AIRPORTS COMPANY
SOUTH AFRICA

NEC3 Engineering & Construction Contract

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

and (Reg No. _____)

for Design, Supply, Deliver, Installation, Configuration, Testing, Commissioning and Integration of a Fully Operational Automated Meter Reading (AMR) System for both Water and Electricity Metering, Including Billing Software at King Shaka International Airport, for a period of Twelve (12) Months.

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CONTRACT No.

Part C1: Agreements & Contract Data

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Part C1 Agreements and Contract Data

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, Deliver, Installation, Configuration, Testing, Commissioning and Integration of a Fully Operational Automated Meter Reading (AMR) System for Water and Electricity Metering, Including Billing Software, at King Shaka International Airport, for a period of Twelve (12) Months.

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

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

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

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 .....

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

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

Note:

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

No.	Subject	Details
1		
2		
3		
4		
5		
6		
7		

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

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

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

C1.2a: ECC3 Contract Data Provided by *Employer*

Part One - Data provided by the *Employer*

The Conditions of Contract are the NEC3 Engineering and Construction Contract (ECC), April 2013 edition, incorporating the Core Clauses, Main Option B: Priced Contract with Bill of Quantities, Dispute Resolution Option W1, and the selected Secondary Options. The Contract Data contains the project-specific information required by the relevant NEC3 clauses.

Clause	Statement	Data
1	**General**	
	The *conditions of contract* are the core clauses and the clauses for main Option	**B: Priced contract with bill of quantities**
	dispute resolution Option	**W1: Dispute resolution procedure**
	and secondary Options	**X2: Changes in the law**
		X4: Parent Company Guarantee
		X5: Sectional Completion
		X7: Delay damages
		X13: Performance Bond
		X16: Retention
		X17: Low-performance damages
		X18: Limitation of liability
		X20: Key performance indicators
		Z: *Additional conditions of contract apply*
		of the NEC3 Engineering and Construction Contract, April 2013 (ECC3).
10.1	The *Employer* is (Name):	**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:	**King Shaka International Airport** **King Shaka Drive** **La Mercy** **4405**
	Tel:	
10.1	The *Project Manager* is: (Name)	**TBC**
	Address:	**King Shaka International Airport** **King Shaka Drive** **La Mercy** **4405**
	Tel/Cell:	**082 702 3272**
	E-mail:	Sipho.khumalo@Airports.co.za

10.1	The *Supervisor* is: (Name)	**: TBC**
	Address	**:**
	Tel No.	**:**
	Fax No.	**:**
	E-mail	**:**
11.2(13)	The *works* are	**DESIGN, SUPPLY, DELIVERY, INSTALLATION, CONFIGURATION, TESTING, COMMISSIONING AND INTEGRATION OF A FULLY OPERATIONAL AUTOMATED METER READING (AMR) SYSTEM FOR WATER AND ELECTRICITY METERING, INCLUDING BILLING SOFTWARE, AT KSIA. AND DECOMMISSIONING OF THE EXISTING SYSTEMS FOR A PERIOD OF 12 MONTHS.**
11.2(14)	The following matters will be included in the Risk Register	• **Unavailability of As-Built information,** • **Access to site – site establishment, permits delay, implementation timing, routing and Logistics,** • **Site Constraints and Constructability,** • **Long lead items,** • **Procurement delays,** • **Price changes or fluctuations,** • **Project Program delay,** • **Payment delay,** • **Current metering equipment decommissioning and safe disposal,** • **Project not delivered within constraints of scope, cost, time, and quality.**
11.2(15)	The *boundaries of the site* are	**ACSA Airport: King Shaka International Airport (KSIA)**
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 (2) weeks.**
13.6	The *period of retention* is	**Twelve (12) – Months, following Completion or earlier termination of a contract.**
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	**Twelve (12) – Months from the Starting Date.**		
11.2(9)	The *key date*s and the *condition*s to be met are:	***Condition* to be met**		***key date***
		1	**System Designs.**	**Three (3) Months.**
		2	**Procure Materials.**	**One (1) Month.**
		3	**System Installations & Testing.**	**Eight (8) Months.**
30.1	The *access dates* are:	**Part of the Site**		**Date**
		1	**All KSIA sites.**	**Upon signing of the contract.**
31.1	The *Contractor* is to submit first programme for acceptance within / by	**The tender closing date and the revised program within the first Design stage review and acceptance, Four (4) weeks after the Contract Date.**		
31.2	The *starting date* is	**Four (4) weeks from the date of signature of the Contract by ACSA.**		
32.2	The *Contractor* submits revised programmes at intervals no longer than	**Four (4) weeks.**		
35.1	The *Employer* is not willing to take over the *works* before the Completion Date.	**The *Employer (ACSA)* and Others will have access to the *works* during construction or prior to completion. Such access by the Employer and Others shall 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	**Twelve (12) Months after Completion of the whole of the *works*.**
43.2	The *defect correction period* is	**Two (2) weeks**
	except that the *defect correction period* for	**Any fault or defect affecting the functional use of the smart metering system equipment, including utility smart meters, data concentrators, gateways, communication protocols, or any related component, and resulting in the inability to perform billing for one or more tenants, shall be resolved within Two (1) weeks.**
	and the *defect correction period* for	**Any defect or failure affecting the full functionality of the smart metering system and resulting in the inability to perform billing for Ten percent (10%) or more of the tenants shall be resolved within One (1) week.**

47	The Contractor submits a quality plan for acceptance within:	**Preliminary quality plan to be submitted by tender closing date and the revised quality policy statement and quality plan to be submitted within Four (4) weeks of the Contract Date.**
5	**Payment**	
50.1	The *assessment interval* is	**Monthly payment assessment is done every Four (4) weeks, prior to payment.** **The Contractor shall not be entitled to any upfront or early payment, or payment prior to the certification of completed work by the Project Manager in accordance with the Payment provisions of this Contract. Advance payments are restricted by the Public Finance Management Act (PFMA), National Treasury Regulations, and contract conditions, and may only be made where contractually permitted and supported by an approved Advance Payment Guarantee.**
51.1	The *currency of this contract* is the	**South African Rand.**
51.2	The period within which payments are made is	**Four to Six (4-6) weeks after the receipt of a valid tax invoice and signed payment certificate**
6	**Compensation events**	
60.1(13)	The place where weather is to be recorded is:	**All records required to be kept on site shall be clearly recorded and maintained in a Site Diary/ file at the Construction Site Office.** **The Contractor shall maintain records of the weather conditions and associated delays on site. Proven delays affecting planned Completion may be assessed in accordance with the provisions of the NEC3 Contract relating to compensation events and delays.** **The Contractor shall consider the rescheduling of outdoor metering installation activities during periods of high winds, heavy rainfall, thunderstorms, or other adverse weather conditions that may affect safe access, electrical work, productivity, or planned Completion of the Works.**
	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 temperatures less than 0 degrees Celsius,** **the number of days with snow lying at 09:00 hours South African Time,** **the wind speed exceeding 40 km/h, and these measurements:**

	The *weather measurements* are supplied by	**South African Weather Services.**
	The *weather data* are the records of past *weather measurements* for each calendar month which was recorded at:	**ACSA Airport:** **King Shaka International Airport**
	and which are available from:	**the South African Weather Bureau and included in Appendix A to this Contract Data provided by the *Employer***
60.1(13)	Assumed values for the Ten-year return *weather data* for each *weather measurement* for each calendar month are:	**The Contractor shall obtain official weather measurements and historical weather data from the South African Weather Service (SAWS). Such weather data shall be attached to and form part of this Contract as Appendix A.**
7	**Title**	**There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.**
8	**Risks and insurance**	
84.1	The *Contractor* provides these additional insurances	***The successful bidder must source the following insurance cover, which is the deductible in the ACSA insurance cover:*** ***Aviation liability insurance cover for an indemnity limit not less than R300 000 (three hundred thousand rands.*** ***Submit proof of insurance to ACSA before the work starts, and annually for the duration of the project.*** ***The successful bidder must source the following insurance cover, which is the deductible in the ACSA insurance cover:***
9	**Termination**	**There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.**
10	**Data for main Option clause**	
B	**Priced contract with bill of quantities**	
60.6	The *method of measurement* is	**Refer to Contract Data Part C2: Pricing Data and the Bill of Quantities as submitted in the tender, including any amendments stated in Part C2.1: Pricing Assumptions, for this re-measurement contract.**
11	**Data for Option W1**	
W1.1	The *Adjudicator* is (Name)	**The adjudicator is the person selected from the panel listed in Appendix C of this Contract Data by the party referring to the dispute.**
	Address	**:**

Tel No. :

Fax No. :

Email :

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 of the Association of Arbitrators (Southern Africa), or a nominee appointed by him or her, or by any successor body to the Association.**

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.**
X4	**Parent company guarantee**	**There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.**
X5	**Sectional Completion**	**All works at all Sites shall be completed in accordance with the agreed programme upon signing of the contract.**

X5.1	The *completion date* for each *section* of the *works* is:	***Section***	**Description**	***Completion date***
		1	**As per the works in 11.2(13)**	**All works at all Sites shall be completed in accordance with the agreed programme and within Twelve 12 months from the date of contract signature by ACSA.**
		2	**Procurement of Equipment and Commencement of works**	
		3	**Completion of all installation works**	
		4	**Commissioning, Signoffs, and project handover and close-out.**	

X5 & X7	**Sectional Completion and delay damages used together**	**Amount per day is 0.05%, to the maximum of 10% of the Contract value.**

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

		1	**As per the works in 11.2(13) per Site**	**Amount payable per day shall be 0.05% of the Contract Value, subject to a maximum of 10% of the Contract Value.**
		2	**Procurement of Equipment and Commencement of works**	
		3	**Completion of all installation works**	
		4	**Commissioning, Signoffs, and project handover and close-out.**	
	Remainder of the *works*		**Overall Works Programme**	
	The total delay damages payable by the *Contractor* does not exceed:	**10% of the Contract value.**		
X7	**Delay damages (but not if Option X5 is also used)**			
X7.1	Delay damages for Completion of the whole of the *works* are	**0.05% per day up to a limit of 10% of the contract value.**		
X13	**Performance bond**			
X13.1	The amount of the performance bond is	**5% of the contract value. Pro-forma draft of a performance bond to be used is included to this contract. See Annexure B.**		
X16	**Retention**			
X16.1	The *retention free amount* is	**R0.00 (Zero Rand)**		
	The *retention percentage* is	**5% of the Contract value. 2.5% will be released at Practical Completion of the works and the remaining 2.5% will be released after the Defects Period (End of 12-Month Defects Liability Period).**		
X17	**Low-performance damages**			
X17.1	The amounts for low-performance damage are:	**Amount**	**Performance level**	
		The amount payable per day shall be 0.1% of the Contract Value, subject to a maximum limit of 10% of the Contract Value.	**for delays in failing to complete the works in accordance with the agreed schedule and approved programme.**	
X18	**Limitation of liability**			
X18.1	The *Contractor*'s liability to the *Employer* for indirect or consequential loss is limited to:	**Nil - Neither Party is liable to the other for any consequential or indirect loss, including but not limited to loss of profit, loss of income or loss of revenue.**		
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:	**Total of the losses incurred and/or repairs to the damage caused.**
X18.3	The *Contractor*'s liability for Defects due to his design which are not listed on the Defects Certificate is limited to	**Total of the losses incurred and / or repairs to the damage caused.**
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:	**Total of the losses incurred and/ or repairs to the damage caused other than for the additional excluded matters.** **The *Contractor's* total liability for the additional excluded matters is not limited.** **The additional excluded matters are amounts for which the *Contractor* is liable under this contract for** • **Defects due to his design which arise before the Defects Certificate is issued,** • **Defects due to manufacture and fabrication outside the Site,** • **loss of or damage to property (other than the *works*, Plant and Materials),** • **death of or injury to a person,** • **damage to third party property, and** • **infringement of 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.**
X20	**Key Performance Indicators**	
X20.1	The *incentive schedule* for Key Performance Indicators is in	**Part C3.1:** *Employer*'s Works Information, item 1.2.2
X20.2	A report of performance against each Key Performance Indicator is provided at intervals of	**One (1) months**
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.

Appendix A: One-in-ten-year-return *weather data* obtained from SA Weather Bureau for [weather station: _____]

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

King Shaka International Airport (KSIA):

	Weather measurement					
Month	Cumulative rainfall (mm)	Number of days with rain more than 10mm	Number of days with min air temp < 0 deg.C	Number of days with snow lying at 09:00 CAT	Wind speed exceeding 40 km/h	[Other measurements if applicable]
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

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

Appendix B: Pro forma Security Bonds and Guarantee

Pro forma Bonds & Guarantees

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

The *conditions of contract* stated in the Contract Data Part 1 include the following Secondary Options:

Option X4: Parent company guarantee
Option X13: Performance Bond

Each of these secondary Options requires a bond or guarantee "in the form set out in the Works Information". Pro forma documents for these bonds and guarantees are provided here for convenience but are to be treated as part of the Works Information.

Option X16: Retention

The *Contractor* may provide a Retention Money Guarantee in the form stated here. When the *Employer* receives and accepts a Retention Money Guarantee exactly in the form stated he will instruct the *Project Manager* not to assess any amount be retained in terms of secondary Option X16.

The organisation providing the bond / guarantee does so by copying the pro forma document onto his letterhead without any change to the text or format and completing the required details. The completed document is then given to the *Employer* within the time stated in the contract. Any changes to the pro-forma document must be approved in writing by the Employer.

Pro forma Parent Company Guarantee (for use with Option X4)

[To be reproduced exactly as shown below on the letterhead of the Contractor's Parent Company]

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

The Airports Company South Africa SOC Limited
King Shaka International Airport
King Shaka Drive, La Mercy, 4405.

Date: _____

Dear Sirs,

Parent Company Guarantee for Contract No.

In this Guarantee the following words and phrases shall mean: -

"**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

"**Contractor**" means:

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

"**Expiry Date**" means:

"**Guarantee**" means: this on demand, unconditional, irrevocable parent company guarantee, which is independent and/or separate from the underlying Contract.

"**Guarantor**" means:

, duly registered in accordance with the laws of: (**country in which the parent company is incorporated).**

I/We the undersigned .....

on behalf of the *Contractor*'s parent company

.....

of physical address

.....

If, for any reason, the Contractor fails to provide the Works the Guarantor hereby undertakes to, in place of the Contractor, provide the Works at no additional cost to the Employer and indemnify the Employer against any additional losses, damages and expenses (including legal expenses) arising from or as a result of the Contractor's breach of the Contract.

If the Guarantor fails to comply with the terms of this Guarantee upon receiving written notice from the Employer, the Employer may itself procure such performance and the Guarantor shall indemnify the Employer for any additional costs or expense it incurs.

This Guarantee shall come into full force and effect on the date when the Contract comes into full force and effect and shall continue in full force and effect until all the Contractor's obligations and liabilities under the Contract have been discharged.

Upon expiration of this Guarantee, the Employer shall without any delay return this Guarantee to the Guarantor and all its liabilities in terms of the Contract shall be discharged.

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).

The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

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.

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

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

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: _____ **[Guarantor's stamp]**

Pro forma Performance Bond – Demand Guarantee (for use with Option X13)

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

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

Guarantor's reference No. _____

The Airports Company South Africa SOC Limited

King Shaka International Airport

King Shaka Drive, La Mercy, 4405. :

Date: _____

Dear Sirs,

Performance Bond – Demand Guarantee for: _____

[Contractor] required in terms of contract: _____
[Contractor's contract reference number or title]

1. In this Guarantee the following words and expressions shall have the following meanings: -

1.1	"**Guarantor**" means:	
1.2	"**Guarantor's Address**" means:	
1.3	"**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.
1.4	"**Contractor**" means:	
1.5	"**Employer**" means:	Airports Company South Africa SOC Limited, a company registered in accordance with the laws of South Africa.
1.6	"**Expiry Date**" means:	means the earlier of • the date that the Bank receives a notice from the Employer stating that all amounts due from the Contractor certified in terms of the contract have been received by the Employer and that the Contractor has fulfilled all his obligations under the Contract, or • the date that the Bank issues a replacement Bond for such lesser or higher amount as may be required by the Employer.
1.7	"**Guaranteed Sum**" means:	
1.8	"**Works**" means:	

2. The Guarantor's liability shall be limited to the Guaranteed Amount.

3. The Guarantor's period of liability shall be from and including the date of issue of this Guarantee and up to and including the Expiry Date or the date of payment in full of the Guaranteed Amount, whichever occurs first. The Project Manager and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

4. The Guarantor hereby acknowledges that:

   a. any reference in this Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship; and

   b. its obligation under this Guarantee is restricted to the payment of money.

5. The Guarantor hereby undertakes to pay the Employer any sum or sums not exceeding the Guarantee Amount in total, upon receipt of a written demand delivered to the Guarantor's Address, stating that the Contractor is in breach of its obligations under the Contract (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.

6. Payment by the Guarantor, in terms of this Guarantee, shall be made within seven (7) calendar days upon receipt of the Employer's written demand to the Guarantor.

7. The obligations under this Guarantee constitute direct primary, irrevocable and unconditional obligations, do not require any previous notice to or claim against the Vendor-Partner, 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 Vendor-Partner; 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).

8. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

9. 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.

10. 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.

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

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

13. 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: _____ **[Guarantor's stamp]**

Pro forma Retention Money Guarantee (for use with Option X16)

[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

King Shaka International Airport

King Shaka Drive, La Mercy, 4405.

.

Dear Sirs, Date: _____

Reference No. _____[Guarantor's reference number]

Retention Money Guarantee: _____[Contractor Name]

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:

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

   1.4 "**Expiry Date**" means:

   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: _____(in Rands), being the total value of the advance payment made in terms of the Contract.

   1.7 "**Guarantor**" means:

   1.8 "**Guarantor's Address**" means:

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 Employer 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 Vendor-Partner, 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 Vendor-Partner; nor any alteration in the obligations undertaken by the Contractor 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: _____ **[Guarantor's stamp]**

Appendix C: ACSA Panel of Adjudicators

One of the following adjudicators shall be selected by the referring party as and when a dispute arises. This panel is valid for a period of three years, commencing on 1 May 2020.

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

Appendix D: ACSA Insurance Clauses

SECTION A: DEFINITIONS

(a) Reference to **Landside** means areas of the Airport before the security points; and the restricted area beyond the security points but, within the perimeter of gatehouses, passenger terminals and cargo buildings.

(b) Reference to **Airside** means the Apron / manoeuvrings areas; and area within the airside boundary/perimeter fence, excluding the internal areas of the passenger terminals, perimeter gatehouses and cargo buildings.

