and Commencement of works**	**31 March 2025**
2	**Completion of all installation works**	**31 October 2026**
3	**Commissioning, Signoffs, and project close-out.**	**31 December 2026**

X5 & X7 Sectional Completion and delay damages used together

X5.1
X7.1 Delay damages for late Completion of the *section*s of the *works* are:

section	**Description**	**Amount per day**
1	**Procurement of Equipment and**	**Five percent (5%) on the cost of the delayed**

			Commencement of works	**equipment delivery to site.**
		2	**Completion of all installation works**	**Five percent (5%) on the cost of the delayed installation works on-site.**
		3	**Commissioning, Signoffs, and project close-out.**	**Five percent (5%) on the cost of the delayed commissioning, signoffs, and project close-out**
	The total delay damages payable by the *Contractor* does not exceed:	**Fifteen percent (15%) of the total project value**		
X15	**Limitation of the *Contractor*'s liability for his design to reasonable skill & care**	**There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.**		
X16	**Retention (not used with Option F)**			
X16.1	The *retention free amount* is	**Retention will not be charged on the amount for the procurement of equipment and materials**		
	The *retention percentage* is	**Five percent (5%) of the total project value**		
X17	**Low performance damages**			
X17.1	The amounts for low performance damages are:	**Amount**	**Performance level**	
		100% of the Cost and incurred expenses	**For the poor quality or unacceptable job standard performed by the contractor**	
		100% of the Cost and incurred expenses	**For the inferior material and or equipment used on-site.**	
X18	**Limitation of liability**			
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**The total cost of the incurred losses and or repairs to the damages caused.**		
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 total cost of the incurred losses and or repairs to the damages caused.**		
X18.3	The *Contractor*'s liability for Defects due to his design which are not listed on the Defects Certificate is limited to	**The total cost of the incurred losses and or repairs to the damages caused and the total cost of paying a third party/parties for the new**		

		designs, installations, commissioning and signoffs.
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 *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;** • **damage to third party property; and** • **infringement of an intellectual property right.**
X18.5	The *end of liability date* is	**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.**
Z	**The *Additional conditions of contract* are**	**Z1 to Z24 below.**

AMENDMENTS TO THE CORE CLAUSES

Z1 Interpretation and the law

Z1.1 **Add to core clause 12.3:** 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.

Z1.2 **Add the following as a new core clause 12.5:**

Z1.2.1 In this contract:

Z1.2.1.1 references to any Party to the Contract include its successors or permitted assigns;

Z1.2.1.2 references to the Contractor include the obligations of its personnel;

Z1.2.1.3 the references to the provisions of any law include such provisions as amended, re-enacted or consolidated from time to time in so far as such amendment, re-enactment or consolidation applies or is capable of applying to any works under this Contract;

Z1.2.1.4 references to this Contract and any deed, Contract or instrument are deemed to include references to this Contract or such other deed, agreement or instrument as amended, novated, supplemented, varied or replaced from time to time;

Z1.2.1.5 references to a "person" include a natural person, company or any other artificial person or other corporate entity, a charity, trust, partnership, joint venture, syndicate, or any other association of persons;

Z1.2.1.6 references to “month” means a calendar month;

Z1.2.1.7 headings are for convenience only and are not taken into consideration in the interpretation of the Contract;

Z1.2.1.8 where any number of days is prescribed, those days are reckoned exclusively of the first and inclusively of the last day unless the last day falls on a day that is not a working day, in which event the last day is the next succeeding working day;

Z1.2.1.9 any provision in Contract that is or may become illegal, invalid or unenforceable in any jurisdiction is ineffective to the extent of such prohibition or unenforceability in such jurisdiction and is treated as severed from the balance of Contract in such jurisdiction, without invalidating the remaining provisions of Contract in such jurisdiction or affecting it in any other jurisdiction;

Z1.2.1.10 references to any amount means that amount exclusive of VAT, unless the amount expressly includes VAT;

Z1.2.1.11 the rule of construction that if general words or terms are used in association with specific words or terms that are a species of a particular genus or class, the meaning of the general words or terms shall be restricted to that same class shall not apply, and whenever the word "including" is used followed by specific examples, such examples shall not be interpreted so as to limit the meaning of any word or term to the same genus or class as the examples given;

Z1.2.1.12 the rule of construction that the Contract is interpreted against or to the disadvantage of the party responsible for the drafting or preparation of Contract does not apply;

Z1.2.1.13 words and abbreviations that have well known technical or trade meanings are used in the Contract in accordance with such recognized meanings;

Z1.2.1.14 references to a "*subsidiary*" or a "*holding company*" is references to a direct or indirect subsidiary or holding company as defined in the law of the jurisdiction of the place of incorporation of the company that has a subsidiary or holding company and "affiliate" is any company that is under common control with such subsidiary or holding company;

Z1.2.1.15 time is of the essence in the performance of the parties' respective obligations.

Z2 **The Project Manager and Supervisor: add the following at the end of core clause 14.2:**

Z2.1 The Project Manager and the Supervisor may take an action which they have delegated.

Z3 **Early Warning: add the following at the end of core clause 16.2:**

Z3.1 The Contractor ensures that a subcontractor attends risk reduction meeting if its attendance would assist in deciding the actions to be taken.

Z4 **Providing the Works: Delete core clause 20.1 and replace with the following:**

Z4.1 The *Contractor* provides the works in accordance with the Works Information and warrants that the results of the Works, when complete, shall be fit for their intended purpose as stated in the Works Information, and if no such purposes is stated, the ordinary purpose of the Works.

Z5 **Subcontracting:**

Z5.1 **The following clause is added as a new core clause 26.4:** "Within 5 days of request by the *Project Manager*, the Contractor provides proof to the *Project Manager* that the Contractor's payment obligations towards its Subcontractors have been discharged. Failure by the Contractor to provide such proof to the satisfaction of the *Project Manager* entitles the *Employer* to instruct the *Project Manager* to certify payment directly to any such Subcontractor and the *Contractor* shall have no recourse to recover such amounts from the *Employer*. Such direct payment do not create privity of contract between the Employer and such Subcontractor. The *Employer* may recover such direct payment from the *Contractor*."

Z6 **Other responsibilities: add the following at the end of core clause 27:**

Z6.1 The *Contractor* has satisfied himself, prior to the Contract Date, as to the completeness, sufficiency and accuracy of all information and drawings provided to him as at the Contract Date.

Z6.2 The *Contractor* is responsible for the correct setting out of the *Works* in accordance with the original points, lines and levels stated in the *Works* Information or notified by the *Project Manager*, *Supervisor* or the *Employer*. Any errors in the positioning of the *Works* are rectified by the *Contractor* at the *Contractor's* own costs.

Z7 **Acceleration: add the following new provisions at the end of core clause 36:**

Z7.1 The Project Manager's reply is either:

Z7.1.1 A notification that the quotation is accepted, in which case, the *Project Manager* changes the Prices, Completion Date and Key Dates and accepts the revised programme; or

Z7.1.2 A notification that the quotation is not accepted and that the Prices, Completion Date and Key Dates are not changed.

Z8 **Extending the defects date: add the following as a new core clause 46:**

Z8.1 If the *Employer* cannot use the *works* due to a Defect, which arises after Completion and before the *defects date*, the *defects date* is delayed by a period equal to that during which the *Employer*, due to a Defect, is unable to use the *works.*

Z8.2 If part of the *works* is replaced due to a Defect arising after Completion and before the *defects date*, the *defects date* for the part of the *works* which is replaced is delayed by a period equal to that between Completion and the date by when the part has been replaced.

Z8.3 The *Project Manager* notifies the *Contractor* of the change to a *defect date* when the delay occurs. The period between Completion and an extended *defects date* does not exceed twice the period between Completion and the *defects date* stated in the Contract Data.

Z9 **Quality Management System: add the following as a new core clause 47:**

Z9.1 The *Contractor* implements and maintains a quality management system with the requirements stated in the Works Information.

Z9.2 Within the period stated in the Contract Data, the *Contractor* provides the *Project Manager* with a quality plan for acceptance. A reason for not accepting the quality plan is that it does not allow for the *Contractor* to Provide the Works.

Z9.3 If any changes are made to the quality plan, the *Contractor* provides the *Project Manager* with the changes quality plan for acceptance.

Z9.4 The *Project Manager* may instruct the *Contractor* to correct a failure to comply with the quality plan. This instruction is not a compensation event.

Z10 **Assessing the amount due:**

Z10.1 **Delete the second bullet point of core clause 50.1 and replace with the following:** "within thirteen weeks of termination of this Contract"

Z11 **Final assessment: add the following as a new core clause 53:**

Z11.1 The *Project Manager* makes a final assessment and certifies final payment in accordance with the Contract. The final payment is made within four weeks of the assessment.