The successful bidder must source the following insurance cover, which is the deductible in the ACSA insurance cover:

Aviation liability insurance cover for an indemnity limit not less than R300 000 (three hundred thousand rands.

Submit proof of insurance to ACSA before the work starts, and annually for the duration of the project.

C1.2b: ECC3 Contract Data Provided by *Contractor*

Part Two (2) - Data provided by the *Contractor*

Notes to a tendering Contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)[1] in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 152 to 154 of the ECC3 Guidance Notes.
2. The number of clauses which require the data is shown in the left-hand column for each statement, however other clauses may also use the same data

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

Clause	Statement	Data
10.1	The *Contractor* is (Name): Address: Represented by: Tel No: Fax No: E-mail:	
11.2(8)	The *direct fee percentage* is The *subcontracted fee percentage* is	_____% _____%
11.2(18)	The *working areas* are the Site and	**Only the Site Area. See Part C4: Site Information**
24.1	The *Contractor's* key persons are: **1. Project Manager (PM)** Name: Job: Responsibilities: Qualifications: Experience:	**CV's to be appended to the contract.**

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

	2. Smart Metering System Design & Integration Engineer Name: Job: Responsibilities: Qualifications: Experience:	
	3. Electrical/Energy Metering Installer Name: Job: Responsibilities: Qualifications: Experience:	
	4. Health and Safety Officer Name: Job: Responsibilities: Qualifications: Experience:	
	5. Name: Job: Responsibilities: Qualifications: Experience:	

	6. 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	**Twelve (12) – Months from the Starting Date.**
11.2(14)	The following matters will be included in the Risk Register	• **Unavailability of As-Built information.** • **Access to site – site establishment, permits delay, implementation timing, routing and logistics.** • **Site Constraints and Constructability.** • **Long lead items** • **Procurement delays.** • **Price changes or fluctuations.** • **Project Program delay.** • **Payment delay.** • **Current metering equipment decommissioning and safe disposal.** • **Project not delivered within constraints of scope, cost, time, and quality.** **Other:** •
11.2(19)	The Works Information for the *Contractor*'s design is in:	**Part 3 "Scope of Works" section of this contract.**
31.1	The programme identified in the Contract Data is	
B	**Priced contract with bill of quantities**	
11.2(21) 11.2(31)	The *bill of quantities* is in The tendered total of the Prices is	 **(in figures): R** **(in words), excluding VAT:**

C1.3 Occupational Health and Safety Agreement

OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH & SAFETY ACT (ACT 85 Of 1993) & CONSTRUCTION REGULATION 5.1(k)

OBJECTIVES

To assist Airport Company South Africa (ACSA) in order to comply with the requirements of:

1. The Occupational Health & Safety (Act 85 of 1993) and its regulations and
2. The Compensation for Occupational Injuries & Diseases Act (Act 130 of 1993) also known as the (COID Act).

To this end an Agreement must be concluded before any Contractor/ subcontracted work may commence. The parties to this Agreement are:

Name of Organisation: **AIRPORTS COMPANY SOUTH AFRICA** **KING SHAKA INTERNATIONAL AIRPORT**
Physical Address: **Airport Company South Africa** **King Shaka International Airport** **PO Box 57701, La Mercy** **4405**

Hereinafter referred to as "Client"

Name of organisation:
Physical Address:

Hereinafter referred to as "the Mandatary/ Principal Contractor"

MANDATORY'S MAIN SCOPE OF WORK

GENERAL INFORMATION FORMING PART OF THIS AGREEMENT

1. The Occupational Health & Safety Act comprises SECTION 1-50 and all unrepealed REGULATIONS promulgated in terms of the former Machinery and Occupational Safety Act No.6 of 1983 as amended as well as other REGULATIONS which may be promulgated in terms of the Act and other relevant Acts pertaining to the job in hand.
2. "Mandatary" is defined as including as agent, a principal Contractor or a Contractor for work, but WITHOUT DEROGATING FROM HIS/HER STATUS IN HIS/HER RIGHT AS AN EMPLOYER or user of the plant
3. Section 37 of the Occupational Health & Safety Act potentially punishes Employers (PRINCIPAL CONTRACTOR) for unlawful acts or omissions of Mandataries (CONTRACTOR) save where a Written Agreement between the parties has been concluded containing arrangements and procedures to ensure compliance with the said Act BY THE MANDATARY.
4. All documents attached or refer to in the above Agreement form an integral part of the Agreement.
5. To perform in terms of this agreement Mandataries must be familiar and conversant with the relevant provisions of the Occupational Health & Safety Act 85 of 1993 (OHS Act) and applicable Regulations.
6. Mandatories who utilise the services of their own Mandatories (Contractor) must conclude a similar Written Agreement with them.
7. Be advised that this Agreement places the onus on the Mandatary to contact the CLIENT in the event of inability to perform as per this Agreement.
8. This Agreement shall be binding for all work the Mandatary undertakes for the client.
9. All documentation according to the Safety checklist including a copy of the written Construction Manager appointment in terms of construction regulation 8, must be submitted 7 days before work commences.

THE UNDERTAKING

The Mandatary undertakes to comply with:

INSURANCE

1. The Mandatary warrants that all their employees and/or their Contractor's employees if any are covered in terms of the COID Act, which shall remain in force whilst any such employees are present on the Client's premises. A letter is required prior to commencing any work on site confirming that the Principal Contractor or Contractor is in good standing with the Compensation Fund or Licensed Insurer.
2. The Mandatary warrants that they are in possession of the following insurance cover, which cover shall remain in force whilst they and /or their employees are present on the Client's premises, or which shall remain in force for that duration of their contractual relationship with the Client, whichever period is the longest.

a. Public Liability Insurance Cover as required by the Subcontract Agreement.

b. Any other Insurance cover that will adequately makes provision for any possible losses and/or claims arising from their and /or their Subcontractors and/or their respective employee's acts and/or omissions on the Client's premises.

COMPLIANCE WITH THE OCCUPATIONAL HEALTH & SAFETY ACT 85 OF 1993

The Mandatary undertakes to ensure that they and/or their Subcontractors if any and/or their respective employees will at all times comply with the following conditions:

1. All work performed by the Mandatary on the Client's premises must be performed under the close supervision of the Mandatary's employees who are to be trained to understand the hazards associated with any work that the Mandatary performs on the Client's premises.
2. The Mandatary shall be assigned the responsibility in terms of Section 16(1) of the OHS Act 85 of 1993, if the Mandatary assigns any duty in terms of Section 16(2), a copy of such written assignment shall immediately be forwarded to the Client.
3. The Mandatary shall ensure that he/she familiarise himself/herself with the requirements of the OHS Act 85 of 1993 and that s/he and his/her employees and any of his Subcontractors comply with the requirements.
4. The Mandatary shall ensure that a baseline risk assessment is performed by a competent person before commencement of any work in the Client's premises. A baseline risk assessment document will include identification of hazards and risk, analysis and evaluation of the risks and hazards identified, a documented plan and safe work procedures to mitigate, reduce or control the risks identified, and a monitoring and review plan of the risks and hazards.
5. The Mandatary shall appoint competent persons who shall be trained on any Occupational Health & Safety aspect pertaining to them or to the work that is to be performed.
6. The Mandatary shall ensure that discipline regarding Occupational Health & Safety shall be strictly enforced.
7. Any personal protective equipment required shall be issued by the Mandatary to his/her employees and shall be worn at all times.
8. Written safe working practices/procedures and precautionary measures shall be made available and enforced and all employees shall be made conversant with the contents of these practises.
9. No unsafe equipment/machinery and/or articles shall be used by the Mandatary or Contractor on the Client's premises.
10. All incidents/accidents referred to in OHS Act shall be reported by the Mandatary to the Provincial Director: Department of Labour as well as to the Client.
11. No user shall be made by the Mandatary and/or their employees and or their Subcontractors of any of the Client's machinery/article/substance/plant/personal protective equipment without prior written approval.
12. The Mandatary shall ensure that work for which the issuing of permit is required shall not be performed prior to the obtaining of a duty completed approved permit.
13. The Mandatary shall ensure that no alcohol or any other intoxicating substance shall be allowed on the Client's premises. Anyone suspected to be under the influence of alcohol or any other intoxicating substance shall not be allowed on the premises. Anyone found on the premises suspected to be under the influence of alcohol or any other intoxicating substance shall be escorted off the said premises immediately.
14. Full participation by the Mandatary shall be given to the employees of the Client if and when they inquire into Occupational Health & Safety.

FURTHER UNDERTAKING

1. Only a duly authorised representative appointed in terms of Section 16.2 of the OHS Act is eligible to sign this agreement on behalf of the Mandatary. The signing power of this representative must be designated in writing by the Chief Executive Officer of the Mandatary. A copy of this letter must be made available to the Client.
2. The Mandatary confirms that he has been informed that he must report to the Client's management, in writing anything he/she deems to be unhealthy and /or unsafe. He has versed his employees in this regard.
3. The Mandatary warrants that he/she shall not endanger the health & safety of the Client's employees and other persons in any way whilst performing work on the Client's premises.
4. The Mandatary understands that no work may commence on the Client's premises until this procedure is duly completed, signed and received by the Client.
5. Non-compliance with any of the above clauses may lead to an immediate cancellation of the contract.

ACCEPTANCE BY MANDATORY

In terms of section 37(2) of the Occupational Health & Safety Act 85 of 1993 and section 5.1(k) of the Construction Regulations 2014,

I _____a duly authorised 16.2 Appointee acting for and on behalf of

_____(company name) undertake to ensure that the requirements and the provision of the OHS Act 85 of 1993 and its regulations are complied with.

Mandatary – WCA/ Federated Employers Mutual No. _____

Expiry date. _____

_____ _____

SIGNATURE ON BEHALF OF MANDATORY **DATE**

(Warrant his authority to sign)

_____ _____

SIGNATURE ON BEHALF OF THE CLIENT **DATE**

AIRPORT COMPANY SOUTH AFRICA

C1.4 Environmental Terms and Conditions Agreement

ENVIRONMENTAL TERMS AND CONDITIONS TO COMMENCE WORK - EMS 048

The following Environmental Terms and Conditions shall be strictly adhered to by all contractors when conducting work for ACSA. ACSA shall audit contractor activities, products and services on an ad hoc basis to ensure compliance with these environmental conditions. Any pollution clean-up costs shall be borne by the contractor.

ISSUE	REQUIREMENT
Environmental Policy	ACSA's Environmental Policy shall be communicated, comprehended and implemented by all ACSA appointed contractor staff.
Storm water, Soil and Groundwater Pollution	• No solid or liquid material may be permitted to contaminate or potentially contaminate storm water, soil or groundwater resources. • Any pollution that risks contamination of these resources must be cleaned up immediately. Spills must be reported to ACSA immediately. Contractors shall supply their own suitable clean-up materials where required. • Washing, maintenance and refueling of equipment shall only be allowed in designated service areas on ACSA property. It is the contractor's responsibility to determine the location of these areas. • No leaking equipment or vehicles shall be permitted at the Airport.
Air Pollution	• Dust: Dust resulting from work activities that could cause a nuisance to employees, or the public shall be kept to a minimum. • Odours and emissions: All practical measures shall be taken to reduce unpleasant odours and emissions generated from work-related activities. • Fires: No open fires shall be permitted on site.
Noise Pollution	• All reasonable measures shall be taken to minimize noise generated on site due to work operations. • The Contractor shall comply with the applicable regulations regarding noise.
Waste Management	• Waste shall be separated as general or hazardous waste. • General and hazardous waste shall be disposed of appropriately at a permitted landfill site should recycling or re-use of waste is not feasible. • Under no circumstances shall solid or liquid waste be dumped, buried or burnt. • Contractors shall maintain a tidy, litter free environment always in their work area. • Contractors must keep on file: 1. The name of the contracting waste company 2. Waste disposal site used 3. Monthly reports on quantities – separated into general, hazardous and recycled 4. Maintained file of all Waste Manifest Documents and Certificates of Safe Disposal 5. Copy of waste permit for disposal site This information must be available during audits and inspections.

ISSUE	REQUIREMENT
Handling & Storage of Hazardous Chemical Substances (HCS)	• All HCS shall be clearly labelled, stored and handled in accordance with Materials Safety Data Sheets. • Materials Safety Data Sheets shall be stored with all HCS. • All spillages of HCS must be cleaned up immediately and disposed of as hazardous waste. (HCS spillages must be reported to ACSA immediately). • All contractors shall be adequately informed with regard to the handling and storage of hazardous substances. • Contractors shall comply with all relevant national, regional and local legislation regarding the transport, storage, use and disposal of hazardous substances.
Water and Energy Consumption	ACSA promotes the conservation of water and energy resources. The contractor shall identify and manage those work activities that may result in water and energy wastage.
Training & Awareness	The conditions outlined in this permit shall be communicated to all contractors and their employee prior to commencing works at each Site (Airport).

Penalties

Penalties shall be imposed by ACSA on Contractors who are found to be infringing these requirements and/or legislation. The Contractor shall be advised in writing of the nature of the infringement and the amount of the penalty. The Contractor shall take the necessary steps (e.g. training/remediation) to prevent a recurrence of the infringement and shall advise ACSA accordingly. The Contractor also advised that the imposition of penalties does not replace any legal proceedings, the Council, authorities, landowners and/or members of the public may institute against the Contractor.

Penalties shall be between R200 and R20 000, depending upon the severity of the infringement. The decision on how much to impose will be made by ACSA's Airport Environmental Management Representative in consultation with the Airport Manager or his/her designate and will be final. In addition to the penalty, the Contractor shall be required to make good any damage caused due to the infringement at his/her own expense.

I, _____(name & surname) of _____

_____(company) agree to the above conditions and acknowledge ACSA's right to impose penalties should I or any of my employees or sub-contractors fail to comply with these conditions.

Signed: _____on this date: _____(dd/mm/yyyy)

at: _____(Airport name).

PART 2: PRICING DATA

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option B	[3]
C2.2	Summary of the Bills of Quantities	[1]

C2.1 Pricing assumptions: Option B

1. The *conditions of contract*

1.1. How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract, April 2013 (ECC3) **Option B** states:

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

This confirms that **Option B** is a re-measurement contract and the bill comprises only items measured using quantities and rates or stated as lump sums. The Contractor is paid based on the actual quantities of work performed as opposed to the quantities set out in the Bill of Quantities. Time related items are items measured using rates where the rate is a unit of time. With this pricing method, the Contractor bears the risk for his pricing of the bill, and the Employer bears the risk for changes in the quantities.

1.2. Function of the Bill of Quantities

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

1.3. Guidance before pricing and measuring

1.3.1. Employers preparing tenders or contract documents, and tendering contractors are advised to consult the sections dealing with the bill of quantities in the NEC3 Engineering and Construction Contract (April 2013) the requirements of the tender (if any) and the Guidance Notes before preparing the *bill of quantities* or before entering rates and lump sums into the *bill*.

1.3.2. The NEC approach to the P & G bill assumes use will be made of method related charges for Equipment applied to Providing the Works based on durations shown in the Accepted Programme, fixed charges for the use of Equipment that is required throughout the construction phase, time related charges for people working in a supervisory capacity for the period required, and lump sum charges for other facilities or services not directly related to performing work items typically included in other parts of the bill.

1.3.3. The P & G section of the bill is not used for the assessment of compensation events.

2. Measurement and payment

2.1. Symbols

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

Abbreviation	Unit
%	percent
h	hour
ha	hectare
kg	kilogram
kl	kilolitre
km	kilometre
km-pass	kilometre-pass
kPa	kilopascal
kW	kilowatt
l	litre
m	metre
mm	millimetre
m^2	square metre
m^2-pass	square metre pass
m^3	cubic metre
m^3-km	cubic metre-kilometre
MN	meganewton
MN.m	meganewton-metre
MPa	megapascal
No.	number
Prov sum	provisional sum
PC-sum	prime cost sum
R/only	Rate only
sum	Lump sum
t	ton (1000kg)
W/day	Workday

2.2. General assumptions

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

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

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

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

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

2.3. Departures from the *method of measurement*

2.4. Amplification of or assumptions about measurement items

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

3. KSIA PERMIT PRICE LISTING – 2025-2026

PERSONAL PERMITS			
PERMIT TYPE	**DURATION**	**PRICE EXCL.VAT**	**PRICE INCL.VAT @15%**
Personal Permanent Permit (New)	2 years	188,76	217,07
Personal Permanent Permit (Renewal)	2 years	232,76	267,67
Temporary Personal Permit	1 day	156,13	179,55
Temporary Personal Permit	2 - 5 days	208,76	240,07
Temporary Personal Permit	6 days	188,76	217,07
Permit Icon		44,00	50,60
Embassy Permit	2 years	341,05	392,21

VEHICLE PERMITS			
PERMIT TYPE	**DURATION**	**PRICE EXCL.VAT**	**PRICE INCL.VAT @15%**
Airside Vehicle Permit	1 year	3 581,04	4 118,20
Airside Vehicle Permti Add-on fee	1 year	736,84	847,37
Air Vehicle - Temporary Permit	1-3 months	526,00	604,90
Air Vehicle - Temporary Permit	3-6 months	1 052,00	1 209,80
Air Vehicle - Temporary Permit	1 day	166,66	191,66
Air Vehicle - Temporary Permit	2 days	166,66	191,66
Air Vehicle - Temporary Permit	3 days	166,66	191,66
Airside Vehicle Permit - Change of Vehicle Registration		65,78	75,65

PARKING PERMITS			
PERMIT TYPE	**DURATION**	**PRICE EXCL.VAT**	**PRICE INCL.VAT @15%**
Staff Parking Permit	1 year	1 909,36	2195.76
Staff Parking Permit	1 month	159.11	182.98
Basement Parking Permit	1 year	396,52	456,00
Basement Parking Permit	1 month	30,00	34,50

LOST / DAMAGED PERMITS			
PERMIT TYPE		**PRICE EXCL.VAT**	**PRICE INCL.VAT @15%**
Damaged Personal Permit		229,82	264,29
1st Lost Personal Permit		317,00	364,55
2nd Lost Personal Permit		493,00	566,95
3rd Lost Personal Permit		No issue	No issue
1st Lost Airside Vehicle Permit/ Replacement cost		816,31	938,76
2nd Lost Airside Vehicle Permit/ Replacement Cost		904,33	1 039,98
3rd Lost Airside Vehicle Permit		No issue	No issue
Lost Embassy Permit		374,98	431,23
Damaged Airside Vehicle Permit		87,09	100,15

PENALTIES			
PERMIT TYPE		**PRICE EXCL.VAT**	**PRICE INCL.VAT @15%**
Expired Personal Permit		2 986,50	3 434,48
Failure to Cancel and Return Personal Permit not in use		13 618,44	15 661,21
Failure to Return Visitor's Permit		3715.00	4 272,25
Late Renewal of Expired Airside Vehicle Permit		3 583,80	4 121,37

PERMIT REPRINT / RE-ISSUE			
PERMIT TYPE		**PRICE EXCL.VAT**	**PRICE INCL.VAT @15%**
Personal Permit Reprint		230,00	264,50
To add icons and color		232,76	267,67
Icon		44,00	50,60

C2.2 *Summary of the Bills of Quantities (BoQ)*

Reference should be made to Annexure A1, BoQ (KSIA Airport), which provides a comprehensive breakdown of the Bills of Quantities (BoQs) under NEC3 ECC Option B for each Airport, to be priced by the *Contractor*.