Z11.2 An assessment of the final amount due is conclusive evidence of the final amount due under or in

connection with the Contract, unless a Party raises a dispute in relation to the assessment of the final amount due.

Z11.3 The assessment of the final amount due is changed to include any agreement the Parties reached and/or a decision of the Adjudicator which has not been referred to the tribunal within four weeks of that decision. The changed assessment becomes conclusive evidence of the final amount due under or in connection with the Contract.

Z12 Notifying compensation events:

Z12.1 Delete the last sentence in core clause 61.3 and replace with the following: "If the *Contractor* does not notify a compensation event within four weeks of becoming aware of the event, he is not entitled to a change in the Prices, the Completion date or a Key Date and the *Employer* is absolved from all liability in relation to such event."

Z13 Assessing compensation events:

Z13.1 The following is added at the end of core clause 63.4: "the *Contractor* shall only be entitled to changes to the Prices, the Completion Date and/or the Key Date if the compensation event affects the critical path."

Z14 Termination

Z14.1 Add the following to core clause 91.1, at the second main bullet, fifth sub-bullet point, after the words "assets or": "business rescue proceedings are initiated or steps are taken to initiate business recue proceedings".

AMENDMENTS TO THE SECONDARY OPTION CLAUSES

Z15 Changes in Law: Add the following clause to secondary option X2 as X2.2:

Z15.1 A change in law is defined as:

Z15.1.1 the adoption, enactment, promulgation, coming into effect, repeal, amendment, reinterpretation, change in application or other modification after the Contract Date of any law, excluding (i) the enactment of any bill inside the country, but only if such bill is enacted without any material changes being made to the contents of such bill from the form published in the Gazette (as defined in the Interpretation Act, 1957) as at the Contract Date, and (ii) any such modification in law relating to any taxes, charges, imposts, duties, levies or deductions that are assessed in relation to a person's income

Z15.1.2 any permit being terminated, withdrawn, amended, modified or replaced, other than (i) in accordance with the terms upon which it was originally granted, (ii) as a result of the failure by the *Contractor* to comply with any condition set out therein, or (iii) as a result of any act or omission of the *Contractor*, any Subcontractor or any affiliate to the *Contractor*.

Z16. Delay damages: add the following to secondary Option X7 (if applicable in this contract)

Z16.1 If the amount due for the *Contractor*'s payment of delay damages reaches the limits stated in this Contract Data for Option X7, the *Employer* may, at its sole discretion, terminate the *Contractor*'s obligation to Provide the Works.

Z16.2 If the *Employer* terminates in terms of this clause, the procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table

Z17 Performance Bond

Z17.1 Amend the first sentence of clause X13.1 to read as follows: The *Contractor* gives the *Employer* an unconditional, on-demand performance bond, provided by a bank or insurer which the *Project Manager* and the *Employer* have accepted, for the amount stated in the Contract Data and in the form set out in Annexure B of this Contract Data.

Z17.2 **Add the following new clause as Option X13.2:** The *Contractor ensures* that the performance bond is valid and enforceable until the end of the *contract period.* If the terms of the performance bond specify its expiry date and the end of the *contract period* does not coincide with such expiry date, four weeks prior to the said expiry date, the *Contractor* extends the validity of the performance bond until the end of the *contract period.* If the *Contractor* fails to so extend the validity of the performance bond, the *Employer* may claim the full amount of the performance bond and retain the proceeds as cash security

Z18 **Limitation of liability: Insert the following new clause as Option X18.6:**

Z18.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00.

Z18.2 Notwithstanding any other clause in this contract, any proceeds received from the security bonds and guarantees provided by the *Contractor* in terms of this Contract and any insurances or any proceeds which would have been received from any insurances but for the conduct of the *Contractor* shall be excluded from the calculation of the limitations of liability listed in the contract.

ADDITIONAL Z CLAUSES

Z19 **Cession, delegation and assignment**

Z19.1 The *Contractor* shall not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer*, which consent shall not be unreasonably withheld. This clause shall be binding on the liquidator/business rescue practitioner /trustee (whether provisional or not) of the *Contractor*.

Z19.2 The *Employer* may, on written notice to the *Contractor*, cede and delegate its rights and obligations under this contract to any person or entity.

Z20 **Joint and several liability**

Z20.1 If the *Contractor* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons, these persons are deemed to be jointly and severally liable to the *Employer* for the performance of the Contract.

Z20.2 The *Contractor* shall, within 1 week of the Contract Date, notify the *Project Manager* and the *Employer* of the key person who has the authority to bind the *Contractor* on their behalf.

Z20.3 The *Contractor* does not materially alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without prior written consent of the *Employer*.

Z21 **Ethics**

Z21.1 The *Contractor* undertakes:

Z21.1.1 not to give any offer, payment, consideration, or benefit of any kind, which constitutes or could be construed as an illegal or corrupt practice, either directly or indirectly, as an inducement or reward for the award or in execution of this contract;

Z21.1.2 to comply with all laws, regulations or policies relating to the prevention and combating of bribery, corruption and money laundering to which it or the *Employer* is subject, including but not limited to the Prevention and Combating of Corrupt Activities Act, 12 of 2004.

Z21.2 The *Contractor*'s breach of this clause constitutes grounds for terminating the *Contractor*'s obligation to Provide the Works or taking any other action as appropriate against the *Contractor* (including civil or criminal action). However, lawful inducements and rewards shall not constitute grounds for termination.

Z21.3 If the *Contractor* is found guilty by a competent court, administrative or regulatory body of participating in illegal or corrupt practices, including but not limited to the making of offers (directly or indirectly), payments, gifts, gratuity, commission or benefits of any kind, which are in any way whatsoever in connection with the contract with the *Employer*, the *Employer* shall be entitled to terminate the

contract in accordance with the procedures stated in core clause 92.2. The amount due on termination is A1.

Z22 Confidentiality

Z22.1 All information obtained in terms of this contract or arising from the implementation of this contract shall be treated as confidential by the *Contractor* and shall not be used or divulged or published to any person not being a party to this contract, without the prior written consent of the *Project Manager* or the *Employer*, which consent shall not be unreasonably withheld.

Z22.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until otherwise notified by the *Project Manager*.

Z22.3 This undertaking shall not apply to –

Z22.3.1 Information disclosed to the employees of the *Contractor* for the purposes of the implementation of this agreement. The *Contractor* undertakes to procure that its employees are aware of the confidential nature of the information so disclosed and that they comply with the provisions of this clause;

Z22.3.2 Information which the *Contractor* is required by law to disclose, provided that the *Contractor* notifies the *Employer* prior to disclosure so as to enable the *Employer* to take the appropriate action to protect such information. The *Contractor* may disclose such information only to the extent required by law and shall use reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed;

Z22.3.3 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);

Z22.4 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*.

Z22.5 The *Contractor* ensures that all his Subcontractors abide by the undertakings in this clause.

Z23 Liens and Encumbrances

Z23.1 The *Contractor* keeps the Equipment used to Provide the Services free of all liens and other encumbrances at all times. The *Contractor,* vis-a-vis the *Employer,* waives all and any liens which he may from time to time have, or become entitled to over such Equipment and any part thereof and procures that his Subcontractors similarly, vis-a-vis the *Employer,* waive all liens they may have or become entitled to over such Equipment from time to time

Z24 Intellectual Property

Z24.1 Intellectual Property (“IP”) rights means all rights in and to any patent, design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works.

Z24.2 IP rights remain vested in the originator and shall not be used for any reason whatsoever other than carrying out the *works.*

Z24.3 The *Contractor* gives the *Employer* an irrevocable, transferrable, non-exclusive, royalty free licence to use and copy all IP related to the *works* for the purposes of constructing, repairing, demolishing, operating and maintaining the works.

Z24.4 The written approval of the *Contractor* is to be obtained before the *Contractor*'s IP made available to any third party which approval will not be unreasonably withheld or delayed. Prior to making any *Contractor*'s IP available to any third party the *Employer* shall obtain a written confidentiality undertaking from any such third party on terms no less onerous than the terms the *Employer* would use to protect its IP.

Z24.5 The *Contractor* shall indemnify and hold the *Employer* harmless against and from any claim alleging an infringement of IP rights (**"the claim"**), which arises out of or in relation to:

Z24.5.1 the *Contractor's* design, manufacture, construction or execution of the Works;

Z24.5.2 the use of the *Contractor's* Equipment, or

Z24.5.3 the proper use of the Works.

Z24.6 The *Employer* shall, at the request and cost of the *Contractor*, assist in contesting the claim and the *Contractor* may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it.

Annexure B: Pro forma Security Bonds and Guarantee

Pro forma Retention Money Guarantee (may be used when Option X16 applies)

[To be reproduced exactly as shown below on the letterhead of the Bank providing the Guarantee]

For use with the NEC3 Engineering and Construction Contract (April 2013)

The Airports Company South Africa SOC Limited

Riverwoods Office Park, The Maples, 24 Johnson Road,
Bedfordview 2008.

Date:

Dear Sirs

Reference No. **[●]** **[Drafting Note: Guarantor's reference number to be inserted]**

Retention Money Guarantee: **[Drafting Note: Name of Contractor to be inserted]**

Project [●]

1. In this Guarantee the following words and phrases shall have the meaning stated:-

1.1 "**Contract**" means the construction contract entered into between the Employer and the Contractor (Contract Reference No._____ and such amendments or additions to the Contract as may be agreed in writing between the parties.

1.2 "**Contractor**" means **[insert]**

1.3 "**Employer**" means Airports Company South Africa SOC Limited, a company registered in accordance with the laws of the South Africa

1.4 "**Expiry Date**" means **[insert]**

1.5 "**Guarantee**" means this on-demand, unconditional, irrevocable advance payment guarantee, which is independent and/or separate from the underlying Contract.

1.6 "**Guaranteed Amount**" means the sum of **[insert]**, being the total value of the advance payment made in terms of the Contract.

1.7 "**Guarantor**" means **[insert]**

1.8 "**Guarantor's Address**" mean **[insert]**

2. The Contractor is required to obtain a retention money guarantee under the Contract.

3. The Guarantor hereby undertakes to pay the Employer any sum or sums not exceeding the Guarantee Amount in total (the "**Demand Amount**"), upon receipt of a written demand delivered to the Guarantor's Address, stating that the Contractor has failed to carry out his obligation(s) to remedy certain defects for which he is responsible under the Contract and, the nature of such defects (without being required to prove the nature of the breach and the amount claimed). The written demand shall be signed by the Employer and be accompanied by the original Guarantee.

4. The Guarantee Amount shall be reduced by 50% at the earlier or Completion of the whole of the Works and the date on which the Emploer takes over the whole of the Works(as defined in the Contract). After receiving the Certificate of Completion from the Contractor the Guarantor shall promptly notify the Employer of the revised Guarantee Amount.

5. This Guarantee automatically comes into full force and effect on the signature date by the Guarantor and shall automatically expire 14 days after the assessment made at the Completion of the whole of the Works or the assessment after the Employer takes over the whole of the Works if this is before Completion of the whole of the Works.

6. The obligations under this Guarantee constitute direct primary, irrevocable and unconditional obligations, do not require any previous notice to or claim against the Contractor, and shall not in any way be released or discharged or otherwise absolved of liability hereunder by reason of any arrangement or change in relationship made between the Contractor and the Employer and/or between the Guarantor and Contractor; nor any alteration in the obligations undertaken by the Contractor or in the terms of the Contract; nor any indulgence, failure, delay by the Employer as to any matter; nor any dissolution or liquidation or such other analogous event of the Contractor (whether or not the Guarantor has notice thereof).

7. The Employer shall be entitled to arrange its affairs with the Contractor in any manner which it sees fit, without advising us and without affecting our liability under this Guarantee. This includes, without limitation, any extensions, indulgences, release or compromise granted to the Contractor or any variation under or to the Contract.

8. All payments made by Guarantor shall be due and payable in the amount specified in any payment demand made in respect hereof by the Employer and shall be made free and clear of and without any deduction for or on account of any tax or future taxes, levies, imposts, duties, charges, fees, set off, counterclaims, deductions or withholdings of any nature whatsoever and by whomever imposed. All charges of the Guarantor related to the issuance or performance of this Guarantee (including, but not limited to, the negotiation, payment, extension or transfer hereof) shall be borne by the Contractor and under no circumstances shall be charged to the Employer by the Guarantor.

9. This Guarantee shall be governed by and construed in accordance with the law of the Republic of South Africa and shall be subject to the jurisdiction of the High Court of the Republic of South Africa.

10. This Guarantee, with the required demand notice, shall be regarded as a liquid document for the purposes of obtaining a court order.

11. The Guarantor chooses as its *domicilium citandi et executandi* for all purposes in connection with this Guarantee at the Guarantor's Address.

12. If at any time any one or more of the provisions of this Guarantee is or becomes illegal, invalid or otherwise unenforceable in any respect neither the legality, validity or enforceability of the remaining provisions of this Guarantee, nor the legality, validity or enforceability of such provision, under the law shall in any way be affected or impaired as a result.

SIGNED at _____on _____Day of_____ 202__

For and on behalf of the **GUARANTOR**, duly authorised and warranting such authority

Full Name: _____

Capacity: _____

Witness: _____

[Insert Guarantor's stamp]

Annexure C: ACSA Panel of Adjudicators

One of the following adjudicators shall be selected by the referring party as and when a dispute arises.

Potential Adjudicator	**Email Address**	**Chamber**
Adv. Mkhululi Duncan Stubbs	duncan.stubbs@gmail.com	Thulamela Chambers
Adv. Arzhar Bham SC	bhamae@law.co.za	Victoria Mxenge
Adv. Mohhamed Chohan SC	chohann@counsel.co.za	Group One
Adv. Benny Makola	benny.makola@gmail.com	Group 621
Adv. Vincent Maleka SC	ivmaleka@mweb.co.za	Thulamela Chambers
Adv. Chris Loxton SC	loxton@counsel.co.za	Group One

Annexure D: ACSA Insurance Clauses

REFER APPENDIX 3 FOR INSURANCE INFORMATION/REQUIREMENTS

C1.2 Contract Data

Part two - Data provided by the *Contractor.*

Clause	Statement	Data
10.1	The *Contractor* is (Name): Address Tel No. Fax No.	
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: Experience: 3 Name: Job: Responsibilities: Qualifications: Experience: 4 Name: Job: Responsibilities: Qualifications: Experience: 5 Name: Job:	

	Responsibilities: Qualifications: 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	
A	**Priced contract with activity schedule**	
11.2(20) 11.2(30)	The *activity schedule* is in The tendered total of the Prices is	**(in figures)** **(in words), excluding VAT**

PART 2: PRICING DATA

C2.1 Pricing assumptions: Option A

ALSO REFER TO PRICING INSTRUCTIONS IN TENDER DOCUMENT.

The *conditions of contract*

How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract, April 2013 (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.
		(22) Defined Cost is the cost of the components in the Shorter Schedule of Cost Components whether work is subcontracted or not excluding the cost of preparing quotations for compensation events.
		(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.

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 instructions to do work or 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”. Hence when compiling the *activity schedule*, the tendering contractor needs to show each activity on the programme he submits with his tender.

Preparing the *activity schedule*

The tendering contractor prepares the *activity schedule* and should study the ECC3 Guidance Notes pages 19 and 20 before doing so. The *Employer* may have instructed the tendering contractor to include particular activities which he has specified and requires the *Contractor* to identify them in his *activity schedule*.

1 Generally it is the Contractor who prepares the Activity Schedule as part of his tender by breaking down the work described within the Works Information into suitable activities which can be well defined, priced as a lump sum and shown on the programme. The Employer, in his Conditions of Tender 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.

2 The Prices are defined in clause 11.2(20) as the lump sum for each activity in the activity schedule and the Price for Work Done to Date (PWDD) (the amount due to the contractor) is defined in clause 11.2(24) as the total of the Prices for each activity that has been completed. Hence activities in the activity schedule should be structured so as to provide an acceptable monthly cash flow as they are only assessed for payment on the assessment date if they have been completed.

3 As the Contractor has an obligation to correct Defects (core clause 43.1) and there is no compensation event for this unless the Defect was due to an Employer's risk, the lump sum Prices must also include for the correction of Defects.

4 If the Contractor has decided not to identify a particular activity, the cost to the *Contractor* of doing the work must be included in, or spread across, the other Prices in order to fulfil the obligation to complete the works for the tendered total of the Prices.

5 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. See Clause 60.1.

6 Hence the Prices tendered by the Contractor in the *activity schedule* 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.

7 However, the Contractor does not have to allow in his Prices for matters that may arise as a result of a compensation event. It should be noted that the list of compensation events includes those arising as a result of an Employer's risk event listed in core clause 80.1.