Summary of Contract – Specific Bills of Quantities (BoQ's) corresponding to Annexure A1 the full BoQ	
Description	**Total Amount (Excl. VAT)**
Part A: Preliminaries and Generals (P&G's).	R
Part B: Contractor Design for the Smart Water & Electricity AMR system.	R
Part C: Procurement, delivery, and installations.	R
Part D: Electrical works.	R
Part E: AMR software and system integration.	R
Part F: Testing and commissioning of a fully completed AMR system and handover.	R
Part G: Annual Lump Sum Amount for Permits and Training (CAPEX)	R 40 000
Part H: Decommissioning and Salvaging of the Existing Meters	R
Total CAPEX (Total Project Value – Sum of part A to H), Excluding VAT*, (Less Salvage)*	

All amounts to enter exclusive of VAT – The Grand Total is the amount to be carried out to the Form of Offer.

PART 3: SCOPE OF WORK

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C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the *works*

1.1 Executive overview (Project Background and Objectives)

Airports Company South Africa (ACSA) currently relies on a predominantly manual approach to monitor electricity and water consumption across its airport network. This involves physical meter readings and monthly manual data capturing for billing purposes. While limited Automated Meter Reading (AMR) capabilities exist at King Shaka International Airport, coverage remains partial and insufficient, leaving many tenants and consumption points unmetered or captured.

The current metering infrastructure is largely outdated, with many devices exceeding their operational lifespan, resulting in inefficiencies, inaccuracies, and revenue leakage. Given the complexity of Airport environments, characterised by high utility demand, multiple stakeholders, mixed recoverable and non-recoverable loads, this fragmented and manual system is no longer fit for purpose. Key challenges include but not limited to:

i) **Inefficient and Error-Prone Manual Processes**.

- Meter readings require approximately 20-30 minutes per meter, making the process highly time-consuming and labour-intensive.
- Manual data handling introduces a high risk of human error, resulting in incorrect billing, delayed invoicing, and reduced utility cost recovery.

ii) **Ageing and Obsolete Metering Infrastructure**.

- A significant portion of installed meters are analogue and have been in service for over Ten (10) years, exceeding their design life.
- These meters are increasingly prone to mechanical wear, failures and maintenance issues.

iii) **Unmetered Tenants and Revenue Leakage**.

- Several tenants and stakeholders remain unmetered due to lack of dedicated infrastructure.
- Shared connections and informal arrangements result in unbilled consumption and significant revenue leakage/loss.

iv) **Unauthorized Usage and Safety Risks**.

- Some tenants access electricity through unauthorised connections (e.g. small power outlets), leading to increased load demand, risk of electrical overload and fire hazards, non-compliance with standards such as SANS 10142.

v) **Inaccurate Consumption Allocation**.

- Multiple tenants or offices and common areas are often supplied from shared electrical circuits, leading to inaccurate consumption attribution, and subsequent direct revenue loss (segregation of circuits).

vi) **Lack of Centralised Monitoring and Control**.

- Absence of an integrated metering platform limits ACSA's ability to monitor consumption in real-time, detect anomalies or losses, standardise metering practices across the Airport.

vii) **Water Metering Failures and Environmental Exposure**.

- Existing water meters exhibit critical issues such as reverse flow during water outages, resulting in incorrect readings.

- Exposure to mud, debris, and harsh environmental conditions, leading to blockages and performance degradation.

viii) Dependence on bulk supply from Eskom and municipalities introduces tariff fluctuations, billing inconsistencies, challenges in cost reconciliation and financial planning.

To address these challenges, Airports Company South Africa (ACSA) aims to upgrade, renew, modernise, and standardise utility metering systems across its commercial Airports through the deployment and implementation of a comprehensive Automated Meter Reading (AMR) solution. Key objectives include but are not limited to:

- Eliminating manual data capturing and enablement of remote communication.
- Replacement of the legacy and absolute meters with modern AMR-compatible smart meters.
- Deployment of a centralised, fully integrated metering and billing platforms per Site.
- Real-time monitoring of electricity and water consumptions.
- Improved tenant level metering and billing accuracy.
- Establishing scalable, future-proof metering systems compatible with evolving technologies and ACSA's Building Management System (BMS).
- Ensuring compliance with the latest SANS standards, NERSA, OHS, and municipal regulations.

Part 1: Engineering and Construction Contract (ECC)

1.1.1 Utilities Metering Scope of Works.

Part 1: Design, Supply, Delivery, Installation, Configuration, Testing, Commissioning and Integration of a Fully Operational Automated Meter Reading (AMR) System for Water and Electricity Metering, Including Billing Software, at King Shaka International Airport.

The Automated Meter Reading (AMR) System project aims to deliver a fully integrated, compliant, and scalable electricity and water metering solution across ACSA facilities. The scope of works covers the full lifecycle of the AMR implementation, from assessments and design through installation, system integration, commissioning, and post-implementation support and maintenance, aligned with SANS standards, OHS requirements, and Airport operational constraints. Site surveys and feasibility assessments will be conducted to evaluate existing metering infrastructure, identify unmetered tenants, billing discrepancies, and infrastructure deficiencies, and assess the most suitable metering locations to reduce losses and improve billing accuracy. The metering system that will be installed shall be scalable to accommodate future users/tenants on-boarding or removal.

The project includes decommissioning of obsolete analogue meters and replacing end-of-life units with AMR-compatible smart meters. A proposal of the salvage costs per meter will be provided by the bidder. Electrical infrastructure will be upgraded as required, including redefining electrical circuits where tenants are bundled, installing new breakers for each tenant, upgrading wiring to handle the load safely where applicable, installation of new distribution boards, and provision of dedicated metering for each tenant to ensure accurate billing and loss reduction. Ensuring that circuits comply with modern electrical codes.

The AMR system shall be fully integrated with a head-end system and Meter Data Management System (MDMS) to enable automated data collection, validation, storage, analysis, and reporting. Multiple communication technologies should be supported to ensure system resilience and flexibility. All meters and associated infrastructure shall be properly earthed, grounded, and bonded in accordance with SANS 10142, SANS 10313, and related standards to ensure electrical safety and operational reliability. Comprehensive testing and commissioning shall be performed, with all statutory Certificates of Compliance.

The project will conclude with the delivery of complete documentation, asset registers, and As-built drawings, along with structured training for ACSA Energy and Demand Management (EDM), Operations, and Maintenance teams. Post-implementation support will include performance monitoring and the development of a long-term maintenance and calibration plan to ensure continued accuracy, compliance, and reliability of the AMR system.

The project involves installation of metering infrastructure at King Shaka Internation Airport. Work will take place in complex, live Airport environments that operate continuously and are governed by strict safety and security requirements. Installations must be carefully planned to avoid disruption to critical operations while complying with access restrictions and operational protocols. The distributed nature of Airport infrastructure, spanning electrical and water systems across large areas, adds further complexity, requiring coordinated, flexible, and efficient execution. The number meters that are currently being used at KSIA, in major sites are outlined in table one (C3) below and note that the quantities are re-measurable. Final measurement will be based on field verification.

Current Active Meters at KSIA	
Energy Meters	**383**
Water Meters	**270**
Total	**653**

Table One (C3): Summary of meters that are installed at KSIA.

i) High-level phased implementation approach for a full functional AMR system.

To ensure effective deployment and long-term sustainability of the Automated Meter Reading (AMR) system at KSIA, the project shall be delivered over **Twelve (12) Months** using a structured, phased approach that ensures safety, operational continuity, accurate metering, and seamless integration with ACSA IT. This structured rollout is designed to minimise operational disruption while systematically addressing existing infrastructure gaps, improving measurement accuracy, and enabling advanced data capabilities.

The approach prioritises establishing a strong metering and billing foundation in the initial phase, followed by the expansion of metering coverage to support enhanced visibility, demand management, and optimisation of energy and water usage. By implementing the system in clearly defined phases, ACSA can manage risk, optimise resource allocation, and ensure seamless integration with existing operational and IT environments, ultimately achieving a scalable, standardised, and future-ready metering solution across its entire airport portfolio. The key phased implementation approach is outlined below:

Phase 1 – Replacement of current meters and establishing the measurement and billing foundation:

Address metering gaps, modernize infrastructure, and lay the groundwork for automation. Building a foundation for better data driven management and billing accuracy (metering foundation and infrastructure upgrade). This foundational phase focuses on:

- Conducting assessment to evaluate the existing metering infrastructure and perform replacements on electrical and water systems.
- Design, supply, install, test and commissioning of a hybrid network (wired & wireless dominant) integrated AMR system, completed with billing software.
- Decommissioning of existing outdated or manual meters undertaken in a controlled and compliant manner, including the safe disconnection and removal of equipment. Comprehensive documentation will be provided, detailing final readings, serial or asset numbers, model specifications, and condition at the time of removal, along with the issuance of formal removal certificates for record keeping and audit purposes.
- Perform electrical rewiring and/or plumbing works to provide independent metering and including circuits segregation and issuance of certificate of compliance (CoC's). This includes addressing meters that have reached end of life, or not compatible with the AMR system and shared power points.
- Implement the system's software to ensure data assimilation, prepare billing aligned with utility tariff structures, generate consumption and billing reporting for users, and dashboard visualisation to track energy and water consumption and system performance with the ability to extract analytics such as

consumption profiles for the various airport zones, variation in consumption relative to airport operating hours.

- Ensure that all new metering locations are planned with future scalability, enables maintenance of asset and,
- Ensure compliance with regulatory requirements such as SANS, SABS, OHS, and NRS standards.

Phase 2 – Expanded metering coverage to drive demand management and optimisation programs: Implement metering of ACSA operational systems, to provide visibility and optimization of energy and water usage. This phase focuses on:

- Metering of selected ACSA loads, including typical facilities and operational areas (e.g. include but not limited to HVAC, lighting, BHS, AGL, Apron, High Mast, fuel farms etc.).
- Installation of check meters at the bulk supply incomers to verify accuracy and data integrity.
- Ensure comprehensive metering coverage for billing and energy monitoring purposes.
- Linking AMR system with ACSA IT server via IP address created by ACSA IT.

1.1.2 Preliminary Implementation of the Works Framework.

The implementation framework set out below is provided as a preliminary guideline to communicate the Employer's anticipated sequencing, interfaces, dependencies, milestones and delivery objectives for the Works. The implementation periods, work package descriptions, milestone dates and sequencing are indicative only and shall not be interpreted as prescribing the Contractor's detailed execution methodology, procurement strategy, construction sequence, resource deployment strategy or programme logic. The Contractor shall develop and submit a detailed Programme in accordance with the NEC3 Engineering and Construction Contract (ECC), demonstrating how the Works will be completed within the Contract Period, including all design activities, procurement activities, manufacturing lead times, resource allocations, installation activities, testing requirements, commissioning activities, integration activities and Completion milestones.

The Contractor shall be fully responsible for the end-to-end design, supply, delivery, installation, configuration, integration, testing, commissioning and handover of the complete Automated Meter Reading (AMR) System, including field metering infrastructure, communication networks, gateways, data concentrators, virtual server environments, software platforms, databases, dashboards, reporting systems, billing systems, interfaces and associated infrastructure required to deliver a fully operational solution. The Contractor shall develop, supply, configure and validate the complete virtualised software environment in accordance with Airports Company South Africa (ACSA) Information and Communication Technology (ICT) standards and requirements. The Contractor shall demonstrate full end-to-end functionality of the AMR solution within an isolated staging environment prior to final integration with the ACSA production ICT environment. ACSA ICT participation shall primarily be limited to the review and approval of infrastructure requirements and the final network integration, firewall configuration, routing activation and secure interface connectivity to ACSA enterprise systems.

The Contractor may propose a parallel, sequential or hybrid deployment strategy across sites, terminals, buildings, facilities, utility zones and work areas, provided that the proposed methodology achieves the Contract objectives, quality requirements, operational continuity requirements and Completion criteria. The Contractor shall provide sufficient management, supervisory, commissioning, installation, Original Equipment Manufacturer (OEM), software and ICT resources to support the proposed implementation methodology and shall clearly demonstrate the resource allocation strategy within the submitted Programme.

Table Two C3 below outlines the Preliminary Implementation Works Framework.

Work Package (WP) and Duration (Months).	**Key Activities**	**Key Deliverables.**
WP1: Project Mobilisation,	Project Mobilisation, stakeholder engagement, site surveys, asset verification,	Survey reports, asset registers, Utility gap

Surveys, Assessments and Design Development. **Duration:** Months 1 – 4	metering gap analysis, communication assessments, ICT assessments, concept design, detailed design, AMR architecture design, HES, MDMS and billing platform design.	analysis, concept design report, detailed design package, infrastructure sizing report, framework design report.
WP2: Virtual Infrastructure Readiness and Procurement. **Duration:** Months 3 – 6	Procurement of smart meters, gateways, data concentrators, communication equipment, software licences, FAT, logistics planning, Virtual Machine (VM) server sizing submissions, firewall and network requirements definition.	Procurement records, FAT reports, delivery schedules, approved Virtual infrastructure and hosting requirements.
WP3: Infrastructure Upgrades, Meter Installation and AMR Deployment. **Duration:** Months 5 – 10	Removal of obsolete meters, electrical rewiring, circuit segregation, DB upgrades, CT/VT installations, earthing and bonding, communication infrastructure installation, gateway installation, AMR meter deployment, smart meter installation and commissioning.	Installation records, Certificates of Compliance (CoCs), updated asset registers, inspection and test report records.
WP4: Software Configuration, Integration and Staging Environment Validation. **Duration:** Months 9 – 10	Installation and configuration of HES, MDMS and Billing System, dashboard configuration, Validation, Estimation and Editing (VEE) configuration, ToU configuration, Enterprise Resource Planning (ERP) integration, BMS integration readiness, cybersecurity configuration, validation and testing in an isolated staging environment.	Configured Software Platforms, Integration Records, Dashboards, API Configurations, Validation Reports.
WP5: Production Integration, Testing, Commissioning and Operational Validation. **Duration:** Months 10 – 11	Final network linking with ACSA ICT, SAT, integrated system testing, communication testing, billing validation, cybersecurity testing, disaster recovery (DR) testing, High Availability (HA) testing and User Acceptance Testing (UAT).	Test reports, commissioning records, UAT records, Billing validation reports, DR and HA test reports.
WP6: Training, Handover and Practical Completion. **Duration:** Months 12.	User training, maintenance training, documentation handover, As-built drawings, licence transfer, asset register finalisation and project close-out activities.	As-built documentation, O&M manuals, software licences, training records, final asset register.

Table Three C3 below outlines the Project Milestones.

Milestone (M)	**Description**	**Target Period**
M1	Approval of Design Package and Infrastructure Sizing Report.	Month 4
M2	Virtual Infrastructure Design Approved and Ready for Staging Environment Deployment.	Month 4

M3	Procurement and Factory Acceptance Testing Completed.	Month 6
M4	Completion of Meter Installation and Infrastructure Upgrade Activities.	Month 10
M5	Successful Demonstration of the End-to-End AMR Solution within the Staging Environment.	Month 10
M6	Final Integration with ACSA ICT Infrastructure Successfully Tested and Commissioned.	Month 10
M7	First Automated Meter Reading Successfully Captured.	Month 10
M8	First Automated Utilities Bill Successfully Generated.	Month 11
M9	User Acceptance Testing Successfully Completed.	Month 11
M10	Practical Completion, Handover and Commencement of the Defects Correction Period.	Month 12
M11	Final Completion and Release of Retention	Month 24

Progressive Completion and Operationalisation.

The Contractor shall structure the implementation methodology to allow completed sites, terminals, buildings, facilities, utility zones or work areas to be progressively commissioned and placed into operation following successful testing, acceptance and Practical Completion of the relevant portion of the Works. Preventative maintenance, corrective maintenance, monitoring services, Meter Data Management System support, billing support and revenue assurance activities may commence on completed portions of the Works while implementation activities continue elsewhere.

The Work Packages, durations, milestones and sequencing indicated above are provided as a preliminary implementation framework only. The Contractor shall develop and submit a detailed Programme showing the proposed execution methodology, resource deployment strategy, procurement activities, Airport-specific implementation sequence, critical path activities, testing and commissioning activities, integration activities and Completion milestones.

Nothing contained in this preliminary framework shall prevent the Contractor from proposing accelerated programmes, additional resources, parallel deployment strategies, sequential deployment strategies or hybrid implementation methodologies, provided that Completion of the Works is achieved within the Contract Period and all operational, safety, quality, performance and compliance requirements of the Contract are satisfied. The Contractor's Accepted Programme shall remain the controlling programme for execution of the Works.

1.1.3 Detailed Project Works Requirements.

The Contractor shall be responsible for the complete design, supply, delivery, installation, configuration, testing, commissioning, system integration, training, maintenance and support of the Automated Meter Reading (AMR) System for electricity and water metering in accordance with the requirements of this Contract. The Contractor shall ensure that the proposed solution is fit for purpose, scalable, interoperable, secure and capable of providing reliable utility metering and revenue management at KSIA. The Works shall comprise, but not be limited to, the following high-level work packages requirements.

a) Project Management:

The Contractor shall establish and maintain an effective project management framework to successfully plan, coordinate, execute, monitor and control all activities associated with the design, supply, delivery, installation, configuration, testing, commissioning and integration of the Automated Meter Reading (AMR) System during the **Twelve (12)** Month implementation period. The Contractor shall adopt an implementation methodology that may comprise phased, parallel, sequential or hybrid deployment approaches, provided that the proposed

methodology maintains operational continuity, minimises disruption to Airport activities, complies with the requirements of the Contract, and achieves Completion within the Contract Period. The methodology shall allow completed sites, terminals, buildings, facilities, utility zones or work areas to transition into preventative maintenance, operational support, monitoring and billing support services immediately upon Practical Completion and acceptance by the Employer, while implementation activities continue at the remaining locations.