•

An activity schedule could have the following format:

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

C2.2 the *activity schedule*

Part-1 (Price for the Design, Supply, Installation, and Commission of the Gas Suppression Systems Including Supply of Relevant Certifications and Signoffs)			
ID	**Room Description**	**Volume (m^3)**	**Price Excluding VAT (ZAR)**
Power and Lighting Substation			
1	MV Switchroom	761,03	R
2	LV Switchroom	1031,04	R
3	Transformer room	602,43	R
4	Generator Room 1	188,31	R
5	Generator Room 2	182,89	R
6	Generator Room 3	229,45	R
Sub-Total 1			R
North Substation			
7	MV Switchroom	72,63	R
8	LV Switchroom	328,35	R
9	Transformer room 1 - HVAC	69,9	R
10	Transformer room 2 - HVAC	69,17	R
11	Transformer room 3 - HVAC	70,8	R
12	Transformer room 4 -TRFN1	70,2	R
13	Transformer room 5 - TRFN2 Spare	71,93	R
14	Transformer room 6 - TRFN3	73,2	R
15	Generator Room 1 & 2	413,02	R
16	Generator Room 3	155,37	R
Sub-Total 2			R
South Substation			
17	MV Switchroom	65,77	R
18	LV Switchroom	297,22	R
19	Transformer room 1- HVAC S3	82,17	R

20	Transformer room 2- HVAC S2	82,45	R
21	Transformer room 3 - HVAC S1	82,51	R
22	Transformer room 4- TRF - S1	80,23	R
23	Transformer room 5- TRF - S2	79,3	R
24	Transformer room 6 - TRF - S3	79,63	R
25	Generator Room	192,88	R
26	UPS Room	63,45	R
Sub-Total 3			R
Alpha Substation			
27	MV Switchroom	1575,38	R
Sub-Total 4			R
UPS Room next to Alpha Sub			
28	UPS Room	161,84	R
Sub-Total 5			R
2 Alpha Substation			
29	MV Switchroom	208,96	R
Sub-Total 6			R
Shell Substation			
30	Generator & LV Switchroom	88,72	R
Sub-Total 7			R
Oval Substation			
31	LV Switchroom	33,45	R
32	Transformer and MV Switchroom	40,11	R
Sub-Total 8			R
Terminal 1 Substation			
33	LV Switchroom	191,8	R
34	Transformer, Generator & MV Switchroom	293,49	R
Sub-Total 9			R
Terminal 5 Substation			
35	LV Switchroom	102,14	R
36	Transformer, and MV Switchroom	199,76	R
Sub-Total 10			R

SOB Substation			
37	MV Switchroom	36,69	R
38	Transformer Room	46,92	R
39	LV Switchroom	42,88	R
Sub-Total 11			R
Sub-19			
40	Generator Container	33,5	R
41	LV and MV Switchroom	243,15	R
42	Transformer Room	79,28	R
Sub-Total 12			R
Air-Franc Substation			
43	MV Switchroom ACSA	1242,14	R
44	MV Switchroom ESKOM	58,49	R
Sub-Total 13			R
Sub-01			
45	Transformer Room	79,13	R
46	MV Switchroom	69,57	R
47	LV Switchroom	182,82	R
48	UPS/Battery Bank Room	100,11	R
49	Generator Container	33,5	R
Sub-Total 14			R
S-BAND Substation			
50	MV Switchroom	46,79	R
51	Transformer Room	39,77	R
52	ATNS Room	222,48	R
Sub-Total 15			R
VORTAC/TACAN Substation			
53	MV Switchroom	20,89	R
54	ATNS Room	103,69	R
Sub-Total 16			R

Parkade 1 Substation			
55	Generator Room	70,4	R
56	MV Switchroom	48,66	R
57	Transformer Room	48,52	R
58	LV Switchroom	83,93	R
Sub-Total 17			R
Parkade 2 Substation			
59	Generator Room	51,85	R
60	MV Switchroom	39,16	R
61	Transformer Room	33,56	R
62	LV Switchroom	66,98	R
Sub-Total 18			R
Basement Substation			
63	LV, MV Switchboards & Transformers	237,33	R
64	Local Transformer & Suppression Gas Bottles	61,38	R
Sub-Total 19			R
Car Rental Substation			
65	LV Switchroom	18,02	R
Sub-Total 20			R
TOTAL 1 Excluding VAT (ST1 + ST2 + ST3 + ST4 + ST5 + ST6 + ST7 + ST8 + ST9 + ST10 + ST11 + ST12 + ST13 + ST14 + ST15 + ST16 + ST17 + ST18 + ST19 + ST20)			R

Part-2 (Price for Decommissioning, Removal from Site and Disposal of the Existing System, Including Disposal Certificates)

ID	Room Description	Volume (m^3)	Current Equipment	Price Excluding VAT (ZAR)
Power and Lighting Substation				
1	LV Switchroom	1031,04	Ex 24 x 75 KG CO2 cylinders	R
2	Transformer room	602,43	Ex 35 x 75 KG CO2 cylinders	R
Sub-Total 1				R
North Substation				
3	LV Switchroom	328,35	Ex 11 x 75 KG CO2 cylinders	R
Sub-Total 2				R
South Substation				
4	LV Switchroom	297,22	Ex 9 x 75 KG CO2 cylinders	R
5	UPS Room	63,45	Ex 3 x 75 KG CO2 cylinders	R
Sub-Total 3				R
Terminal 1 Substation				
6	Transformer, Generator & MV Switchroom	293,49	Ex 9 x 75 KG CO2 cylinders	R
Sub-Total 4				R
Terminal 5 Substation				
7	LV Switchroom	102,14	Ex 5 x 75 KG CO2 cylinders	R
8	Transformer, and MV Switchroom	199,76		
Sub-Total 5				R
Basement Substation				
9	LV, MV Switchboards & Transformers	237,33	Ex 9 x 75 KG CO2 cylinders	R
Sub-Total 6				R
Total 2 Excluding VAT (ST1 + ST2 + ST3 + ST4 + ST5 + ST6)				**R**

Part-3 (Preliminary and General)		
ID	**Preliminary and General**	**Price (ZAR)**
1	Site Establishment	R
2	Safety File	R
3	Permits (Personnel and Vehicles) Refer permit costs after Scope of Works in contract document.	R
4	Insurance(s)	R
	TOTAL 3	R

PRICING SCHEDULE SUMMARY		
No.	**Activity/Pricing Schedules**	**Price (ZAR)**
1	Design, Supply, Install and Commission Total	R
2	Decommissioning Total	R
3	Preliminary and General Total	R
4	Provisional Sum Total (for possible additional works – refer information after scope of works)	R 500,000.00
	TOTAL	R
5	Contingencies @10%	R
Grand Total Excl. VAT **(Carry over to form of offer)**		R
VAT @ 15% **(Carry over to form of offer)**		R
Grand Total Incl. VAT **(Carry over to Form of Offer)**		R

PART 3: SCOPE OF WORK

DESCRIPTION OF THE WORKS

Executive overview

Works on this contract includes designing, supplying, installing, and commissioning of new inert gas (IG) fire suppression systems and the replacement of existing carbon dioxide (CO_2) fire suppression systems at Cape Town International Airport substations. Some substations currently have CO_2 fire suppression systems installed that needs to be decommissioned, removed, and disposed and / or recycled safely, and on the same substations design, supply, install, and commission new inert gas (IG) fire suppression systems. On the other hand, some substations currently do not have any fire suppression systems installed, on these substations, the design, supply, installation, and commissioning of new inert gas (IG) fire suppression systems is required. Incidental to the core works of this contract additional minor works have been allowed for as detailed on the provisional sum.

Employer's objectives and purpose of the works

The main objective of this contract is to have all electrical substations protected from fire damage by employing suitable standalone gaseous fire suppression systems to automatically detect any fire condition in the respective substation and suppress the fire in protecting the critical electrical infrastructure and the general building infrastructure. This will also address non-compliance of not having functional fire detection and suppression systems in electrical rooms that currently do have any fire suppression systems installed.

Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AIA	Authorised Inspection Authority
ASME	American Society of Mechanical Engineers
ATNS	Air Traffic and Navigation Services
ACSA	Airports Company South Africa
CAPEX	Capital Expenditure
CIDB	Construction Industry Development Board
COC	Certificate of Conformance
CO2	Carbon Dioxide
CTIA	Cape Town International Airport
EC	European Commission

EN54	European Standard for Fire Detection and Fire Alarm Systems
EU	European Union
FDIA	Fire Detection and Installation Association
HVAC	Heating, Ventilation, and Air Conditioning
IG-541	Inert Gas (Nitrogen 52%, Argon 40%, and Carbon Dioxide 8%
INERGEN	Brand name for IG-541 inert gas
ISO	International Organization for Standardization
KPA	Kilopascal
KPI	Key Performance Indicator
LV	Low Voltage
MV	Medium Voltage
NEC	National Engineering Contract
NFPA	National Fire Protection Association
OPEX	Operating Expenditure
PER	Pressure Equipment Regulations
RSA	Reinforced Structural Analysis
SABS	South African Bureau of Standards
SANS	South African National Standards
SAQCC	South African Qualification and Certification Committee
SANAS	South African National Accreditation System
SCM	Supply Chain Management
SOB	Southern Office Block
TACAN	Tactical Air Navigation
TPED	Transportable Pressure Equipment Directive
TRFN	Transformer
TVRN	Traction Voltage Regulating Network
UPS	Uninterruptible Power Supply

WORKING HOURS
Working hours for this contract is from 07h00 to 17h00.

Airport is operational 24 hours.
All works for this tender to be completed within a period of 2 years.

Complete new inert gas (IG-541) fire detection and suppression systems to be installed at Cape Town International Airport electrical substations and switch rooms together with new pipework connected to the new Gas Control Units for the operation of individual gas discharge zones. The work must be planned and executed with minimal disruption to airport operations.
The new IG-541 gas suppression cylinders to be located within the vicinity of the areas to be suppressed. New gas suppression pipe reticulation to be installed in each of the rooms, and each room to be equipped with its own panel and detectors.
An EN54 certified gas extinguishing control panel to be installed at each of the individual risk areas rooms and where applicable, a Gas Repeater unit to be installed at the secondary entry/exit door. Optical smoke detectors to be installed in the rooms together with the required audible and visual indication devices at the respective doors. The new gas extinguishing control panels to be interfaced to the existing fire detection panel.
Existing Panels:
The list of existing fire detection panels is attached separately – refer Appendix 1.
All works to be carried out in accordance with the ACSA's schedule and provision of site access thereto. The Designers, Installers and Commissioners shall be registered with the South African Qualification Certification Committee (SAQCC - gas suppression and fire detection body) for the area of specialisation and/or FDIA.

Any welding must be carried out in accordance to the relevant legislation.

All penetrations entering or exiting a risk area (protected area, in this case an electrical room or electrical substation) shall maintain the integrity of the enclosure.
All pipe support brackets shall make provision for rubber supports to protect the pipe from abrasions.

All electrical work (power supply, wiring, cabling, etc.) associated with the mechanical part of this contract, including the linking up of the solenoid actuators to the respective Gas Control Units in each of the risk areas shall the be service provider's responsibility.

<u>Summarized Scope of Works</u>

- Design, Supply, Install and Commission new Inert gas (IG-541) fire detection and suppression systems to replace the existing CO_2 fire detection and suppression systems.
- Scope to include decommissioning, removal from site and disposal of old equipment from the existing CO_2 fire detection and suppression systems, and provision of disposal certificates.

- Design, Supply, Install and Commission new Inert gas (IG-541) fire detection and suppression systems for all electrical rooms where currently no suppression systems exist.

- System to be linked to the room fresh air supply and upon discharge activation on a fire incident the electricity supply to the air-conditioning units, and or ventilation fans where applicable shall be switched off.

- On rooms employing natural fresh air intake via fixed louvers or fins, a fire-resistant curtain activated by a magnetic solenoid shall be installed and upon discharge activation on a fire incident the magnetic solenoid shall release the fire-resistant curtain to contain fire within the room and block fresh air (oxygen) supply to the room.

- On rooms employing natural fresh air intake via moving louvers, a magnetic solenoid shall be installed and connected to the louvers via heat resistant steel wire rope and upon discharge activation on a fire incident the magnetic solenoid shall release the steel wire rope, and this will shut the moving louvers to contain the fire within the room and block fresh air (oxygen) supply to the room.

- Repair all wall penetration to improve the room sealing integrity.
- Pipe entries and cable trays to be sealed around the outside and inside where they penetrate the perimeter boundaries of the enclosure.
- Provide a detailed room design, and layout for each room in AutoCad, PDF and hard copy format in A1 size laminated and framed.
- Conduct a room integrity test and provide an integrity test certificate for each substation room.
- The individual gas suppression systems on respective areas shall comply with relevant SANS and IEC standards (e.g. SANS 347 and SANS 10139).
- The system to be linked to the existing fire detection monitoring system for the airport.

- Test and commission the system, issue the COCs and Engineer's sign-off for the Fire Detection and Suppression System,

Substation Details

The table below gives substation details, volume measurements for the substation rooms and indicates whether there is an existing gaseous suppression system in each room or not.

No.	Substation Name	Room Description	Volume (m^3)	Existing Suppression Details
1	Power and Lighting Substation (6 rooms)	MV Switch room	761,03	Existing 24 x 75 KG CO2 cylinders
2		LV Switch room	1031,04	None
3		Transformer room	602,43	Existing 35 x 75 KG CO2 cylinders
4		Generator Room 1	188,31	None
5		Generator Room 2	182,89	None
6		Generator Room 3	229,45	None
7	North Substation (10 rooms)	MV Switch room	72,63	None
8		LV Switch room	328,35	Existing 11 x 75 KG CO2 cylinders
9		Transformer room 1 - HVAC	69,9	None
10		Transformer room 2 - HVAC	69,17	None
11		Transformer room 3 - HVAC	70,8	None
12		Transformer room 4 -TRFN1	70,2	None

13		Transformer room 5 - TRFN2 Spare	71,93	None
14		Transformer room 6 - TRFN3	73,2	None
15		Generator Room 1 & 2	413,02	None
16		Generator Room 3	155,37	None
17	South Substation (10 rooms)	MV Switch room	65,77	None
18		LV Switch room	297,22	Existing 9 x 75 KG CO2 cylinders
19		Transformer room 1- HVAC S3	82,17	None
20		Transformer room 2- HVAC S2	82,45	None
21		Transformer room 3 - HVAC S1	82,51	None
22		Transformer room 4- TRF - S1 Building Services	80,23	None
23		Transformer room 5- TRF - S2	79,3	None
24		Transformer room 6 - TRF - S3	79,63	None
25		Generator Room	192,88	None
26		UPS Room	63,45	Ex 3 x 75 KG CO2 cylinders
27	Alpha Substation	MV Switch room	1575,38	None
28	UPS Room next to Alpha Sub	UPS Room	161,84	None
29	2 Alpha Substation	MV Switch room	208,96	None
30	Shell Substation	Generator & LV Switch room	88,72	None
31	Oval Substation (2 rooms)	LV Switch room	33,45	None
32		Transformer and MV Switch room	40,11	None
33	Terminal 1 Substation (2 rooms)	LV Switch room	191,8	None
34		Transformer, Generator & MV Switch room	293,49	Existing 9 x 75 KG CO2 cylinders
35	Terminal 5 Substation (2 rooms)	LV Switch room	102,14	Existing 5 x 75 KG CO2 cylinders
36		Transformer, and MV Switch room	199,76	
37	SOB Substation (3 rooms)	MV Switch room	36,69	None
38		Transformer Room	46,92	None
39		LV Switch room	42,88	None
40	Sub-19 (3 rooms)	Generator Container	33,5	None
41		LV and MV Switch room	243,15	None
42		Transformer Room	79,28	None
43	Air-Franc Substation (2 rooms)	MV Switchroom ACSA	1242,14	None
44		MV Switchroom ESKOM	58,49	None
45	Sub-01 (5 rooms)	Transformer Room	79,13	None
46		MV Switchroom	69,57	None
47		LV Switchroom	182,82	None
48		UPS/Battery Bank Room	100,11	None
49		Generator Container	33,5	None

50	S-BAND Substation (3 rooms)	MV Switchroom	46,79	None
51		Transformer Room	39,77	None
52		ATNS Room	222,48	None
53	VORTAC/TACAN Substation (2 rooms)	MV Switchroom	20.89	None
54		ATNS Room	103,69	None
55	Parkade 1 Substation (4 rooms)	Generator Room	70,4	None
56		MV Switch room	48,66	None
57		Transformer Room	48,52	None
58		LV Switch room	83,93	None
59	Parkade 2 Substation (4 rooms)	Generator Room	51,85	None
60		MV Switch room	39,16	None
61		Transformer Room	33,56	None
62		LV Switch room	66,98	None
63	Basement Substation (2 rooms)	LV, MV Switchboards & Transformers	237,33	Existing 9 x 75 KG CO2 cylinders
64		Local Transformer & Suppression Gas Bottles	61,38	
65	Car Rentals LV Room	LV Switchroom	18,02	None

Technical Specifications:

Detailed Specification – Gas Suppression System

The clean agent fire extinguishing system shall be an engineered total flooding system utilizing fixed nozzles agent distribution network. It shall be designed and installed in accordance with the SANS/ISO 14520 Code of Practice, and the Engineer's specification, whichever is more stringent. A full 300 bar INERGEN (IG541) system, shall be used on these installations.

Approval shall be European approved in EN1924-2 TPED EC1999/36, TPED2010/35 EU and one other internationally recognized approval as listed in SANS347 and PER Performance Approval authority is (UL) standard 2127.

The system shall be actuated by detection and control equipment for automatic system operation along with providing local and remote manual operation as required for testing.

Work under this portion of the contract consists of the detailed design, supply, delivery and installation of an automated gas total flooding fire suppression system, complete with all inert gas bottles, gas pipe work, bosal conduits for electrical wiring, heat resistant wires, valves, nozzles, smoke detectors, sounders, strobes, signage, and discharge control units/fire panel. And ancillary equipment such as: indoor gas bottle cages, outdoor gas bottle cages movable shutter louvers, fire resistant curtains, magnets, and catch discs, etc.