The Contractor shall be responsible for the overall management and administration of the Contract in accordance with the NEC3 Engineering and Construction Contract (ECC), ensuring seamless coordination between implementation and maintenance activities, continuity of technical resources and uninterrupted operation of commissioned systems throughout the Contract Period. The Contractor's responsibilities shall include, but not be limited to, the following:

- Overall project governance, leadership and contract management.
- Preparation and maintenance of an integrated implementation and maintenance programme in accordance with NEC3 ECC requirements.
- NEC3 contract administration, including early warnings, compensation events, programme updates and contractual communications.
- Progress monitoring, performance measurement and submission of weekly and monthly progress reports.
- Coordination of all suppliers, Original Equipment Manufacturers (OEMs), utility service providers and specialist consultants and subcontractors where applicable.
- Stakeholder engagement and interface management with ACSA, Airport Management, tenants, ICT representatives and other affected stakeholders.
- Resource planning to support simultaneous implementation and maintenance activities across multiple sites at KSIA.
- Risk identification, mitigation and maintenance of a live project risk register.
- Implementation of a Quality Management System, including Inspection and Test Plans (ITPs), audits, non-conformance management and corrective actions.
- Implementation of the Health, Safety and Environmental (HSE) Management Plan, including permit-to-work systems, task-specific risk assessments, method statements and Lock-Out/Tag-Out (LOTO) procedures.
- Management of project documentation, design submissions, technical approvals, meeting minutes, correspondence, records, document control and asset information.
- Coordination of testing, commissioning, phased handover and acceptance of completed works, and
- Commencement of preventative maintenance, system monitoring, MDMS support, ongoing billing support and service level obligations immediately following the acceptance of each commissioned site, terminal, building or work area.

b) Site survey, assessments, concept and detailed design (ECSA Stages 1 to 3 deliverables):

The Contractor shall undertake all surveys, assessments and concept design activities necessary for the execution of the Works. Such activities shall include, but not be limited to, the following:

- Conduct detailed site surveys to identify and verify existing water and electricity meters, meter locations, metering infrastructure and associated electrical installations, and assess their operational condition, compliance, and suitability for integration into the Automated Meter Reading (AMR) System.
- Identification of tenant billing deviations, metering discrepancies, unmetered loads, shared services, and anomalies in consumption data, (metering gaps, and opportunities for improvement).
- Collaborate closely with ACSA Energy and Demand Management (EDM) teams to identify all unmetered tenants, billboards, and public-use facilities.
- Assessment of existing electrical distribution systems and metering arrangements.
- Verification of available communication networks and communication coverage.

- Communication network and connectivity assessments.
- Assessment of the existing Information and Communication Technology (ICT), Servers, Cloud and data management infrastructure.
- Identification of integration requirements with existing ACSA systems, monitoring platforms and billing systems.
- Cybersecurity and data management assessments.
- Identification of installation constraints, access requirements and operational interfaces.
- Assessment of health, safety, environmental and operational risks.
- Prioritise strategic areas for meter installation to reduce utility losses and improve billing accuracy.
- Ensure all new metering locations are planned with consideration for future scalability, ease of maintenance, and compliance with SANS standards.
- Coordinate with stakeholders to integrate the new meters seamlessly into the existing electrical distribution infrastructure.
- Preparation of concept designs, system layouts, schematic diagrams and equipment schedules,
- Preparation of a Framework Design Report for the complete Automated Meter Reading (AMR) and Utility Billing System, including recommendations for the phased implementation of the Works. The Contractor shall develop and submit detailed engineering designs for a fully operational AMR system integrated with the Utility Billing and Revenue Management System. The detailed design shall include smart meters, CT and CT/VT metering arrangements, communication networks, gateways, data concentrators, Head-End System (HES), Meter Data Management System (MDMS), linking the AMR system to ACSA server infrastructure, SCADA-compatible monitoring platform, dashboards, Time-of-Use (ToU) configuration, tariff configuration, billing integration, cybersecurity architecture, Application Programming Interface (API)/interface requirements, installation drawings, equipment schedules, engineering calculations, technical specifications, and all documentation required for construction, testing, commissioning, operation and maintenance of the complete AMR and Utility Billing System.

c) Installations and Infrastructure Upgrades:

The Contractor shall provide all labour, materials, Plant, equipment, software, tools and resources necessary to undertake the installation, refurbishment, upgrading, integration, testing, commissioning and placing into operation of the Smart Metering System and associated infrastructure. The installation and infrastructure upgrade works shall include, but not be limited to, the following:

- Restoration of existing associated metering infrastructure with minor deficiencies to full operational conditions where practical and economically justified.
- Decommissioning, removal and environmentally responsible disposal of obsolete, redundant or non-compliant meters, shared power points and associated equipment.
- Replacement of meters that have reached the end of their service life with new AMR-compatible smart meters as per technical specifications.
- Supply, installation, configuration, testing and commissioning of a fully operational Automated Meter Reading (AMR) System, AMR-compatible smart meters, communication devices, gateways, data concentrators and all associated accessories. The proposed system shall support secure two-way communication between field devices and the central system, enabling remote meter reading, monitoring, diagnostics, remote configuration, firmware updates, and the upload and download of meter data, parameters and configuration settings. The system shall also enable authorised users to remotely issue commands to individual meters or groups of meters, including configuration changes, time synchronisation, parameter updates, demand resets, communication diagnostics, remote connect/disconnect (where applicable), and other OEM-supported control functions.
- The Contractor shall take full single-point Design and Build responsibility for supplying the complete multi-utility AMR, Meter Data Management System (MDMS), and revenue billing platform packaged as pre-configured, inherently compatible Virtual Machines (VMs), and shall execute all independent configuration labour necessary to logically link field meters and fully demonstrate end-to-end functionality within an isolated staging environment prior to final integration, ensuring the complete system is fully linked with ACSA's IT virtual servers while restricting active ACSA IT infrastructure

involvement exclusively to the final network interface linking handshake and secure API connectivity.

- Rectification of existing electrical infrastructure deficiencies, including rewiring of circuits, separation of shared supplies, installation or upgrading of distribution boards (DBs), protection devices, isolators, current transformers (CT's), voltage transformers (VT's) and associated electrical equipment where required to provide dedicated and accurate metering for individual tenants/consumers, testing, commissioning and issuing of certificate of compliance (CoC's.
- Electrical rewiring and infrastructure modifications required to ensure accurate measurement, monitoring and billing of utility consumption,
- Labelling and identification of all meters, distribution boards, communication devices, circuits and associated infrastructure in accordance with approved standards and ACSA requirements,
- Installation of communication modules, communication networks, power supplies, backup power systems and associated infrastructure necessary for operation of the Smart Metering System,
- Integration of field devices with communication networks, Head-End Systems (HES), Meter Data Management Systems (MDMS), monitoring platforms, reporting systems and billing platforms and linking with ACSA IT infrastructure,
- Configuration of software, firmware, databases, dashboards, alarms, reports, tariff structures and user interfaces,
- Implementation of tariff optimisation functionality within the billing system to support improved billing, cost optimisation, consumption analysis and performance monitoring,
- Implementation of earthing, grounding and bonding systems in accordance with applicable SANS standards and Airport safety requirements,
- Construction, modification or upgrading of meter kiosks, enclosures, meter rooms, cable routes, conduits, trunking, support and associated civil, building and structural works where required,
- Reinstatement of all affected surfaces, finishes, structures, services and operational areas disturbed during the execution of the Works,
- Protection of existing infrastructure, utilities, equipment and operational services during installation activities,
- Meter Configuration Replication **-** Where an existing smart meter is replaced, the Contractor shall ensure that all operational parameters, configuration settings and communication settings of the existing meter are replicated and applied to the replacement meter prior to commissioning. This shall include, as applicable, meter identification, communication addresses, network settings, CT/VT ratios, pulse constants, Time-of-Use (ToU) tariff structures, calendars, demand integration periods, alarm thresholds, event logging parameters, scaling factors, firmware configuration (where applicable), security credentials, encryption keys, remote command settings and all other meter-specific parameters required to maintain continuity of operation. The replacement meter shall be fully integrated into the AMR System without loss of historical data, communication functionality or billing integrity.
- Ensuring that all installations achieve a high standard of workmanship, including secure mounting, environmental protection, waterproofing, ingress protection, equipment labelling and compliance with applicable SANS standards, manufacturers' requirements and Airport operational standards; and
- Maintenance of accurate installation, asset and configuration records, including meter serial numbers, communication identifiers, locations, calibration records and asset information necessary for system administration, billing and compliance purposes.

All installation and infrastructure upgrade works shall comply with applicable SANS standards, Occupational Health and Safety requirements, ACSA operational requirements, approved designs, manufacturers' recommendations and the requirements of this Contract. The Contractor shall undertake all works in a manner that minimises disruption to Airport operations and ensures the continued safe and reliable operation of existing services.

d) Virtual Server Infrastructure and Hosting Requirements:

The Contractor shall be responsible for the complete design, sizing, specification, configuration, testing and commissioning of all software components required to operate the Automated Meter Reading (AMR) System, Head-End System (HES), Meter Data Management System (MDMS), Utility Billing Platform, reporting dashboards and associated applications within the ACSA virtual server environment. The Contractor shall ensure that all software applications are fully compatible with ACSA's Information and Communication Technology (ICT) standards, cybersecurity requirements, server architecture and virtualisation environment. The Contractor shall be responsible for the following:

- The design, supply, configuration, testing, commissioning and validation of all virtual server infrastructure, software environments, databases and associated components required for the successful operation of the Automated Meter Reading (AMR) System.
- Determining and submitting all virtual infrastructure requirements necessary to support the complete AMR solution.
- Providing detailed server sizing calculations, assumptions and capacity planning information.
- Defining the required number of Virtual Machines (VMs), processor requirements, memory requirements, storage requirements, IOPS requirements and network requirements.
- Defining database architecture, application architecture, storage architecture and system redundancy requirements.
- Defining system performance requirements required to support current and future metering growth.
- Defining backup, archiving and disaster recovery requirements.
- Defining High Availability (HA) architecture and failover requirements.
- Defining all firewall, routing, Virtual Local Area Network (VLAN), Domain Name System (DNS), network addressing, Application Programming Interface (API) and communication requirements.
- Defining all cybersecurity requirements applicable to the proposed solution.

The Contractor shall submit an Infrastructure Sizing Report for review and approval by ACSA ICT prior to commencement of software deployment activities. The Infrastructure Sizing Report shall include, as a minimum:

- Virtual Machine (VM) quantities and architecture.
- Virtual Central Processing Unit (vCPU) requirements.
- Random Access Memory (RAM) requirements.
- Storage requirements.
- Expected database sizes.
- Storage capacity and performance requirements
- Database sizing and growth projections.
- Network bandwidth, firewall and Virtual Local Area Network (VLAN) requirements.
- Backup and retention requirements.
- High Availability requirements.
- Disaster Recovery requirements.
- Operating System requirements.
- Database platform requirements.
- Integration architecture requirements.
- Cybersecurity requirements.
- API and integration requirements, and
- Future scalability requirements.

The Contractor shall supply and configure the complete AMR solution, including all required virtual machines, operating systems, databases, Head-End System (HES), Meter Data Management System (MDMS), utility billing platform, reporting dashboards, application services and associated software components as a fully integrated and compatible virtualised solution. The Contractor shall independently undertake all software

installation, configuration, integration, migration, validation, testing and commissioning activities necessary to establish and demonstrate a fully operational end-to-end AMR solution within a standalone staging environment, independent of the live ACSA ICT production environment.

The Contractor shall configure and demonstrate the complete functionality of the solution, including meter communications, data acquisition, validation, storage, reporting, billing functionality, dashboards, alarms, cybersecurity controls, backup processes, High Availability functionality and Disaster Recovery capability prior to requesting final integration with ACSA ICT infrastructure.
The Contractor shall be responsible for proving that the complete system is fully operational, stable, tested and commissioned before any production connection to the ACSA ICT environment is undertaken. ACSA ICT involvement shall be limited to the review of the Infrastructure Sizing Report, provision or approval of the required interface requirements, and the final network integration activities necessary to establish secure connectivity between the commissioned AMR solution and ACSA's production ICT environment.

Following successful completion of the Contractor's staging, validation and commissioning activities, ACSA ICT and the Contractor shall jointly undertake the final network interface linking, firewall configuration, routing activation and secure API connectivity required to integrate the AMR solution with ACSA's enterprise infrastructure, business systems and operational platforms (production environment).

Milestone Quality Gate: No integration with the live ACSA ICT environment shall be permitted until the Contractor has successfully demonstrated a fully functional end-to-end AMR system operating within the staging environment and has obtained written approval from the Employer and ACSA ICT to proceed with final production integration.

e) System Integration and Configurations:

The Contractor shall design, configure, integrate, test and commission all software, firmware, communication systems, databases, interfaces and associated components necessary to deliver a fully functional Smart Metering System. The Contractor shall ensure full interoperability between all field devices, communication infrastructure, software platforms and existing ACSA systems. The system integration and configuration works shall include, but not be limited to, the following:

- Integration, configuration and commissioning of the Advanced Meter Reading (AMR) system, Head-End System (HES), Meter Data Management System (MDMS), billing platform and associated software applications,
- Configuration of the Head-End System to communicate directly with all smart meters and field devices, enabling automated collection, transmission and management of utility consumption data,
- Implementation and configuration of a Meter Data Management System (MDMS) to collect, validate, estimate, process, store, manage and analyse metering data for operational, reporting, billing and analytical purposes,
- Integration of metering infrastructure, communication devices, gateways and data concentrators with the Head-End System and Meter Data Management System,
- Integration of metering data and reporting functionality with ACSA's existing billing systems, Building Management Systems (BMS), utility management platforms, information technology networks and any other systems identified in the Scope,
- Configuration of communication networks and protocols to support reliable data transmission using either of the communication technologies, including RF Mesh, Wi-Fi, Modbus, Zigbee, PLC, Cellular technologies, Ethernet, fibre optic or hybrid communication solutions, as appropriate for the installation environment,
- Configuration of software, databases, dashboards, alarms, notifications, reports, user access profiles and administrative functions necessary for the operation and management of the Smart Metering System,
- Implementation and configuration of tariff management functionality, including tariff structures, tariff optimisation tools, billing rules, consumption allocation methodologies and automated billing calculations,

- Provision of custom reporting, data analytics, dashboard visualisation and performance monitoring tools to support utility management, cost recovery, energy management and operational decision-making,
- Configuration of automated data validation, exception reporting, alarm management and event monitoring functions,

- Configuration and testing of user access controls, audit trails, cybersecurity settings and system security measures in accordance with ACSA requirements and applicable standards,
- Establishment of data backup, recovery, archiving and retention processes necessary to ensure the integrity, security and availability of metering and billing data,
- Verification of data accuracy, communication reliability, system performance and integration functionality through testing and commissioning activities, and
- Configuration of system functionality to support ACSA's sustainability objectives, energy efficiency initiatives, utility performance monitoring and operational optimisation programmes.
- The Contractor shall supply, integrate, configure, integrate, test and commission a SCADA-compatible monitoring platform with a centralised dashboard for the real-time monitoring, visualisation and management of the AMR System. The dashboard shall provide authorised users with real-time and historical analytics, meter status, communication health, alarms, events, trends, reports, key performance indicators (KPIs), and Time-of-Use (ToU) consumption and demand analysis for electricity and water metering. The system shall support secure, role-based remote meter commands, including on-demand meter reading, upload and download of meter data and configuration settings, remote configuration, diagnostics, firmware updates (where supported), and other OEM-supported functions. The solution shall be fully auditable and capable of integrating with ACSA's existing and future enterprise systems through open, industry-standard interfaces.
- The AMR system should provide a centralised SCADA-compatible monitoring platform that is accessible from authorised ACSA workstations and laptops connected to the ACSA network. The platform should support role-based access and allow multiple authorised users to simultaneously monitor and manage the system from different locations. The system should also support connections to external display screens or video walls for control room applications, where required by ACSA, without requiring any changes to the core software, and
- Utility Tariff Configuration and Billing Compliance - The AMR and Utility Billing System shall be capable of configuring, administering and automatically applying electricity and water tariffs in accordance with the applicable NERSA-approved Eskom tariffs, municipal tariffs, and any other utility tariff structures applicable to KSIA. The system shall support multiple tariff schedules, customer categories, Time-of-Use (ToU) tariffs, demand charges, fixed charges, service charges, network charges, seasonal tariffs, public holidays, weekend and weekday calendars, block tariffs (where applicable), taxes, levies and surcharges. The system shall also allow tariff structures to be configured, updated and maintained by authorised ACSA personnel without requiring software redevelopment or intervention by the Contractor, and shall automatically calculate, validate and generate accurate utility bills for tenants, customers, concessionaires, airlines, stakeholders and other utility consumers in accordance with the applicable tariff rules and billing periods.

The Contractor shall ensure that all software, firmware, communication systems, databases and interfaces are fully operational, correctly configured, tested and integrated prior to Completion. All configuration records, licences, passwords, administrator credentials, system documentation and software-related information shall be included in the Close-out Documentation and provided to ACSA upon Final Completion.

f) Earthing, grounding and bonding:

The Contractor shall design, install, test and commission all earthing, grounding and bonding systems associated with the Works to ensure the safe and reliable operation of the Smart Metering System and associated electrical infrastructure. The earthing, grounding and bonding works shall include, but not be limited to, the following:

- Provision of earthing, grounding and bonding for all smart meters, distribution boards,

communication equipment, kiosks, enclosures, power supplies and associated electrical infrastructure.