Technical Requirements

The gas system shall consist of total storage banks and be capable of totally flooding the protected areas to a design concentration applicable to the gas offered at an ambient temperature of 21°C A minimum gas design concentration of 39.9% is required. A room oxygen concentration of maximum 14% (minimum 11%) shall be maintained for a period of not less than ten minutes after the gas discharge. Discharge times will be those as specified in the SANS/ISO 14520-15 Code of Practice, alternatively to those concentrations in compliance with the products listings.

The system design shall be based on the following criteria:
Indoor temperature (anticipated design) 21°C
A complete system, each individual component, design manual and design software approval shall be provided on the total inert gas installation.
The detailed design shall form part of an approved, integrated design, manufacture, and testing process in compliance with the regulation. The design of the fire protection layout shall be done as part of an IS09001 certified design programme.

Materials
Only equipment and components specifically designed for the proposed installation may be used. Proof of such compliance shall be provided for each item, and in the case of the gaseous extinguishing system, the software, each component, and the system.
Relevant national design code is ASME B31.

Working documents
The winning bidder shall be responsible for producing the following working documents, which shall include the following items:
(a) Drawings, to an indicated scale of extinguishant distribution system, including gas cylinders, location of gas cylinders, piping and nozzles, valves and pressure _ reducing devices, orifice unions and pipe hanger spacing.
(b) Enclosure cross-section, full height or schematic diagram, including raised access floor and suspended ceiling.
(c) Extinguishing concentration, design concentration and maximum concentration.
(d) Specification of containers used, including capacity, storage pressure and mass including extinguishant.
(e) Description of nozzle(s) used, including inlet size, orifice port configuration, and orifice size/code and orifice size of pressure -reducing devices, if applicable.
(f) Description and suppliers of pipes, valves and fittings used, including material specifications, grade and pressure rating, mill certificates and batch test reports,
(g) Equipment schedule or bill of materials for each piece of equipment or device, showing device name, manufacturer, model or part number, quantity, and description.
(h) Isometric view of extinguishant distribution system, showing the length and diameter of each pipe segment and node reference numbers relating to the flow calculations.
(i) Enclosure pressurization and venting calculations.
(j) Description of fire detection, actuation, and control systems; and
(k) Installation, testing and commissioning instructions and troubleshooting guide and details of all safety protection devices, where applicable.

Cylinders
Containers shall be designed to hold the specific extinguishant. Containers shall not be charged to a full density greater than specified in that part of ISO 14520 relating to the specific extinguishant. Cylinders shall be designed to suit the working pressure of the gas offered. Design pressure shall be at least 1.5 times the working pressure or relevant to an accepted manufacturing standard to be supplied with certificate of compliance (COC) from SANAS approved authorised inspection authority (AIA).

Container and valve manifolds shall be tested hydraulically to the highest pressure of that specified by SANS ISO 14520, or manufacturer, or 450 bar test pressure and be substantiated by a relevant test certificate. All cylinders will be supplied with a pressure relief valve as per manufacturer accepted Standards and approval or in accordance with SANS 347 specification.

The containers used in these systems shall be designed to meet the requirements of relevant national standards and be TPED approved, particularly the Pressure Equipment Regulations (PER) under the Occupational Health and Safety Act (Act 85 of 1993). The Contractor shall provide written proof of compliance with such design code by the manufacturer or importer Furthermore; the Contractor shall submit certificates for every storage cylinder before bringing them onto site. Where no certificates have been issued, the Contractor shall submit a list of cylinders, including manufacturer, serial number, and standard together with a (SANAS) approved (AIA) Certificate of conformance (COC)
The container valve assembly should be fitted with a pressure relief device complying with the appropriate national standards and be approved to TPED standard for transportable pressure vessels.
All storage cylinders shall be supplied new, and all cylinders forming part the installation shall be of interchangeable without any modification whatsoever.
Cylinder shipping shall be in accordance with the TPED code of the cylinders.
Storage cylinders shall be shipped fully charged, and with an approved protective cap over the cylinder valve. Protective caps shall be removed only once cylinders have been finally bracketed into position. All protective caps shall be mounted on a traceable tag cap rack next to the cylinder bank.
Storage cylinders shall be installed in banks in accordance with the manufacturer's specifications and SABS ISO 14520 Code of Practice. All cylinders shall be securely positioned by means of a rigid bracketing assembly, which eliminates any lateral movement of cylinders.

Contents Indication
Each cylinder must be electrically individually monitored for pressure leaks on cylinder bank.
Cylinder gauge must indicate pressure in KPA or Bar. The pressure monitoring of the cylinder will be connected to the main control panel and indicate fault alarm if any cylinder leaks on the cylinder bank.

Container Arrangement
Arrangements shall be made for container and valve assemblies and accessories to be accessible for inspection, testing and other maintenance when required. Cylinder Discharge valve shall be able to be removed from system for service or repair without removing the entire cylinder from the site.
Each cylinder is to be fitted with an approved TPED hand wheel valve.
Containers shall be adequately mounted and suitably supported according to the systems installation manual to provide for convenient individual servicing of the container and its contents.
Containers shall be suitably supported, each with two suitable clamps, each from a rigidly fixed Unistrut.
Containers shall be supported on a steel stand designed to take all containers in a manifold group.
Supports shall be level with the false floor and manufactured from steel sections welded and painted black, and solidly bolted to the wall, after being adjusted for correct floor level.
Storage containers shall not be located where they will be subjected to severe weather conditions or to potential damage due to mechanical, chemical, or other causes. Where potentially damaging exposure or unauthorized interference is likely, a suitable enclosure or guards shall be provided by the contractor.

Valves
Discharge valve for use in IG-541 fire extinguishing systems.
The valve shall have built-in pneumatic activation for inter-system activation, back pressure activation and mechanical activation interface.
Discharge and control valves must be able to be removed from the system cylinder for service or replacement without removing cylinder from site or decanting content. Valves are to be approved in accordance with EN12094-4 CE1116
(COC) to be submitted from SANAS approved (AIA)

Manifolds

Manifolds manufactured by the IG-541 Gas Agent equipment manufacturer shall be certified to an approved requirements listed in the PER or SANS347.

Flexible connection hoses shall consist of flexible, steel reinforced hose, with swaged on threaded connectors on either end, and shall incorporate a check valve to prevent agent loss in case of a discharge with any cylinder disconnected from the hose for any reason. These hoses shall have at least the same pressure handling capability as the manifolds

Manual and Electrical Solenoid Actuation Valves

At each bank, an electrical solenoid-controlled actuator or detonator type shall automatically release the gas on receipt of the appropriate fire alarm signal or manually operated.

Pipework Distribution

Pipe work and fittings shall comply with appropriate local requirements and be complying of the local (PER) and SANS 347, Installer of the equipment shall provide the relevant design code used to conform to the requirement. Pipe system is to be designed to conform to Category 1 SANS 347.

Installer or subcontractors shall have a current approval for document control accepted by a relevant inspection authority e.g SABS ISO9001.

Pipe system shall be non-combustible and able to withstand the expected pressures and temperatures without failure and or damage, where the manufacturer's listings require more stringent specifications in accordance with equipment's listing these shall be followed.

Before final assembly, pipe and fittings shall be inspected visually to ensure they are clean and free of burrs and rust, and that no foreign matter is inside, and the full bore is clear.

After assembly, the system shall be thoroughly blown through with dry air or Nitrogen.

Over pressure relief devices shall be designed to operate at a pressure not greater than the test pressure of the pipe work, or as required by the manufacturer. Pressure relief devices, which must include a selector valve assembly, should be fitted so that the discharge, in the event of operation, will not injure or endanger personnel and, if necessary, so that the discharge is piped to an area where it will not become a hazard to personnel.

In the systems using pressure operated container valves, automatic means shall be provided to vent any container leakage that build up pressure in the pilot system and cause unwanted opening of the container valve.

The means of pressure venting shall not prevent operation of the container valve.

The pipe system shall be provided with a FE listed pressure switch just upstream of the orifice union before any other take-off to provide a potential-free output signal to the main fire alarm system to monitor and report on a gas discharge.

The bidder to provide the following information which must be aligned to the requirements of the scope of works.

No.	Requirement	*Bidder to complete*
1.	Pipe work design standard used	
2.	Conformance assessment SANS347 categorization	
3.	Indicate test method Hydro, pneumatic or other	
4.	Indicate fitting type Screwed/Welded/Flanged	
5.	Indicate maximum downstream pressure	
6.	Schedule of pipe identified as	
7.	Class of fittings identified as	

Piping Materials

Piping shall be of non-combustible material having physical and chemical characteristics such that its integrity under stress can be predicated with reliability .'Only seamless Carbon-steel schedule piping shall be used.