- Bonding of all metallic parts, conductive structures, meter enclosures, cable containment systems and exposed conductive elements to prevent electric shock hazards and ensure personnel safety.
- Measurement, testing and verification of earth resistance values to ensure effective fault current dissipation, electrical safety and reliable operation of the Smart Metering System.
- Identification and rectification of any deficiencies in existing earthing, grounding and bonding systems that may affect the performance, safety or compliance of the Works.
- Verification that all earthing, grounding and bonding systems comply with the requirements of SANS 10142, SANS 10313, SANS 62051 and any other applicable standards and statutory requirements, and
- Submission of test records and certification demonstrating compliance with the applicable standards and Contract requirements.

g) Testing, Commissioning and Compliance:

The Contractor shall undertake all inspections, testing, commissioning, verification and acceptance activities necessary to demonstrate compliance of the Works with the Contract requirements, applicable standards and operational requirements of ACSA. The testing, commissioning and compliance activities shall include, but not be limited to, the following:

- Factory Acceptance Testing (FAT), Site Acceptance Testing (SAT), integrated system testing and User Acceptance Testing (UAT).
- Functional testing and commissioning of all smart meters, communication devices, gateways, data concentrators, software platforms, reporting systems and associated infrastructure.
- Verification of meter functionality, accuracy, data collection, communication performance, alarm functionality, reporting capabilities and system integration requirements.
- Verification of earthing, grounding and bonding systems to confirm compliance with electrical safety requirements and applicable standards.
- Communication and integration testing between field devices, Head-End Systems (HES), Meter Data Management Systems (MDMS), billing platforms and existing ACSA systems.
- Verification of software functionality, database performance, cybersecurity settings, user access controls and system reliability.
- Demonstration that all utility consumption data is accurately collected, transmitted, processed, stored and reported.
- Correction of any defects, deficiencies or non-conformances identified during testing and commissioning and repetition of affected tests until compliance has been achieved.
- Issuing and submission of all required Certificates of Compliance (CoCs), disposal certificates, commissioning records, test certificates and any other statutory, regulatory or Contract required certificates and records associated with the Works.
- Compliance with all Occupational Health and Safety (OHS) requirements, Airport operational requirements, municipal regulations and applicable statutory requirements during the execution of testing and commissioning activities, and
- Coordination of all testing, commissioning and cut-over activities with ACSA and affected stakeholders, including undertaking such activities during approved low-traffic Airport operational periods where required to minimise disruption to operations.

h) Documentation, Training and Handover:

The Contractor shall provide all documentation, records, manuals and training necessary to support the operation, maintenance and administration of the Works. The documentation, training and handover requirements shall include, but not be limited to, the following:

- Preparation and submission of complete As-built drawings and record drawings.

- Provision of wiring schematics, single-line diagrams, communication network diagrams and system architecture drawings.
- Submission of calibration certificates, commissioning records, test certificates, warranties and guarantees. (The warranty period to commence after handover and acceptance)
- Provision of asset registers (Annexure B1) identifying all installed equipment, meter serial numbers, communication identifiers, locations, asset tagging and configuration information.
- Labelling of all meters, communication devices, distribution boards and associated infrastructure with unique identifiers to support traceability, maintenance and asset management.
- Submission of software licences, licence keys, passwords, administrator credentials, backup files and configuration records.
- Provision of operating manuals, maintenance manuals, user guides and support documentation.
- Delivery of comprehensive training programmes for ACSA Energy and Demand Management (EDM), Operations, Maintenance and other authorised personnel.
- Provision of training materials and attendance records.
- Transfer of sufficient knowledge and operational information to enable ACSA personnel to safely and effectively operate, administer and maintain the Smart Metering System, and
- The Automated Meter Reading (AMR) System, including all associated hardware, software, configurations, licences (where transferable), documentation, and all data generated, collected, processed, and stored by the system, shall be the sole property of ACSA.

All installation activities will be executed under strict safety controls appropriate to live, high risk Airport environments. Work will only proceed following formal risk assessments, approved method statements, and valid permit to work authorisations. Personnel will comply with all Airport security requirements, including access control procedures and escort protocols where necessary. Special precautions will be implemented when working within electrical reticulation networks, tenant distribution boards, water systems, and critical infrastructure areas such as plant rooms, substations, and service ducts.

This includes isolation and lockout procedures, use of appropriate personal protective equipment (PPE), and adherence to confined space and high-voltage safety standards. At all times, activities will be planned and executed to prevent disruption to Airport operations, ensure the safety of personnel and the public, and maintain the integrity of critical systems. The Contractor shall provide all test records, commissioning reports, certificates and supporting documentation to the Project Manager and ACSA as part of the Close-out Documentation.

i) Recommended Installation Periods and Location Considerations:

The Contractor shall plan, coordinate, and execute all smart meter installation activities in a manner that ensures the continued safe and uninterrupted operation of ACSA Airports. As all ACSA Airports operate continuously on a 24-hour, 365-day basis, all installation activities shall be carefully scheduled to minimise disruption to Airport operations, passengers, tenants, airlines, and other stakeholders. The Contractor shall recognise that the Works will be undertaken within a live operational environment where safety, security, operational continuity, and regulatory compliance are of paramount importance.

The Works will be carried out across a variety of operational and high-security locations, including passenger terminal buildings, substations, electrical rooms, plant rooms, transformers, Ring Main Units (RMUs), HVAC (Heating, Ventilation, and Air Conditioning), lighting, Baggage Handling Systems (BHS), Aerodrome Ground Lighting (AGL), High Mast, fuel farms, maintenance buildings, utility kiosks, cargo facilities, electric vehicle (EV) charging stations, airside operational infrastructure, parking facilities, fire and rescue facilities, communication rooms, and other associated airport support and remote facilities. These locations are geographically dispersed throughout the Airport precinct and may require varying levels of security clearance, permits, operational coordination, and access control.

Where existing substations, electrical rooms, plant rooms, distribution boards (DBs), meter panels or other installation locations do not provide adequate space to accommodate the new smart metering equipment and associated infrastructure, the Contractor shall design, supply, install and commission the necessary

extensions, new enclosures, mounting arrangements or supporting infrastructure to facilitate the installation. Any modifications or additional equipment shall be undertaken in accordance with applicable SANS standards, OEM requirements and ACSA Engineering requirements. Due consideration shall be given to the sensitivity and criticality of the various installations, ensuring that all works are carefully planned, coordinated and executed to maintain the safety, integrity, reliability and uninterrupted operation of critical Airport systems and infrastructure.

The Contractor shall coordinate all installation activities with ACSA Engineering, Airport Operations, Commercial Department, Security, Airside Operations (where applicable), and other affected stakeholders. All work shall be undertaken in accordance with ACSA's Permit-to-Work (PTW) system, Lock-Out/Tag-Out (LOTO) procedures, Airport security protocols, and all applicable health, safety, environmental, and statutory requirements. Any activity requiring the interruption of electrical or water services shall only be performed during ACSA-approved maintenance or shutdown windows following formal approval by the Employer.

Where installations are undertaken within critical operational areas, the Contractor shall implement appropriate mitigation measures to ensure that Airport operations, critical infrastructure, emergency services, security systems, and utility services remain fully operational throughout the execution of the Works. The Contractor shall also ensure that sufficient resources are deployed to manage the distributed nature of the metering assets and achieve the required programme within the Contract Period. Table below outlines the critical Airport facilities, recommended installation period and location considerations.

Location	Key Location Considerations	Recommended Installation Time
Passenger Terminal Buildings	Live 24/7 passenger operations, high public traffic, security-controlled environment.	Late evening, overnight, or ACSA-approved maintenance windows.
Substations	Critical electrical infrastructure supplying Airport facilities	Planned electrical shutdown windows approved by ACSA Engineering. Strict adherence to Permit-to-Work (PTW), Lock-Out/Tag-Out (LOTO) procedures and electrical safety requirements.
Electrical Rooms	Restricted access, critical power distribution equipment.	Normal working hours where operationally feasible or approved maintenance windows. Coordinate with ACSA Engineering to avoid disruption to essential services.
Plant Rooms	Critical building services and utility infrastructure.	
Transformers	High-voltage/low-voltage critical infrastructure.	Planned shutdown windows. Coordinate switching operations with ACSA Engineering and authorised personnel.
Ring Main Units (RMUs)	Medium-Voltage distribution equipment supplying Airport infrastructure.	
HVAC (Heating, Ventilation and Air Conditioning) Systems	Supports passenger comfort and critical environmental control.	Periods of low occupancy or approved maintenance windows. Maintain environmental conditions within operational facilities.
Lighting Systems	Internal and external lighting supporting Airport operations.	Daytime for non-critical circuits or approved maintenance windows for operational lighting. Critical operational lighting shall always remain available unless approved outages are in place.
Baggage Handling Systems (BHS)	Mission-critical operational system with limited downtime.	Low-flight activity periods or approved maintenance windows. Coordinate closely with Airport Operations to prevent disruption to baggage processing.
Aerodrome Ground Lighting (AGL)	Critical airfield navigation and aircraft movement infrastructure.	Approved airfield maintenance windows, typically outside aircraft operational periods. Work subject to Airside Operations approval and strict aviation safety procedures.
High Mast Lighting	Airside and landside lighting infrastructure	Daylight hours or approved maintenance windows. Traffic management and work-at-height requirements shall apply.

Fuel Farms	Hazardous area with explosive atmosphere classification.	Approved maintenance windows. Comply with hazardous area requirements, permit systems and applicable safety standards.
Maintenance Buildings and Workshops	Operational support facilities.	Normal working hours or agreed maintenance windows. Coordinate with facility managers to minimise operational disruption.
Utility Kiosks	Distributed utility infrastructure throughout the Airport.	Standard working hours unless operational constraints dictate otherwise. Installation sequencing should optimise travel between scattered locations.
Cargo Facilities	Continuous logistics and shipped operations.	Approved operational windows. Coordinate with Cargo Operations to minimise operational impacts.
Electric Vehicle (EV) Charging Stations	Public and operational vehicle charging infrastructure.	Periods of low utilisation or approved maintenance windows. Ensure charging services remain available where operationally required.
Airside Operational Infrastructure	Restricted security area with aircraft movements.	As approved by Airside Operations under an Airside Work Permit. Work shall not interfere with aircraft operations or compromise aviation safety.
Parking Facilities	Public access, vehicle movements and commercial operations	Off-peak traffic periods or approved maintenance windows. Temporary traffic management measures may be required.
Fire and Rescue Facilities	Mission-critical emergency response infrastructure.	Approved maintenance windows with operational approval. Emergency response capability shall remain fully operational throughout the Works.
Communication Rooms	Critical ICT, telecommunications and operational systems	Planned maintenance windows. Coordinate with ICT personnel to prevent communication outages.

Table Two (C3): Summary of the critical Airport facilities, recommended installation period and location considerations.

j) Specialised Hazardous Area Works.

All works within airport fuel farms, petroleum depots, AVGas storage areas and Sky Tanking facilities shall comply fully with the applicable South African hazardous-area legislation, SANS 10108:2023, SANS 10089-2 and SANS/IEC 60079 standards. All equipment, meters, cabling, containment and communication devices shall be appropriately certified for the designated hazardous zone, gas group and temperature class, supported by valid certification. The Contractor shall obtain and verify the approved Hazardous Area Classification drawings, appoint a suitably registered Master Installation Electrician, and obtain the Employer's prior written approval before procurement or installation. All works shall be subject to approved specialist installation procedures, competitive quotations and applicable inspection, testing and certification requirements. Completion shall include the required hazardous-area CoC and all supporting test and compliance documentation prior to commissioning and final acceptance.

1.1.4 Works Methodology.

The Contractor shall execute the Works using a structured, phased methodology designed to ensure safe execution, regulatory compliance, operational continuity, accurate utility metering, reliable data acquisition and seamless integration of the Automated Meter Reading (AMR) System across ACSA facilities. All activities shall be undertaken in accordance with the NEC3 Engineering and Construction Contract (ECC), ACSA Engineering Standards, ICT Standards, applicable SANS standards, the Occupational Health and Safety Act, Airport security requirements, permit-to-work procedures, and all applicable airside and landside operational requirements. Prior to commencing any work, the Contractor shall prepare detailed site-specific risk assessments, method statements and construction programmes for review and acceptance by the Employer. The Contractor shall coordinate all activities with ACSA Engineering, ICT, Airport Operations, tenants and other affected stakeholders to minimise disruption to Airport operations and maintain service continuity throughout the implementation period. Prior to installation, the Contractor shall undertake comprehensive site surveys and asset verification to confirm the existing electricity and water metering infrastructure, distribution boards (DBs), water reticulation systems, communication pathways and associated services.

Existing asset information shall be verified, baseline consumption data shall be recorded, and pre-installation inspections shall be conducted to establish circuit integrity, meter condition and system readiness. Meter installations shall be undertaken in close collaboration with ACSA Engineering personnel, with written authorisation obtained through controlled partial handover procedures to provide safe access to electrical distribution boards, water reticulation infrastructure and associated plant while maintaining operational control.

Existing meters shall be safely isolated, removed and disposed of in accordance with applicable legislation, environmental requirements, SANS standards and ACSA lock-out/tag-out (LOTO) procedures. New smart meters shall be supplied, installed, securely mounted, correctly wired or connected, labelled, configured and commissioned in accordance with the approved design, manufacturer specifications and Employer's requirements. Where necessary, minor electrical, civil or plumbing modifications shall be undertaken to facilitate installation while preserving the integrity and safety of the existing infrastructure. All installed assets shall be exclusively identified and recorded within the Employer's Asset Management system.

The Contractor shall safely decommission, remove, transport and dispose of all redundant electricity meters, water meters, communication devices, wiring, fittings, enclosures, pipework, accessories and other obsolete equipment replaced under this Contract. All decommissioning and disposal activities shall be undertaken in accordance with applicable environmental legislation, waste management regulations, ACSA Environmental Management requirements and approved disposal procedures. Equipment identified by the Employer for retention shall be carefully removed, labelled, inventoried and handed over to the Employer at a designated storage location. Equipment approved for disposal shall be removed from site and disposed of at appropriately licensed waste disposal or recycling facilities. The Contractor shall maintain a comprehensive asset reconciliation register for all removed and newly installed equipment and shall provide disposal certificates, waste manifests, asset handover records and updated asset registers as part of the project close-out documentation.

The Contractor shall design, install, configure and commission the communication network and associated field infrastructure required to support reliable meter-to-server communications. Communication gateways, controllers, network equipment and associated infrastructure shall be installed, configured and integrated using approved communication technologies, ensuring reliable data transmission, redundancy where appropriate and cybersecurity compliance. The complete AMR solution shall be integrated with the Meter Data Management System (MDMS), ACSA ICT infrastructure, Building Management Systems (BMS), billing platforms and other approved enterprise systems to provide secure, automated and accurate utility data collection and reporting.

Comprehensive testing and commissioning shall be undertaken to verify electrical and plumbing installations, metering accuracy, communication performance, data integrity, system interoperability, cybersecurity controls, alarm functionality, event logging, load profiling, leak monitoring, billing integration and overall system performance. Factory Acceptance Testing (FAT), Site Acceptance Testing (SAT), integrated system testing and User Acceptance Testing (UAT) shall be completed in accordance with approved testing procedures before each Airport, terminal, building or work area is accepted by the Employer. Upon successful commissioning, the Contractor shall formally hand over each completed section together with all required commissioning records, Certificates of Compliance (CoCs), calibration certificates, test reports, asset registers (refer to Annexure B1), configuration records, As-built drawings, operation and maintenance manuals, OEM documentation and training records.

The Contractor shall implement the Works using a phased delivery approach, whereby preventative maintenance, corrective maintenance, remote monitoring, communication network management, MDMS support, billing system support and revenue assurance activities commence immediately following the Practical Completion and acceptance of each Airport, terminal, building or work area, while installation activities continue at the remaining sites.

Throughout the Contract Period, the Contractor shall continuously monitor system performance, communication availability, meter health, data quality and billing integrity, undertake preventative and corrective maintenance, perform firmware and software updates, manage OEM support and technical escalations, and provide regular performance reports to ensure that the AMR System remains fully operational, secure and capable of supporting accurate utility billing and long-term asset management.

1.1.5 Key Disciplines, Services, and Personnel Requirements.

The successful delivery of this project depends on a coordinated, multi-disciplinary team with clearly defined roles, responsibilities, and professional compliance. The table below outlines the key disciplines, associated services, and required personnel, including their roles and mandatory registrations with relevant governing bodies. The table below further reflects a streamlined and integrated approach, incorporating engineering design responsibility within the appropriate discipline to ensure that the metering solution is properly specified, designed, and implemented across all sites. The Contractor shall provide suitably qualified Key Personnel for the execution of the Works, including installation, testing, commissioning, and related support activities for Automated Meter Reading (AMR) systems for water and electricity. The Key Personnel shall be competent, experienced, and appropriately registered with relevant statutory or professional bodies in South Africa. The Contractor shall ensure that all personnel comply with applicable South African legislation, including but not limited to:

- Occupational Health and Safety Act (Act 85 of 1993),
- Electrical Installation Regulations,
- Applicable SANS standards, and
- Airport operational safety and security requirements.

The Contractor shall ensure that Key Personnel are available for the duration of the Works and deployed in accordance with project execution requirements. Artisan and Support personnel shall be deployed on-site during active installation, testing, and commissioning activities.

The Health and Safety Officer shall maintain continuous presence or scheduled site visits as required to ensure full compliance with statutory safety obligations. No substitution of Key Personnel shall be permitted without prior written approval from the Employer (ACSA). Replacement personnel shall possess equal or higher qualifications, experience, and registration status as the approved Key Personnel. Failure by the Contractor to provide Key Personnel meeting the minimum requirements shall constitute a material non-compliance and may result in disqualification or contract termination, at the discretion of the Employer.