The pressure handling capabilities shall be the maximum developed pressure plus 50% at a maximum storage temperature of not less than 50T, if higher operating temperatures are approved for a given system, the design pressure shall be adjusted to the developed pressure plus 50% at maximum temperature In performing this calculation, all joint factors and threading, grooving or welding allowances shall be taken into account.

Where a static pressure-reducing device is used in a non-liquefied gas system, the maximum working pressure plus 50% in the distribution pipe work downstream of the device shall be used in the verification of the downstream pipe wall thickness; all pipes shall be sleeved where penetrating separating elements Sleeves shall be properly sealed after the pipe installation.

Flexible tubing or hoses (including connections) shall be of approved materials in accordance with the system's listings and or manufacturer's recommendations and shall be suitable for service at the anticipated extinguishant pressure and maximum and minimum temperatures expected during normal and discharge conditions.

Notwithstanding the requirements of IS014520 the expected working pressures for Inert systems shall be in accordance with NFPA2001.

Minimum Design Working Pressure for Inert Gas Clean Agent System Piping

Pressure Criteria

Minimum Rim feed pressure XXS pipe 300 Bar WP
Minimum Area pipe pressure after (SV) 100 Bar WP
Maximum Allowable Pipe Size DN100mm
Minimum Design Pressure at (21 º C) to be used.
Maximum Design Pressure at (50 º C) to be used.

All pipe ends shall be reamed clean of any burrs before assembly. Contractors shall physically check the inner diametric tolerance of particularly smaller pipe sizes for conformity with the prescribed specification.

Contractors are advised to blow through all distribution pipe work and nozzles to ensure that no blockages exist, prior to performing the full discharge test.

Fittings

Fittings shall be classified in accordance to the relevant design code maximum downstream pressure at 50 º C when filled to the maximum allowable fill density for the extinguishant being used, For systems that use a pressure-reducing device in the distribution piping, the fittings downstream of the device (orifice) shall have a minimum rated working pressure at 150% of the maximum anticipated pressure in the downstream piping,

Pipe and fitting Classifications

Flanges Rim Feed Class 2500lbs
Threaded Rim Feed Class 6000lbs
Flanges After SV 600lbs
Threaded After SV 3000lbs

Cast iron fittings shall not be used

Welding and brazing alloys shall have a melting point above 500 º C
Welding shall be performed in accordance with relevant national standards

Where copper, stainless steel, or other suitable tubing is joined with compression fittings, the manufacturer's pressure/temperature ratings of the fittings shall not be exceeded, and care shall be taken to ensure the integrity of the assembly.

All manifolds shall remain unpainted.

Identification

Identification colours shall be approved by the Engineer. Identification shall be neat and legible and shall be applied after completion of final finishes. All gas piping shall be provided with Agent identification stickers neatly applied to the pipes showing Agent and flow direction. Size and location shall be in accordance with SABS 0140 Identification of pipelines.

Each gas bank, Gas Control unit, and Interface shall be labelled with red lettering 50mm high on a white background.

Labels shall be of non-corroding material, shall consist of red lettering with a minimum height of 50mm on a white non-glossy background. Labels shall be screwed into position, each gas bank, gas control unit, and Interface shall be labelled.

Pipe Supports

Pipe supports shall be suitable for the expected temperature and shall be able to withstand the dynamic and static forces involved. Due allowance shall be made for the stresses induced in the pipe work by temperature variations. Adequate environmental protection shall be given to supports and associated steelwork,

Adequate support shall be provided for nozzles and their reactive forces such that in no case shall the distance from the last support be greater than as follows:

(a) <25mm pipe #100mm

(b) >25mm pipe #250mm

Movement of pipe work caused by temperature fluctuations arising from environment or the discharge of extinguishant may be considerable particularly over long lengths and should be considered in the support fixing methods.

AII pipe runs, and system components shall be so located to maintain a minimum clearance of 200mm from electrical conduiting or equipment, unless greater clearance is indicated in the supplementary specification or on tender drawings.

Where equipment is to be bolted down on concrete plinths, anchor studs shall preferably be cast into concrete bases

In such instances, the thread of the anchor studs shall be suitably protected to readily facilitate repeated disassembly of fixing assemblies.

Where equipment is to be fixed to concrete or brickwork surfaces, and where building or casting in is not feasible or desirable, fixing shall be by means of approved expansion type anchor bolts. Due care shall be taken to ensure adequate penetration of any expansion bolt, to eliminate surface damage. Pipes penetrating walls shall be sleeved.

All pipelines shall be firmly bracketed to walls and ceilings to the satisfaction of the designer. All piping systems shall be securely supported with due allowance for expansion and concentration and shall not be subject to possible damage.

The Contractor shall supply all bolts, fasteners, fittings, braces, supports, packing, gaskets, etc. necessary for assembly all equipment supplied by him. All such items required for assembly shall be supplied by the manufacturer of the clean agent equipment, or alternatively approved by the manufacturer.

Assembly of equipment shall be done in accordance with the requirements of the clean agent equipment manufacturer. Assemblies shall be neat and in accordance with the Client's and Engineer's requirements regarding quality of workmanship.

Typical pipe supports are made of RSA sections welded to steel plate and bolted to the structure these are to be manufactured as shown on the design drawings.

Threaded rod hangars shall under no circumstances be acceptable.

Nozzles

Nozzles, including nozzles directly attached to containers, shall be as supplied by the certified manufacturer of the clean agent equipment, and shall be of adequate strength for use with the expected working pressures, able to resist normal mechanical damage; and constructed to withstand expected temperatures without deformation.

All discharge nozzle orifices shall be pre-drilled by the certified manufacturer of the Clean Agent equipment, and the equivalent single orifice size clearly and indelibly stamped on the nozzle body, regardless of shape and number of orifices. This equivalent size shall refer to the size of standard single orifice type with rounded entry and a coefficient of discharge of not less than 0.98, having the same flow rate as the nozzle in question. No Contractor or any other party shall under any circumstances be allowed to modify in any way any pre-drilled nozzle orifice, unless written approval from Design Engineer has been provided.

Where possible, a minimum of two nozzles shall be provided in every protected space, or any part of subdivision separated from the main part of the protected space by any physical barrier, such as access flooring or ceiling. Single nozzles shall only be used in spaces too small to accommodate two nozzles where single nozzles are installed, blind elbows shall be fitted.

All discharge nozzles shall be located to achieve the best results and shall be selected and so positioned that the discharge will not splash flammable liquids or create dust clouds that might spread a fire, create an explosion, or otherwise adversely affect the contents of the protected space. Nozzles vary in design and discharge characteristics and shall be selected based on their suitability for the use intended.

Where clogging by foreign materials is possible, the discharge nozzles shall be provided with frangible discs or blow-out caps.

These devices shall provide an unobstructed opening upon system operation and shall be designed and arranged so they will not injure personnel.

Nozzles shall be suitable for the intended use and shall be approved for discharge characteristics, including area coverage and height limitations.

Nozzle discharge orifice inserts shall be of corrosion -resistant material and nozzles shall be brass with male threaded connections to ANSI 81 20.1, and compatible with the pipe threaded being used.

The Contractor shall individually ensure that the thread on each nozzle matches pipe thread before installation commences.

Marking

Discharge nozzles shall be permanently marked to identify the manufacturer and size of the orifice.

Pressure Relief Dampers

Dampers shall be designed to open upon pressure (250pa) exerted onto the damper by the gas during discharge and shall close automatically by means of an adjustable spring as the discharge diminish and remain tightly closed after discharge. The open or closed status of the damper shall be indicated outside the casing.

Dampers shall be sized in accordance with the calculations provided by the supplier of the gas suppression system or be in accordance with the sizes as given by the Designer. The required free area is a function of the enclosure strength.

Dampers shall be installed to form part of a continuous barrier to the passage of fire when in a closed position. Where a damper cannot be fitted immediately adjacent to the fire wall, the section of ducting between damper and wall shall be of at least the same metal thickness and fire rating as the damper casing.

Dampers shall be self-supporting in case of fire.

Care shall be exercised that the frame be set so that the closing device will be accessible.

Pressure relief dampers shall be manufactured as a 120-minute fire damper, construction dampers shall comply with the requirements of local authorities, SABS 193 NFPA Bulletin 90A and National Building Regulations Act.