No.	Role	Minimum Qualification	Required Registration / Compliance	Key Responsibility / Services to Offer
1	**Smart Metering System Design & Integration Engineer**	Bachelor's Degree (BEng), Bachelor of Science (BSc), Bachelor of Engineering Technology (BTech) in Electrical, Electronic, Mechatronic, Computer or Mechanical Engineering (**NQF 7 or higher**)	ECSA Professional Registration as a professional Engineer (Pr.Eng) or professional Engineering Technologist (Pr.Tech Eng) in Electrical, Electronic, Mechatronic, Computer or Mechanical Engineering	Technical leadership or governance during installation, and oversight for the design and implementation of (AMR) systems, conducts independent technical assessments, developing AMR system architecture and specifications, meter selection, approving and signing off on technical designs, AMR communication networks infrastructure design and integration, data transmission infrastructure, cybersecurity controls, MDMS, billing system integration, and analytics platforms, solution

				architecture, systems integration design, site inspections, technical support during maintenance period, system integration, testing and communication
2	**Project Manager (PM)**	Degree in Engineering/Built Environment (or SAQA-accredited equivalent qualifications) (**NQF 7 or higher**)	South African Council for the Project and Construction Management Professions (SACPCMP) as a Professional Project Manager (Pr.PM) or Professional Construction Project Manager (Pr.CPM) or equivalent recognised registration in Engineering, Built Environment	Project planning, Coordination, and scheduling to ensure the successful delivery of project objectives, stakeholder engagement, monitoring project progress, Site management, preparation of reports, overall project oversight, costs control, review and acceptance of key project documentation and contract administration.
3	**Electrical / Energy Metering Installer (Lead Electrician)**	Qualified Electrical Trade-Tested Electrician (trade qualified Artisan) with a valid Trade Test Certificate with National diploma or higher in Electrical Engineering (Valid Wireman's Licence), **(NQF 5 or higher)**	Registered with Department of Employment and Labour (DoEL) Registered as Installation Electrician IE, Valid Wireman's Licence, Authorised to issue Certificate of Compliance (CoC) and a valid Trade Qualification in Electrical.	Electricity metering systems, smart meter installations, modems, testing and commissioning of electrical meters, load management, electrical reticulation and distribution, circuits segregations, and DB modifications
4	**Assistant Electrician**	Qualified in Electrical or Electronics Engineering/Technology, **(NQF 4 or higher)**	A valid ORHVS (Operating Regulations for High Voltage Systems).	Assist the Electrician in carrying duties of all metering related systems, data collection, asset registering, updating and record management.
5	**Health & Safety Officer**	National Diploma or relevant qualification in Occupational Health & Safety / Safety Management / Environmental Health, (**NQF 6 or higher**)	Registered with the South African Institute of Occupational Safety and Health (SAIOSH) or the South African Council for the Project and Construction Management Professions (SACPCMP) as professional or candidates	Development and implementation of project-specific Health & Safety Plan and compliance monitoring and reporting, audits, risk management, site safety enforcement, Lockout/tagout (LOTO) for electrical systems, method statements and permit to work systems

Table Three (C3): Summary of key Disciplines, Services, Roles and Responsibilities.

All system design, specifications, and integration architecture will be developed, approved and signed off by the Smart Metering System Design and Integration Engineer. Installation teams will execute works strictly in accordance with the approved design documentation, applicable standards, and regulatory requirements. No installation work will commence without formal design acceptance and approval. Table 4 (C3) below outlines the roles and responsibilities of the key personnel.

Item	Responsibility	ACSA (Client)	Smart Metering Engineer	Project Manager (PM)	Electrical Metering Installer	Assistant Electrician	Safety Officer (OHS)
1	Site establishment and safety induction.	I	I	C	C	I	R, A
2	Stakeholder coordination	C	C	R, A	I	I	I
3	Scope definition and works breakdown.	C	C	R, A	C	I	I
4	Design of smart-metering systems.	I	R, A	C	C	C	C
5	Technical specifications and standards compliance.	I	R, A	C	C	C	C
6	Review and approval of technical documentation.	C	R	C	I	I	I
7	Communications, AMR system integration and configuration.	I	R, A	C	C	C	C
8	Protocol configuration and MDMS setup, Integration with Billing software, EMS/BMS.	I	R, A	C	C	C	C
9	Overall project governance, budget, programme, risk, and stakeholder management.	I	C	R, A	C	C	C
10	Procurement of meters, devices and materials.	I	C	R, A	C	C	I
11	Electrical meter installation and testing.	I	C	C	R, A (CoC)	C	C
12	Testing and Commissiong.	I	R, A	C	R	C	C
13	Data communication testing and verification.	I	R, A	C	C	C	C
14	Health and Safety planning, risk assessments and Health & Safety file.	I	C	C	C	C	R, A
15	Risk assessments and permit-to-work approvals (Airport safety).	C	C	C	C	C	R
16	Monitoring compliance & reporting incidents.	I	C	C	C	C	R, A
17	Quality assurance and compliance verification.	I	R	A	R	R	C
18	Project scheduling, Reporting and progress monitoring.	I	C	R, A	C	C	I
19	Handover, training and acceptance.	C	R	R	C	C	C

20	Close-Out, As-Builts and final documentation.	I	R	R, A	C	C	C
21	Final project sign-off.	C	C	R	I	I	I

Legend:

R – Responsible (execute the work),

A – Accountable (final decision / approval authority),

C – Consulted (provides expert input),

I – Informed (kept updated)

Table Four (C4): RACI Matrix for Implementation of AMR Metering Solutions at KSIA.

1.1.6 Smart Metering Technical Specification Requirements.

The following table forms part of the technical requirements for the provision, installation, testing, commissioning, and integration of smart metering systems under this NEC3 Contract. The specifications establish the minimum performance, functionality, communication, and compliance requirements for metering equipment intended for use across ACSA Airport facilities and associated infrastructure. The metering systems are required to support accurate utility measurement, energy and water management, automated meter reading, data analytics, and integration with centralised Airport Management Systems, Building Management Systems (BMS), and AMR/AMI platforms.

These requirements apply to Single-phase (1Φ) energy meters, Three-phase (3Φ) energy meters, and smart water meters to ensure consistency, interoperability, operational reliability, and maintainability throughout the asset lifecycle. The Contractor shall ensure that all metering equipment and installations comply fully with this specification and shall read this table in conjunction with the D112MAN Metering Technical Specification and Guidelines, which outlines the overall metering philosophy, installation standards, communication architecture, cybersecurity considerations, data management requirements, testing and commissioning procedures applicable to the Works. Table 4 below outlines the smart metering technical specifications for Airport Energy and Water metering systems.

General Metering Requirements (Applicable to All Energy Meters)	
Item	**Specification Descriptions**
Meter Technology	Static electronic solid-state smart energy meter utilising digital sampling and microprocessor-based measurement technology, with True RMS measurement, 4-quadrant Bi-directional metering, programmable CT/PT ratios (where applicable), integrated data logging, event recording, and communication interfaces suitable for AMR/AMI, BMS, and SCADA integration.
Meter Configuration	Meters shall be either Direct-connected or CT-operated as required by the application
Direct-Connected Rating	Direct-connected meters shall be rated for currents up to 100 A nominal current, as required by the application
CT Input Rating	CT-operated meters shall accept 1 A or 5 A secondary
CT Ratio Configuration	Support fully programmable CT ratios.
Application Guidance	Direct-connected meters for tenant supplies, retail outlets, offices, lighting and small power distribution boards. CT-operated meters for incomers, sub-main feeders, HVAC systems, baggage handling systems, MCCs, generators, UPS systems and other major electrical load
Time Synchronisation	Meter clocks shall support automatic time synchronisation via the AMR/AMI Head-End System, Building Management System (BMS), SCADA platform, or Network Time Protocol (NTP) server where network connectivity is available
AMR/AMI Compatibility	All meters shall be compatible with ACSA centralised AMR/AMI infrastructure and support remote configuration, monitoring and data retrieval
Meter Selection	Meter selection shall be based on the maximum demand, fault level, and operational requirements of the installation
Single-Phase (1-Φ) Energy Meter's Technical Specification	
General Requirements	
Item	**Specification Descriptions**
Application	Commercial, tenant metering and small power distribution systems
Mounting	Panel mounted, DIN rail mounted or flush mounted, as required by the application
Type	Single-Phase, 2-wire (L-N) system
Active Energy Accuracy	Class 0.2S or Class 0.5S in accordance with IEC/SANS 62053-22
Reactive Energy Accuracy	Class 1.0 or Class 2.0 in accordance with IEC/SANS 62053-23

Reference frequency	50 Hz
Reference voltage	230 V AC
Measurement Type	True RMS, Bi-directional 4-quadrant energy measurement, Programmable CT ratios, Data logging capabilities with manual or automatic data transfer
Certification/Standard compliance	SANS 1524-1, SANS/IEC 62053-21, SANS/IEC 62053-22, SANS/IEC 62053-23, SANS/IEC 62056-21, SANS/IEC 62056-5-3, SANS/IEC 62056-6-2, NRS 057, NRS 071
Measured Parameters	
Item	**Specification Descriptions**
Energy	Active (kWh), Reactive (kVArh), Apparent (kVAh)
Demand	kW, kVA, kVAr, Maximum Demand (MD)
Instantaneous	Voltage, Current, Frequency, Power factor, Power (kW, kVA, kVAr)
Load Profile	Configurable/programmable integration period (15 or 30 minutes)
Harmonics	Total Harmonic Distortion (THD-V, THD-I)
Display and Indicators	
Item	**Specification Descriptions**
Display Type	Backlit LCD/LED
Display Parameters	Instantaneous values, energy registers, maximum demand, power factor and frequency
Indicators	Active/reactive pulse LED, communication status, power ON, phase reversal, phase failure and tamper indication
Digits	Minimum 6 digits (integer + decimal)
Communication and Interfaces	
Item	**Specification Descriptions**
Communication Interfaces	RS-485, RS-232, RJ45/Ethernet, M-bus, as required by the application.
Wireless Communication Options	RF Mesh, Zigbee, LoRaWAN, Wi-Fi, NB-IoT, or Cellular technologies as required by the application.
Supported Protocols	Modbus RTU, Modbus TCP/IP, DLMS/COSEM, M-Bus, compatible with AMR/AMI and as required by the application
Pulse Output	Configurable active and reactive energy pulse outputs
Optical Port	Included for local data reading and configuration
System Integration	Compatible with ACSA IT Systems / Building Management System (BMS), SCADA and fully compatible with centralised AMR/AMI systems or platforms
Environmental	
Item	**Specification Descriptions**
Operating Temperature	–25 °C to +55 °C
Storage Temperature	–25 °C to +70 °C
Relative Humidity	Up to 95% non-condensing
Ingress Protection	IP20 (Casting mounted), IP40 (panel mounted) / IP54 (flush mounted) / IP65 for outdoor, as required by the application
Insulation	4 kV RMS, 50 Hz for 1 minute in accordance with IEC standards
Auxiliary supply	
Item	**Specification Descriptions**
Auxiliary Voltage	85–265 V AC or 110–300 V DC
Burden	Less than 5 VA

Data Logging and Memory	
Item	**Specification Descriptions**
Load Profile Storage	Minimum of 45 days at 15 minutes intervals
Event Logging	Power failure, reverse current, MD reset, tamper, phase failure, (minimum of 100 events)
Storage Capacity	Minimum 12 months hourly interval and billing data
Non-volatile Memory	Minimum 5 years data retention without power
Lifespan and Warranties	
Item	**Specification Descriptions**
Design Life	Minimum of 10 years (≥ 10 years)
Warranty	Minimum of 12 months after commissioning with option to extend
Safety and Tamber Features	
Item	**Specification Descriptions**
Reverse current detection	Required
Phase Failure Detection	Required
Magnetic Tamper Detection	Required
Terminal Cover Tamper Detection	Required
Event logging	Required for unauthorised access attempts
Documentation and Deliverables	
Item	**Specification Descriptions**
Calibration Certificates	Factory calibration/test certificates (traceable to national standards)
Configuration Records	Configuration and communication setup records required
As-Built Drawings and Shop drawings	As-built wiring and connection diagrams required, including shop drawings
Installation and Maintenance Manuals	Required
Compliance Test Reports	Required
Integration Test Reports	Demonstrate BMS, SCADA and AMR/AMI connectivity
Three-Phase (3Φ) Energy Meter's Technical Specification	
General Requirements	
Item	**Specification Descriptions**
Application	Incomers, feeders, tenant metering, plant equipment and bulk energy metering
Mounting	Panel mounted, DIN-rail mounted or flush-mounted, as required by application
Type	Three-Phase, 4-Wire (star) or 3-Wire (delta) system
Active Energy Accuracy	Class 0.2S or Class 0.5S in accordance with IEC/SANS 62053-22
Reactive Energy Accuracy	Class 1.0 or Class 2.0 in accordance with IEC/SANS 62053-23
Reference frequency	50 Hz
Reference voltage	230/400 VAC (LV) or PT-connected for MV/HV applications
Measurement Type	True RMS, Bi-directional 4-quadrant energy measurement, Programmable CT ratios, Data logging capabilities with manual or automatic data transfer
Standard compliance	SANS 1524-1, SANS/IEC 62053-21, SANS/IEC 62053-22, SANS/IEC 62053-23, SANS/IEC 62056 series, NRS 057, NRS 071

Measured Parameters	
Item	**Specification Descriptions**
Energy	Active (kWh), Reactive (kVArh), Apparent (kVAh)
Demand	kW, kVA, kVAr, Maximum Demand (MD)
Instantaneous	Per-phase voltage, current, frequency, power factor, phase angle, kW, kVA and kVAr
Load Profile	Configurable/programmable integration period (15 or 30 minutes)
Harmonics	Total Harmonic Distortion (THD-V, THD-I)
Display and Indicators	
Item	**Specification Descriptions**
Display Type	Backlit LCD or LED
Display Parameters	Instantaneous values, energy registers, maximum demand, power factor and frequency
Indicators	Active/reactive pulse LED, communication status, power ON, phase reversal, phase failure and tamper indication
Digits	Minimum 6 digits including decimal places
Communication and Interfaces	
Item	**Specification Descriptions**
Communication Interfaces	RS-485, RS-232, RJ45/Ethernet, M-bus, as required by the application.
Wireless Communication Options	RF Mesh, Zigbee, LoRaWAN, Wi-Fi, NB-IoT, or Cellular technologies as required by the application.
Supported Protocols	Modbus RTU, Modbus TCP/IP, DLMS/COSEM, M-Bus, compatible with AMR/AMI and as required by the application
Pulse Output	Configurable active and reactive energy pulse outputs
Optical Port	Included for local data reading and configuration
System Integration	Compatible with ACSA IT Systems / Building Management System (BMS), SCADA and fully compatible with centralised AMR/AMI systems or platforms
Environmental, Auxiliary Supply, Data Logging, Lifespan, Safety Features and Documentation	
The requirements shall be identical to those specified for the Single-Phase Energy Meter's Technical Specifications.	
Smart Water Meter Technical Specification	
General Requirements	
Item	**Specification Descriptions**
Application	Domestic, commercial and bulk potable water metering for billing, leak detection and network monitoring
Meter Technology	Ultrasonic or electromagnetic smart water meter
Mounting	Horizontal or vertical installation in accordance with manufacturer's requirements
Meter Sizes	DN15 to DN300 or as specified by the project
Accuracy Class	Class 1 or Class 2
Measurement Type	Electronic ultrasonic or electromagnetic, Bi-directional, with digital sensing, no moving parts, high-resolution flow detection, and integrated data logging.
Certification/Standard compliance	SANS 1529-1, SANS 1529-9, NRS 057

Measured Parameters	
Item	**Specification Descriptions**
Flow Rate Range	In accordance with applicable SANS standards (e.g. SANS 10252-1)
Minimum Flow (Q1)	≤ 0.015 m³/h
Transitional Flow (Q2)	As per meter classification
Nominal Flow (Q3)	2.5–250 m³/h depending on meter size
Overload Flow (Q4)	Minimum 1.25 × Q3
Measurement Direction	Bi-directional (forward and reverse)
Measured Quantities	Forward volume, reverse volume and net volume (m³)
Leakage or Burst Detection	Built-in leak and burst detection with event logging
Temperature Rating	As per meter model (as specified by the manufacturer)
Display and Indicators	
Item	**Specification Descriptions**
Display Type	LCD electronic display with backlight
Display Parameters	Total volume, flow rate, flow direction, battery status, communication status and alarms or tamper events
Indicators	Pulse output indicator, low battery warning, communication status indicator
Digits	Minimum 6 digits including decimal places
Communication and Interfaces	
Item	**Specification Descriptions**
Communication Interfaces	Pulse output, RS-485, M-Bus, Optical Port, as required by the application
Wireless Communication Options	LoRaWAN, RF 868 MHz, NB-IoT, or Cellular technologies as required by the application
Supported Protocols	Modbus RTU, M-Bus, DLMS/COSEM, MQTT, as required by the application
Local Access	Optical or magnetic key port for on-site configuration and reading
Data Transfer	Configurable scheduled or on-demand communications
System Integration	Compatible with ACSA IT Systems / Building Management System (BMS), SCADA and fully compatible with centralised AMR/AMI systems or platforms
Environmental and Mechanical	
Item	**Specification Descriptions**
Operating Temperature	–25 °C to +55 °C
Storage Temperature	–25 °C to +70 °C
Relative Humidity	Up to 95% non-condensing
Ingress Protection	IP68 (for fully submersible electronic meters), IP65 (for above-ground installations)
Pressure Rating	PN 16 bar minimum (standard), PN 25 optional
Body Materials	Brass, bronze or polymer composite (for DN ≤ 40 mm); Cast iron, ductile iron or stainless steel (for DN50 and above)
Power and Battery	
Item	**Specification Descriptions**
Battery Type	Lithium
Battery Life	Minimum 10 years (≥ 10 years)
External Power (optional)	12–24 V DC
Power Consumption	Less than 0.5 W

Data Logging and Memory	
Item	**Specification Descriptions**
Load Profile Storage	Minimum of 45 days at 15 minutes intervals
Storage Capacity	Minimum 12 months of hourly data, and billing data
Event Logging	Power or battery status, reverse flow, tamper, magnetic interference, leak and burst events (minimum of 100 events)
Non-volatile Memory	Minimum 5 years data retention without power
Lifespan and Warranties	
Item	**Specification Descriptions**
Design Life	Minimum of 8 years (≥ 8 years)
Warranty	Minimum of 12 months after commissioning with option to extend
Documentation and Deliverables	
Item	**Specification Descriptions**
Calibration Certificates	Factory calibration/test certificates (traceable to national standards)
Configuration Records	Configuration and communication setup records required
As-Built Drawings and Shop drawings	As-built wiring and connection diagrams required, including shop drawings
Installation and Maintenance Manuals	Required
Compliance Test Reports	Required
Integration Test Reports	Demonstrate BMS, SCADA and AMR/AMI connectivity

Table Five (C3): Smart Metering Technical Specification Requirements.

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

The implementation of an integrated smart metering system At KSIA is a strategic initiative aimed at improving revenue recovery, operational efficiency, and overall utility management. Airports are complex, high consumption environments where manual or incomplete metering often leads to inefficiencies, billing inaccuracies, and revenue leakage. By introducing automated, real-time monitoring of electricity and water consumption, the system ensures accurate, transparent, and auditable billing while eliminating unmetered usage. It also reduces administrative workload, minimises human error, and standardises processes across multiple sites, resulting in more reliable and efficient operations.

In addition, the system enhances data visibility and control, enabling proactive monitoring, better demand management, and early detection of anomalies such as leaks or unauthorised consumption. This reduces operational losses, limits billing disputes, and improves tenant trust. From a strategic and financial perspective, smart metering supports data driven decision making, sustainability initiatives, and improved infrastructure management. The return on investment is realised through increased revenue collection, reduced wastage, lower operating costs, and improved cash flow, making the solution both financially sustainable and essential for modern, data driven Airport operations.

The purpose of the Works is to design, supply, install, integrate, test, and commission a fully functional Automated Meter Reading (AMR) system At KSIA, including the replacement of obsolete meters with smart, AMR-compatible devices. The objective of the work is to provide a complete, integrated and operational Automated Meter Reading (AMR) system for electricity and water metering. The Works must deliver a complete, integrated, and operational metering solution that:

- Automatically captures utilities consumption and transmits metering data without manual intervention (eliminate manual data capturing),
- Measures and records utility consumption data for both electricity and water consumption at primary supply (bulk), distribution, and tenant levels (sub-metering), automatically,
- Enable real-time monitoring of electricity and water consumption, anomalies or fault detection and reporting (supports operational monitoring),
- Improve billing accuracy and revenue recovery from tenant,
- Replaces obsolete and unreliable metering infrastructure,
- Covers all identified metering points within the Scope (i.e. individual metering points, including incomers, and sub-metering – circuit segregation),
- Integrates with billing and management systems,
- Provide tenants with transparent access to their consumption data,
- Establish a standardised, scalable metering platform, future proof metering systems compatible with evolving technologies,
- Provide robust earthing, grounding, and bonding for electrical safety and fault protection,
- Support sustainability goals and carbon reduction mandates,
- Adhere with ACSA's Environmental Management Plan,
- Enhance energy efficiency and demand management,
- Ensure compliance with regulatory requirements such as SANS, OHS, and NRS standards.

1.2.1 Fitness for Purpose.

For the purposes of this Contract, the Works shall be deemed fit for purpose if the completed AMR system, as a whole and in its integrated operation as outline below but not limited to:

i) Functional Performance.

- Reliably measures utility consumption with accuracy consistent with applicable metering standards.
- Eliminates reliance on manual meter reading for routine billing purposes.
- Successfully captures data from all installed meters and transmits it to the central system.

ii) **Data Integrity and Availability**.

- Provides complete, consistent, and verifiable consumption data for all metered points.
- Prevents data loss, corruption, or unauthorised alteration.
- Maintains system availability sufficient to support monthly billing cycles and operational monitoring.

iii) **Billing Enablement**.

- Enables ACSA to produce accurate, timely, and auditable tenant utility invoices.
- Supports clear differentiation between recoverable (tenant) and non-recoverable (ACSA operational) consumptions.

iv) **Coverage and Completeness**.

- Ensures that all identified consumption points and tenants within the agreed scope are individually metered where required and appropriately allocated where direct metering is not feasible.

v) **System Integration**.

- Fully integrates with ACSA's billing, financial, and reporting systems.
- Provides user access (including tenants) to relevant consumption data where required.

vi) **Reliability and Robustness**.

- Operates effectively within Airport environments, including electrical and mechanical stress conditions and environmental exposure (e.g. water, dust, mud, and temperature variations).

- Includes appropriate safeguards against reverse flow inaccuracies from water meters and communication failures.

vii) **Scalability and Maintainability**.

- Supports future expansion, modification, and integration (smart grid readiness).
- Can be maintained without undue disruption to airport operations, including ongoing billing support.

viii) **Compliance**.

- System shall meet all applicable South African National Standards (SANS), NRS specifications, Occupational health and safety requirements, and Airport operational and security requirements.

1.2.2 System Measurable Outcomes.

The successful implementation of the smart metering system will be measured against its ability to deliver tangible operational and financial improvements across ACSA's Airport portfolio. The focus of the works is therefore outcome driven, ensuring that the system not only functions technically but also provide meaningful value in terms of revenue assurance, data visibility, and operational efficiency. In this regard, the Contractor shall ensure that the completed system demonstrably achieves the following outcomes:

- Enables automatic collection and transmission of metering data without the need for manual intervention,
- Improved revenue recovery through accurate tenant billing,
- Availability of real-time consumption data,
- Detection of anomalies (e.g. leaks, losses, HVAC inefficiencies, Meter tampering/bypassing, unexpected load increases, equipment failing, and unauthorised usage).
- **Performance Requirements:** The Smart Metering System shall meet the following minimum performance requirements, which align with NEC performance mechanisms (X17, X20):

Key Performance Indicator (KPI's)	Weights (%)	Targets	Penalties to the Contractor
Overall System Availability	25%	≥ 99% monthly uptime, after practical commissioning	98%-95%, result in 2% deduction and < 95%, in 5% deductions of monthly payments.
Data Availability or Capturing	20%	≥ 98% valid data capture	97%-95%, result in 1% deduction and < 95%, in 3% deductions of monthly payments.
Data Accuracy integrity	15%	Worst case meter accuracy Class 2.0 maintained	> ±2% accuracy, result in 2% deduction of monthly payments per affected zone.
Communication Network Reliability	15%	≥ 98%, successful transmissions	98%-95%, result in 2% deduction and < 95%, in 5% deductions of monthly payments.
Fault Response and Recovery Time	10%	Critical faults resolved within 3-hours and non-critical within 24-hours	24-hour+ delay, results in 5% deduction and delays more than 3-hours but less than 24-hours results in 2% of monthly payments.
System Integration Performance	10%	100% integration with billing software, and either BMS/EMS systems (End-to-end data validation)	Partial integration results in 5% deduction per system failure points.
Reporting and Data Accessibility	5%	Real-time dashboards operational and monthly reports delivery on time, including invoices	Late or no reports result in 2% deduction per occurrence.
Minimum overall score is **95%,** and below 95% triggers performance review meeting, corrective action plan, potential application of Option X17 (Low-Performance Damages) and repeated failure constitutes material breach. Failure to meet these requirements constitutes a Defect and may trigger performance damages under the contract			

Table Six (C3): Summary of performance requirements.

1.2.3 Legal and Contractual Interpretation.

The successful delivery of this project is defined not only by the physical installation of metering equipment, but by the achievement of a fully functional, reliable, and integrated smart metering system that meets the operational and commercial objectives of ACSA. Accordingly, the contractual obligations of the Contractor extend beyond compliance with technical specifications and include responsibility for overall system performance, data integrity, and usability for billing and revenue management purposes.

This approach aligns with the principle of fitness for purpose, whereby the Contractor is accountable for ensuring that the complete system performs as intended within the operational environment of the airport. As such, performance will be assessed based on the system's ability to deliver accurate measurements, reliable data, and effective support for revenue recovery, rather than on the installation of individual components in isolation.

In the event of any dispute, the interpretation of completion and compliance will therefore be based on the functionality and outcomes of the complete integrated system**.** The legal and contractual interpretation shall be guided by the following:

- The work shall not be considered complete merely upon installation of equipment.
- The Contractor's obligation is to deliver a fully operational, integrated system capable of achieving the intended outcomes described above.
- Any failure of the system to accurately measure consumption, reliably provide data for billing and support revenue recovery objectives, shall constitute a failure to meet the fitness for purpose requirement, regardless of whether individual components comply with technical specifications.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
ACSA	Airports Company South Africa (Employer)
SANS	South African National Standards (define technical and safety requirements for products, systems, and installations).
SABS	South African Bureau of Standards (develop, publish, maintain and certified SANS standards and ensure products and systems meet required standards).
OHSA	Occupational Health and Safety Act, 1993 (ensure a safe and healthy working environment).
NRS	National Rationalised Specification (provide standardised technical guidelines for electricity supply industry, metering systems and distribution networks.
NRCS	National Regulator for Compulsory Specifications (enforce compulsory safety and performance standards).
POPIA	Protection of Personal Information Act (protect personal information and data privacy)
CAA	Civil Aviation Authority (regulate Aviation safety and security).
IEC	International Electrotechnical Commission (International body that sets global electrical standards).
OEM	Original Equipment Manufacturer (company that produces the equipment or components).
MDMS	Meter Data Management System (system used to collect, validate, and manage metering data).
IT	Information Technology (systems, servers, and infrastructure for data processing and storage)

ICT	Information and Communication Technology (broader systems including IT, networks, and communications)
PPE	Personal Protective Equipment (safety gear such as helmets, gloves, and boots etc.)
SACPCMP	South African Council for the Project and Construction Management Professions
LOTO	Lockout/Tagout (safety procedure to ensure equipment is properly shut off during maintenance)
EMS	Energy Management System (monitors and optimises energy usage)
BMS	Building Management System (controls and monitors building services like HVAC, lighting, etc.)
OPEX	Operational Expenditure (ongoing costs of running systems and operations)
CAPEX	Capital Expenditure (initial investment in assets or infrastructure)
HVAC	Heating, Ventilation, and Air Conditioning
BHS	Baggage Handling System (automated system that transports checked luggage from check-in counters to aircraft and from aircraft to baggage claim areas)
KSIA	King Shaka International Aiport
AGL	Airfield Ground Lighting (Lighting systems on runways, taxiways, and aprons that guide aircraft during take-off, landing, and ground movement, especially in low-visibility conditions)
CoC	Certificate of Compliance (confirms that installations meet regulatory and safety standards)

Table Seven (C3): Summary of abbreviations.

2 Management and start up.

2.1 Management meetings

The Contractor is expected to attend progress and technical meetings for the purposes of contract management, project progress, risk management (including the weekly risk register), safety, compensation events, overall coordination, and other matters of a general nature. As far as practicable, the Contractor shall ensure that all required key personnel are available to attend such meetings. In certain instances, specialist meetings may be convened upon formal request. The Contractor shall not submit any claims for staff attending these meetings.

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

Title and purpose	Approximate time & interval	Location	Attendance by:
Kick-off meeting: Implementation Strategy	Once-off, time TBC	Sites/Teams Meeting	*Employer*, *Contractor's team (PM)*
Risk registers and compensation events	Weekly, time TBC	Sites/Teams Meeting	*Employer*, *Contractor's team (PM)*
Overall contract progress and feedback	Monthly, time TBC	Sites/Teams Meeting	*Employer*, *Contractor's team (PM)*

Table Eight (C3): Summary of project management meetings.

Meetings of a specialist nature may be convened as specified elsewhere in this Works Information. Where not specified, such meetings may be arranged by mutual agreement between the Parties, at times and locations appropriate to the nature and progress of the works.

Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within Ten (10) days prior to the meeting. All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

2.1.1 Communications Management Plan

The ACSA Project Lead shall establish, implement, maintain, and periodically update the Communications Management Plan for the Automated Meter Reading (AMR) Project. The Communications Management Plan shall define the communication framework, stakeholder engagement processes, reporting structures, communication channels, escalation procedures, meeting requirements, and document management protocols necessary to support the successful delivery of the Works. The plan shall identify stakeholder communication requirements, including the information to be communicated, communication methods, reporting frequencies, responsible parties, and intended recipients.

The ACSA Project Board (or Steering Committee) shall provide overall project governance, strategic direction, and oversight of project delivery. The ACSA Project Lead shall act as the primary point of contact for project communications and stakeholder engagement and shall be responsible for coordinating governance reporting, operational interfaces, permit applications, site access arrangements, stakeholder coordination, and the planning of project activities to minimise disruption to airport operations. The Contractor shall support the ACSA Project Lead by providing accurate and timely project information, technical inputs, progress reports, attendance at meetings, and any other information reasonably required for project governance and stakeholder communications.

The Communications Management Plan shall include a communications matrix identifying stakeholders, communication types, reporting requirements, communication methods, responsible persons, and distribution lists. The plan shall further define meeting procedures, action tracking requirements, issue escalation processes, decision-making protocols, and document control requirements. A project team directory containing the contact details and roles of key project participants shall also be maintained. The Contractor shall comply with the Communications Management Plan and participate in all communication, reporting, coordination, and stakeholder engagement activities as directed by the ACSA Project Lead. Table 9 below sets out the preliminary Project Communication Management Matrix to be implemented for the duration of the Works.

Communication Items	Communication Purpose	Prepared by	Recipients	Communication Methods	Reporting Intervals
Project Status Report	Provide overall project progress, schedule updates, risks, issues, and key achievements	Contractor	ACSA Project Board or Steering Committee	Formal Report & Presentation	Monthly
Project Board Meeting	Governance oversight, strategic decisions, approvals, and issue resolution	ACSA Project Lead	ACSA Project Board	Formal Project Board Meeting	TBC
Technical and Progress Meetings	Review technical progress, installations, testing, commissioning, and operational coordination	Contractor	ACSA Project Lead	Meetings or Workshops	Bi-weekly or Monthly
Site Coordination Meetings	Coordinate site access, permits, outages, safety, and operational activities	ACSA Project Lead	Contractor, & Stakeholders	On-site Meetings	Bi-weekly or Monthly

Risk and Issue Register Updates	Communicate project risks, mitigation actions, and unresolved issues	Contractor	Project Lead	Risk Register or Reports	Weekly
Change Request Notifications	Communicate proposed project changes, impacts, approvals, and implementation status	Contractor	ACSA Project Lead & Project Board	Change Request Documentation	As Required
Quality Assurance Reports	Report quality inspections, testing results, non-compliance / deviations, and corrective actions	Contractor	Project Lead	Reports or Inspection Records	Bi-weekly or Monthly
Procurement and Delivery Updates	Provide updates on equipment procurement, manufacturing, shipping, and deliveries	Contractor	Project Lead	Progress Reports / Email	As Required
Safety and Compliance Reports	Communicate health safety, environmental, and compliance matters	Contractor	Project Lead	Progress Reports or Meetings	Bi-weekly or Monthly
Tenant and Stakeholder Notifications	Inform affected tenants and stakeholders of planned works, outages, and activities	Project Lead	Tenants, Airport Operations, Stakeholders	Email / Notices / Meetings	As Required
Escalation Reports	Escalate critical issues requiring management intervention or approval	ACSA Project Lead	ACSA Project Board	Formal Reports or Meetings	As Required
Testing and Commissioning Reports	Confirm completion of testing activities and commissioning results / procedures	Contractor	Project Lead	Technical Reports	Per Site Completion
Payments or Claims Certificates	Submit, verify, and approve payment applications, invoices, and claims linked to completed work and milestones	Contractor and ACSA Project Lead	ACSA Finance and Project Lead	Payment Applications or Certificates or Financial or Cost Reports	Monthly or Milestone-Based
Final Project Close-Out Report	Summarize project delivery, performance, lessons learned, and final acceptance	Contractor	ACSA Project Board	Final Report and Presentation	Project Completion as Required

Table Nine (C3): Summary of the project Communication Management Plan approach.

2.2 Documentation control

All communication shall be conducted via the Employer's designated personnel. All contractual documentation shall bear the contract number. Email is accepted as a means of communication, however, all contractual communications shall be issued in the form of properly compiled NEC letters or forms attached to emails, and not within the body of the email itself. All correspondence between the Contractor and the Employer's designated personnel shall comply with the following requirements:

a) All letters shall bear the reference number, contact details, date, and signature of the sender.
b) Letters shall follow the numbering scheme described in point (g).
c) **Correspondence sent via email**:

   i) Sender:
   - The letter shall be saved in PDF format and sent as an attachment to the receiver.
   - The email subject field shall contain only the document reference number.

- The email body may contain informal text but shall not be contractually binding.
- Only the letter saved in PDF format shall be regarded as formal communication and legally binding.

ii) Receiver:

- The receiver shall reply to the email "received", ensuring that the complete message from the sender is included in the reply, with the original letter in PDF format attached.
- In the reply, the receiver shall include the following text on the first line of the message body: "Acknowledgement of receipt." This acknowledgement shall be contractually binding and shall serve as proof that the letter was delivered to the receiver's address.
- Where a reply to a letter is required (e.g., "Acceptance of documentation"), the receiver shall become the sender and shall follow the process described under (a) and (b), issuing a new letter with a new reference number as described in point (g).

d) **Correspondence delivered by hand**:

i) Sender:

- The sender shall prepare the letter with a space for the receiver to sign and date acknowledgement of receipt. The sender shall sign the letter and prepare two copies for delivery.

ii) Receiver:

- The receiver shall sign both copies of the letter upon receipt and return one signed and dated copy to the sender.

e) **Correspondence by fax**:

i) Sender:

- The sender shall prepare the letter with a space for the receiver to sign and date acknowledgement of receipt. The sender shall sign the letter and send it to the receiver by fax.

ii) Receiver:

- Upon receipt, the receiver shall sign and date the letter and return it to the sender by fax as acknowledgement of receipt.

f) **Drawings and other technical document transmittals**:

- Transmittals shall be numbered as described in point (g).
- The same method as for letters described under point (d) shall be followed for transmittals.

g) Any correspondence not transmitted in accordance with the methods described above shall be regarded as informal and shall not be contractually binding. Only correspondence that has been duly acknowledged as received by the intended recipient shall be considered formal and legally binding.

2.3 Health and safety risk management

The *Contractor* shall comply with the health and safety requirements contained in this Works Information. For a smart metering project within an Airport environment, the Contractor shall adhere to strict Health, Safety, and Risk Management practices due to the high security, high traffic, and operationally sensitive nature of Airport facilities. Such environments present unique risks associated with continuous operations, restricted access zones, Aircraft movement, and critical infrastructure.

The Contractor is therefore required to implement comprehensive safety management measures, including compliance with all applicable occupational health and safety legislation, aviation regulations, and Airport specific procedures. This includes conducting detailed risk assessments, implementing appropriate mitigation controls, ensuring strict access and security compliance, and maintaining high standards of electrical and technical safety.

Furthermore, the Contractor shall ensure that all personnel are adequately trained, properly equipped with the required personal protective equipment (PPE), and fully aware of emergency procedures and site-specific hazards. Continuous monitoring, reporting of incidents and near misses, and active participation in safety audits and coordination meetings are essential to maintaining a safe working environment. Overall, the Contractor's approach should prioritise the protection of personnel, Airport operations, and infrastructure, ensuring that all activities are executed safely, efficiently, and in full compliance with regulatory and operational requirements. The contractor must comply with but not limited to the following regulatory and standard compliance:

- Occupational Health and Safety Act (OHSA), and regulations.
- Compensation for Occupational injuries and diseases Act.
- Civil Aviation Authority (CAA) regulations for Airport operations.
- Airport specific safety procedures (e.g. vehicle movement, restricted zones, Security compliance, Airside/landside movement, access control and permits).
- ISO 45001 standards for occupational health and safety.
- Electrical safety standards for smart metering (SANS / IEC standards).
- All ACSA procedures that are applicable to the scope of work.

The Contractor shall, at all times, adhere to the Employer's health, safety, and legal requirements, as amended from time to time for the duration of the Contract. In addition, the Contractor shall comply with all requirements set out in the SHE Specification. The Employer reserves the right to terminate the Contract should the Contractor demonstrate a pattern of poor performance or non-compliance in respect of applicable health and safety regulations, policies, and procedures.