The supplier shall manufacture the unit in strict compliance with the above standards.
The damper blades shall be held in the closed position with a stainless or other suitable spring, adjustable and set at an opening pressure of 250 Pa.
The damper shall be provided with an inlet grille, white epoxy powder coated with a free area of 90%.
A thin black insect screen shall be fitted to the outlet side of the damper, and screwed in position on the damper flange, for easy removal and replacement.
Standards and Specification of adherence

- FDIA registered or similar recognised association
- SANS 10139 Part 1
- SANS 10139 Part 2
- SANS 101400
- SANS 14520 Part 1-15
- SANS 347
- ISO 9001

ROOM INTEGRITY TEST INFORMATION

The Contractor shall conduct a comprehensive room integrity test for substations, aimed at verifying the containment capability of the designated space to support the effective operation of gaseous fire suppression systems. The Contractor shall perform a door fan test to accurately measure leakage rates and pressure differentials, ensuring the room meets the required agent retention hold time in compliance with SANS 14520 standards. The Contractor is responsible for identifying and rectifying any leaks to ensure room integrity. A detailed report outlining the test procedures, results, and corrective actions, along with a certification of compliance, shall be submitted to the ACSA. This documentation must confirm that the fire suppression system is capable of effectively controlling and extinguishing fires, thereby upholding the substation's safety and regulatory compliance.

KEY PERSONNEL:

Refer Functionality for information as to how points will be awarded for Key Personnel.
As a minimum ACSA requires the following Key Personnel:

Key Personnel	Required Accreditation	Required Experience
1. Designer	Valid relevant Gas Suppression Design SAQCC Accreditation (provide copy of the SAQCC ID Card)	Relevant Gas Suppression design Experience (project details and reference to be supplied in detailed CV)
2. Site Manager / Supervisor (Refer below for minimum responsibilities)	Valid relevant Gas Suppression Installation and/or Pipe Fitting Accreditation (copy of the SAQCC ID Card)	Relevant Experience in managing similar projects (project details and reference to be supplied)
3. Installer	Valid relevant Gas Suppression Installation Accreditation (copy of the SAQCC ID Card)	Relevant Gas Suppression Experience (project details and reference to be supplied)
4. Pipe Fitter	Valid relevant Gas Suppression Pipe Fitting Accreditation (copy of the SAQCC ID Card)	Relevant Gas Suppression Pipe Fitting Experience (project details and reference to be supplied)

5. Commissioner	Valid relevant Gas Suppression Commissioner Accreditation (copy of the SAQCC ID Card)	Relevant Gas Suppression Commissioning Experience (project details and reference to be supplied)

SITE MANAGER MINIMUM RESPONSIBILITES
As a minimum the Site manager must: -

- Supervise the work
- Safety Management
- Quality Control
- Communication with ACSA Representative
- Report on progress of project weekly
- Attend weekly Meetings.
- Performance meeting once a month

ADDITIONAL WORKS WHERE REQUIRED - AND UPON APPROVAL OF ACSA REPRESENTATIVE.

1	Closing of wall, and / or windows, and / or door, and or ceiling penetrations where applicable
2	Supply and installation of new windows where applicable
3	Supply and installation of new doors where applicable
4	Supply and installing of new ceilings where applicable
5	Supply and installation of fire-resistant curtains and accessories where applicable
6	Supply and installation of louvres and accessories where applicable
7	Minor historical building works where applicable
8	Supply and installation of new fans and accessories where applicable
9	Supply and installation of new aircons and accessories where applicable

PROJECT FILES, AS A MINIMUM, MUST INCLUDE THE FOLLOWING:

- DRAWINGS
- SCHEMATICS
- LAYOUTS
- GENERAL ARRANGEMENTS OF EQUIPMENT
- CERTIFICATION AND SIGN-OFF (e.g., Design, Commissioning etc)
- **NOTE#** 1 x hardcover file, and soft copy for each room, and 2 x hardcover files, and soft copy for the consolidated project file.

PERMIT COSTS (Training Courses and Permit Issuing costs)

1. Training Courses

ONLINE COURSES	COURSE COST EACH Excluding VAT
SAFETY- Airside Induction (AIT INTIAL)	R2 103,60
SAFETY- Airside Induction Refresher (AIT Refresher)	R960,00
SAFETY- Airside Vehicle Operators Permit (AVOP)	R2 103,60
SAFETY- Airside Vehicle Operators Permit Refresher (AVOP)	R960,00
Aerodrome Emergency Preparedness	R5 240,40
Safety Management System (SMS)	R5 000,00
General Security Awareness (GSAT)	R960,00

2. Permit Issuing Costs

Personal Permit R 470/per person per year
Vehicle Permit R 700 / per vehicle per year
ALLOW PERMIT COSTS FOR 2 YEARS

PART 4: SITE INFORMATION

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.

Description of the Site and its surroundings
General description

The general site is Cape Town International Airport (CTIA) managed by the Airports Company South Africa (ACSA).

Project Specific Site(s): include electrical substations and / or electrical rooms in the landside and the airside. In the landside some substations are in the terminal building. Below is the overview of all the substation's location.

Id.	Substation Name	Room Description	Volume (m^3)	Location Details
1	Power and Lighting Substation (6 rooms)	MV Switch room	761,03	Foxtrot 3 Gate. Tower Road. Power and Lighting
2		LV Switch room	1031,04	
3		Transformer room	602,43	
4		Generator Room 1	188,31	
5		Generator Room 2	182,89	
6		Generator Room 3	229,45	
7	North Substation (10 rooms)	MV Switch room	72,63	Central Terminal Building
8		LV Switch room	328,35	
9		Transformer room 1 - HVAC	69,9	
10		Transformer room 2 - HVAC	69,17	
11		Transformer room 3 - HVAC	70,8	
12		Transformer room 4 - TRFN1	70,2	
13		Transformer room 5 - TRFN2 Spare	71,93	
14		Transformer room 6 - TRFN3	73,2	
15		Generator Room 1 & 2	413,02	
16		Generator Room 3	155,37	
17	South Substation (10 rooms)	MV Switch room	65,77	Central Terminal Building
18		LV Switch room	297,22	
19		Transformer room 1- HVAC S3	82,17	
20		Transformer room 2- HVAC S2	82,45	
21		Transformer room 3 - HVAC S1	82,51	

22		Transformer room 4- TRF - S1 Building Services	80,23	
23		Transformer room 5- TRF - S2	79,3	
24		Transformer room 6 - TRF - S3	79,63	
25		Generator Room	192,88	
26		UPS Room	63,45	
27	Alpha Substation	MV Switch room	1575,38	Central Terminal Building
28	UPS Room next to Alpha Sub	UPS Room	161,84	Central Terminal Building
29	2 Alpha Substation	MV Switch room	208,96	Opposite FedEx
30	Shell Substation	Generator & LV Switch room	88,72	Next to Fuel Depot
31	Oval Substation (2 rooms)	LV Switch room	33,45	Oval Park
32		Transformer and MV Switch room	40,11	
33	Terminal 1 Substation (2 rooms)	LV Switch room	191,8	Terminal 1
34		Transformer, Generator & MV Switch room	293,49	
35	Terminal 5 Substation (2 rooms)	LV Switch room	102,14	Southern Office Block (SOB)
36		Transformer, and MV Switch room	199,76	
37	SOB Substation (3 rooms)	MV Switch room	36,69	Southern Office Block (SOB)
38		Transformer Room	46,92	
39		LV Switch room	42,88	
40	Sub-19 (3 rooms)	Generator Container	33,5	Airside_Sub-19
41		LV and MV Switch room	243,15	
42		Transformer Room	79,28	
43	Air-Franc Substation (2 rooms)	MV Switchroom ACSA	1242,14	Airside_Air-franc Substation
44		MV Switchroom ESKOM	58,49	
45	Sub-01 (5 rooms)	Transformer Room	79,13	Airside_Sub-01
46		MV Switchroom	69,57	
47		LV Switchroom	182,82	
48		UPS/Battery Bank Room	100,11	
49		Generator Container	33,5	
50	S-BAND Substation (3 rooms)	MV Switchroom	46,79	Airside_S-BAND Substation
51		Transformer Room	39,77	
52		ATNS Room	222,48	
53	VORTAC/TACAN Substation (2 rooms)	MV Switchroom	20.89	Airside_VORTAC Substation
54		ATNS Room	103,69	
55	Parkade 1 Substation (4 rooms)	Generator Room	70,4	Parkade 1
56		MV Switch room	48,66	
57		Transformer Room	48,52	
58		LV Switch room	83,93	
59	Parkade 2 Substation (4 rooms)	Generator Room	51,85	Parkade 2
60		MV Switch room	39,16	
61		Transformer Room	33,56	
62		LV Switch room	66,98	

63	Basement Substation (2 rooms)	LV, MV Switchboards & Transformers	237,33	Terminal Building International Arrivals Basement
64		Local Transformer & Suppression Gas Bottles	61,38	
65	Car Rentals LV Room	LV Switchroom	18,02	Car Rental

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

Electrical rooms and / or substations where the inert gas fire suppression systems will be installed houses existing electrical infrastructure. Electrical infrastructure and machinery installed on respective rooms includes the following: low voltage switchboards, medium voltage switchgear, transformers, generators, uninterruptible power supplies, etc.