The Contractor shall ensure that its employees, agents, subcontractors, and mandataries comply with the provisions of the Occupational Health and Safety Act, No. 85 of 1993, and all applicable regulations. The Health and Safety Agreement (**Part C1.3** of the Contract Data) shall be signed and returned as part of the tender returnable.

2.4 Environmental constraints and management

The Contractor shall comply with all applicable environmental legislation, standards, Airport environmental management requirements, and site-specific environmental controls throughout the execution of the Works. As a minimum, the Contractor shall comply with:

- Latest version of the Environmental Management System standard (ISO 14001:2015),
- National Environmental Management Act, 1998 (Act 107 of 1998),
- and all applicable ACSA environmental procedures, policies, and operational requirements relevant to the scope of work.

The Contractor shall undertake all design, installation, testing, commissioning, operational maintenance and associated activities in a manner that minimises environmental impacts, operational disruptions, waste generation, noise, dust, pollution, risk of damage to existing infrastructure, services, vegetation, and environmentally sensitive areas. The Contractor shall implement all reasonable measures necessary to prevent environmental harm and shall immediately report any environmental incident, spill, pollution event, environmental complaint or non-compliance to the Project Manager and ACSA and implement corrective actions without delay.

The handling, storage, transportation, recycling and disposal of redundant metering equipment, batteries, electronic waste, packaging materials and all other waste streams generated during the execution of the Works shall be undertaken in accordance with applicable environmental legislation, approved disposal procedures and ACSA environmental requirements.

The environmental constrains and management shall be strictly adhered to by the Contractor, its employees, subcontractors and suppliers. Furthermore, the Environmental Terms and Conditions Agreement (**Part C1.4** of the Contract Data) shall be completed, signed and submitted as part of the Tender Returnable. Compliance with the requirements of the Environmental Terms and Conditions Agreement shall be maintained throughout the duration of the Contract. The Contractor shall be deemed to have included in the Prices full provision for compliance with all environmental obligations arising from this Contract and shall not be entitled to any additional compensation for adherence to the requirements of this clause.

2.5 Quality assurance requirements

The Contractor shall establish, implement, and maintain a project-specific Quality Management System for the duration of the Works and shall submit a Quality Plan, Inspection and Test Plans (ITPs), Method Statements, and associated Work Procedures to the Project Manager for review and acceptance by the Employer, prior to commencing any installation activities. As a minimum, the Contractor's Quality Management System shall comply with the requirements of ISO 9001:2015 and shall ensure that all design, procurement, factory testing, installation, integration, commissioning, and handover activities associated with the smart metering systems are subject to documented quality control processes.

The Quality Plan shall identify quality objectives, responsibilities, document control procedures, inspection requirements, testing methodologies, non-conformance management processes, corrective actions, and records management requirements. Hold points and witness points shall be clearly identified within the Inspection and Test Plans and shall, as a minimum, include factory acceptance testing (FAT), verification of meter configurations and communications settings, installation inspections, integration testing with AMR/AMI, BMS, SCADA, billing systems, site acceptance testing, and final commissioning activities.

The Contractor shall provide all quality records, calibration certificates, test reports, inspection records, commissioning reports, and As-built documentation for review and acceptance in accordance with the Contract requirements. Acceptance by the Employer or Project Manager of the Contractor’s quality assurance programme, Quality Plan, Inspection and Test Plans, Method Statements, or those of any Subcontractor, shall not relieve the Contractor of its obligation to provide services, equipment, and Works that fully comply with the requirements of the Contract.

Acceptance of quality documentation shall not relieve the Contractor of any responsibility for compliance with the Scope, applicable standards, specifications, or the performance of the Works. The Contractor shall also ensure that quality controls are applied to all off-site activities, including design, factory assembly, configuration, testing, logistics, supplier management, and manufacturing processes associated with the delivery of the Works.

2.6 Programming constraints

The Contractor shall prepare, maintain, and update a detailed programme in accordance with NEC3 Clause 31.2 and submit it to the Project Manager for ACSA in-house review and acceptance. The programme shall clearly indicate all key activities, interfaces, milestones, forecast start dates, forecast completion dates, procurement activities, factory testing, site installations, communication network implementation, AMR/AMI integration activities, commissioning, training, and handover requirements for each Airport included within the Scope.

The programme shall identify the work of the Employer, Airport operational stakeholders, utility service providers, IT service providers, tenants, and other contractors that may affect or interface with the execution of the Works. Additional information to be included in the programme shall comprise critical path activities, float, resource allocation, access requirements, permit dependencies, outage requirements, Airport operational constraints, testing and commissioning windows, and any activities requiring coordination with Airport operations.

The Contractor shall take cognisance of the differing operating hours, operational requirements, security restrictions, and access limitations applicable at the Airport and shall plan the Works to minimise disruption to Airport operations, passengers, tenants, and critical services. The programme shall be updated regularly and shall accurately reflect progress, planned mitigation measures, and the effects of any accepted compensation events or changes to the Works.

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

The Contractor shall provide and maintain suitably qualified, experienced, and competent management, supervisory, technical, and support personnel necessary for the successful execution of the Works throughout the duration of the Contract. Prior to commencement of the Works, the Contractor shall submit a project team organogram for review and acceptance by the Employer, identifying the project-critical resources proposed in the functionality evaluation, together with reporting structures, communication lines, roles, responsibilities, and authority levels. The organogram should also clearly indicate how the project team will be supported by Original Equipment Manufacturer (OEM) personnel, including specialist technical resources responsible for meter configuration, communications infrastructure, AMR/AMI integration, software platforms, testing, commissioning, training, and warranty support.

Where the Contractor is a Joint Venture, the organogram shall clearly identify the lead partner, participating entities, management responsibilities, decision-making authority, and interfaces between the Joint Venture partners. The Contractor shall appoint a dedicated Project Manager as the single point of contact for all contractual, technical, and operational matters and shall ensure that key personnel remain assigned to the project for its duration unless otherwise approved by the Employer.

The Contractor shall provide adequate site supervision at all Airport's sites where work is being undertaken and shall ensure that suitably qualified personnel are available to coordinate installations, testing, commissioning, stakeholder engagement, Airport operational interfaces, and system integration activities. Any proposed replacement of key personnel shall be subject to prior approval by the Employer and shall be supported by evidence demonstrating equivalent or superior qualifications, experience, and competency.

2.8 Invoicing and payment

The Contractor shall submit a payment claim to the Project Manager or ACSA on or before the assessment date stated in the Contract Data. Each payment claim shall be supported by all information necessary for the assessment of the amount due, including, where applicable, Bills of Quantities, schedules, records, invoices, timesheets, delivery notes, test certificates and any other supporting documentation required by the Project Manager or ACSA.

The payment claim shall be submitted in the format prescribed by the Project Manager and shall clearly identify the work completed during the assessment period. The Employer and Project Manager may review and evaluate the Contractor's payment claim and supporting documentation before the amount due is assessed. The Contractor shall bear all costs associated with the preparation, reproduction and submission of payment claims and supporting documentation. Unless otherwise instructed by the Project Manager, the Contractor shall provide Three (3) hard-copy sets of A4-size supporting documentation together with an electronic copy in a format acceptable to the Project Manager.

Within Two (2) days of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Project Manager's* payment certificate.

The *Contractor* shall address the tax invoice to _____and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager;*
- The contract number and title;
- *Contractor*'s VAT registration number;
- The *Employer*'s VAT registration number:
- Description of work done by cross reference to *Project Manager*'s certificate;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

2.9 Contract change management

All changes to the Scope, Accepted Programme, Prices, Key Dates, Completion Date or any other aspect of the Contract shall be managed in accordance with the Compensation Event provisions of NEC3 and the Employer's contract administration procedures. The Contractor shall promptly notify the Project Manager of any matter which may constitute a Compensation Event and shall provide all supporting information, including details of the cause, impact on cost, time, resources, risks and proposed mitigation measures, within the timescales stated in the Contract.

The Contractor shall maintain a comprehensive Change Register recording all Early Warnings, Compensation Event notifications, quotations, assumptions, instructions, assessments, acceptances and implemented changes. The Change Register shall be updated regularly and submitted to the Project Manager as part of the monthly reporting requirements and whenever requested by the Project Manager. The Contractor shall ensure that all proposed changes are supported by sufficient technical, commercial, programme and operational information to enable proper evaluation of their implications. Quotations for Compensation Events shall clearly identify the effect of the change on the Prices, Completion Date, Key Dates, resources, airport operations, system functionality, project risks and any interfaces with existing Airport systems, including metering, communications, BMS, SCADA and AMR/AMI platforms.

No change to the Scope, metering architecture, communications infrastructure, equipment specifications, software configuration, system integration requirements or operational interfaces shall be implemented except in accordance with the instructions and procedures provided for in the Contract. The Contractor shall ensure that all implemented changes are incorporated into the Accepted Programme, design documentation, testing and commissioning procedures, asset registers, operation and maintenance manuals and As-Built documentation. Compliance with this change management process shall not alter the rights, obligations or liabilities of the Parties under the Compensation Event provisions of the Contract.

2.10 Provision of bonds and guarantees

The form in which a bond or guarantee is required by the conditions of contract (if any) to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties. The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer*'s right to termination stated in this contract.

2.11 Training workshops and technology transfer

Technology and knowledge transfer shall form an integral part of the Contract and shall be implemented through structured on the job training, formal training workshops, and handover training sessions to ensure full operational readiness of ACSA personnel. On the job training for ACSA maintenance personnel shall commence during the installation and commissioning phases and shall include practical, hands-on exposure to meter installation, configuration, communication setup, testing, fault diagnosis, system integration, and routine maintenance activities associated with the smart metering system. This practical training shall be supplemented by formal training workshops conducted by the Contractor, supported by OEM specialists where required, and shall make use of approved maintenance manuals, system documentation, and operational procedures.

Additional training workshops shall be provided to system operators and facility management personnel, focusing on system operation, AMR/AMI platform use, data interpretation, reporting functions, alarm handling, and basic troubleshooting. An operator manual shall be provided at handover, forming part of the complete system documentation package.

Training shall be delivered at agreed intervals during the project lifecycle, including at least one pre-commissioning workshop, one commissioning-phase workshop, and a final handover training session at Practical Completion for each Airport or system area as applicable.

Technology transfer requirements shall include the transfer of all relevant system information, configuration parameters, communication settings, and operational knowledge necessary for the Employer to independently operate, maintain, and manage the system after Completion. At commissioning and handover, the Contractor shall provide basic system training to enable competent use of the AMR/AMI and associated metering systems, including access to system dashboards, reporting tools, and maintenance functions. All training shall be documented, and attendance registers, training materials, and competency confirmations shall be submitted to the Project Manager or Employer as part of the completion deliverables.

3 Engineering and the *Contractor*'s design

This is a design and construction contract in which the Contractor shall be responsible for the design, supply, installation, integration, testing, commissioning, training, and handover of a complete smart metering solution that fully complies with the requirements of this Scope and all applicable standards, specifications, and Airport operational requirements. The Contractor shall undertake all engineering and design activities necessary to develop a fit for purpose solution, including system architecture, metering layouts, communication networks, AMR/AMI integration, interface requirements, power supplies, mounting arrangements, cabling, containment, software configuration, cybersecurity considerations, and all associated infrastructure required to deliver a fully functional system.

The Contractor shall provide all equipment, materials, software, licences, tools, specialist services, and ancillary components necessary to achieve a complete and operational solution, whether specifically identified in the Scope or reasonably required for proper system performance. All designs shall be prepared and certified by suitably qualified and competent professionals and shall be submitted to the Project Manager or Employer for review and acceptance in accordance with the Contract requirements. Acceptance of any design submission shall not relieve the Contractor of responsibility for adequacy, accuracy, performance, functionality, safety, maintainability, or compliance of the design. The Contractor shall maintain all insurances required under the Contract, including professional indemnity insurance and any other insurance relating to design liability, for the duration specified in the Contract Data.

3.1 *Employer*'s design

The Employer has not provided any detailed design for the Works, and the Contractor shall be responsible for the complete design of the smart metering solution in accordance with the requirements of this Scope. The Employer has, however, provided the user requirements, functional requirements, technical specifications, performance requirements, integration requirements, and operational objectives that define the expected outcomes of the solution. In addition, previous designs and implementation information relating to smart metering systems at other Airports may be made available to the Contractor for information and guidance purposes only. Such information shall not be interpreted as an approved design, design standard, or complete solution and shall not relieve the Contractor of its responsibility to undertake all investigations, surveys, engineering assessments, and design activities necessary to develop a fit for purpose solution.

The Contractor shall verify all existing conditions and infrastructure and shall prepare, certify, and submit its own designs for review and acceptance in accordance with the Contract requirements. The Contractor shall remain fully responsible for the adequacy, functionality, performance, compliance, and integration of the final design and the completed Works (end to end functionality).

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

The Contractor shall be responsible for the complete design of all aspects of the Works necessary to deliver a fully functional smart metering solution with Automated Meter Reading (AMR) capabilities, centralised monitoring, reporting, and billing functionality in accordance with the Scope, Employer's Requirements, and applicable standards. The Contractor's design responsibilities shall include, but not be limited to, site investigations, surveys, system architecture, metering strategies, meter schedules, communication network design, AMR/AMI platform configuration, software integration, cybersecurity measures, data management architecture, power supplies, panel modifications, mounting arrangements, cabling systems, containment, interface requirements, and all associated electrical, electronic, mechanical, telecommunications, and software components required for a complete operational solution.

The Contractor shall prepare and submit all detailed designs, calculations, technical specifications, shop drawings, construction drawings, installation drawings, wiring diagrams, network architecture diagrams, interface drawings, commissioning procedures, testing procedures, quality assurance and temporary works designs required for the execution of the Works.

The Contractor shall further be responsible for the preparation and submission of all project deliverables, including stage-gate design reports, design review submissions, factory acceptance test documentation, site acceptance test documentation, commissioning reports, Certificates of Compliance (CoCs), As-built drawings, shop drawings, closed-out reports, preventative maintenance manuals, maintenance procedures, operator manuals, training materials, manufacturer warranties, software licences, software support agreements, system configuration documentation, communication settings, database configuration records, cybersecurity configuration records, and all other documentation required to operate, maintain, support, and administer the system following Completion.

The Contractor shall ensure that all designs and deliverables are prepared by suitably qualified personnel and submitted for review and acceptance in accordance with the Contract requirements. Acceptance of any design or document by the Project Manager or Employer shall not relieve the Contractor of responsibility for the adequacy, functionality, performance, maintainability, safety, compliance, or completeness of the Works.

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

In accordance with NEC3 Clause 21.2, the Contractor shall submit all design information to the Project Manager or Employer for review and acceptance prior to commencing the relevant construction, installation, integration, testing, or commissioning activities. The Contractor shall prepare and submit comprehensive design documentation demonstrating how the proposed smart metering solution satisfies the Employer's requirements, functional requirements, technical specifications, operational requirements, cybersecurity requirements, integration requirements, and performance criteria.

Design submissions shall include, as applicable, design reports, engineering calculations, simulations, network and communication architecture diagrams, metering layouts, equipment schedules, single-line diagrams, wiring diagrams, panel layouts, installation drawings, construction drawings, software architecture documentation, interface specifications, cybersecurity designs, testing and commissioning plans, and any other information reasonably required by the Project Manager or Employer to assess compliance with the Scope. All drawings shall be prepared in accordance with recognised engineering drafting standards and ACSA drawing requirements and shall be submitted in both editable electronic format and PDF format.

The Contractor shall comply with the applicable ACSA Framework for Infrastructure Project Delivery and Management (FIPDM) processes and stage-gate requirements throughout the design development process. Design submissions shall be aligned to the relevant project stages and shall include sufficient detail to support technical reviews, stakeholder engagement, operational assessments, constructability reviews, and approval processes.

Where required, the Contractor shall participate in design review workshops and coordinate with ACSA representatives, Airport operational stakeholders, IT representatives, utility providers, and other parties identified by the Project Manager or Employer. Acceptance of any design submission by the Project Manager or Employer shall not relieve the Contractor of responsibility for the adequacy, correctness, functionality, performance, maintainability, safety, compliance, or completeness of the design or the Works.

3.4 Other requirements of the *Contractor*'s design

The Contractor shall ensure that all designs are developed in accordance with the Employer's technical standards, operational requirements, information management requirements, and asset management principles applicable to Airport environments. The design shall provide a standardised, scalable, maintainable, and interoperable smart metering solution that can be expanded and integrated with existing and future ACSA systems.

The Contractor shall implement consistent asset identification (refer to Annexure B1), tagging, naming, and codification methodology for all meters, communication devices, gateways, servers, software components, databases, network infrastructure, panels, and associated equipment to support asset management, maintenance, reporting, billing, and lifecycle management requirements. All naming conventions, meter numbering structures, communication addresses, database tags, alarm identifiers, and system hierarchies shall be submitted to the Project Manager or Employer for review and acceptance and shall align with ACSA operational and information management requirements.

The Contractor shall ensure that the design adopts open, industry-recognised communication protocols and standards wherever practicable and shall avoid Vendor-specific solutions that may unnecessarily restrict future integration, maintenance, expansion, migration or replacement of equipment, software or service providers. The design shall provide interoperability between all metering, communication, software and reporting components and shall facilitate integration with existing and future ACSA information technology, operational technology, AMR/AMI, Building Management System (BMS), Supervisory Control and Data Acquisition (SCADA), utility management, billing and reporting platforms.

The Contractor shall be responsible for achieving the performance requirements specified in this Scope on an end-to-end basis and shall ensure that all equipment, software, communication networks, interfaces and supporting infrastructure operate as a single integrated solution. Design reviews, comments, acceptance of submissions, participation in workshops, stage-gate approvals or any other review by the Employer or Project Manager shall not relieve the Contractor of responsibility for the adequacy, completeness, functionality, performance or compliance of the design and the completed Works.

The Contractor shall implement formal configuration management and design change control procedures throughout the Contract and shall maintain a complete record of all hardware configurations, software versions, firmware revisions, database structures, communication settings, network addresses, cybersecurity configurations and system parameters forming part of the Works.

The design shall further take into account maintainability, accessibility, cybersecurity, redundancy requirements where applicable, future expansion requirements, communication network resilience, data retention requirements (data storage management), and compatibility with existing ACSA IT, AMR/AMI, BMS, SCADA, utility management, and reporting systems. The Contractor shall ensure that all hardware, software, communication infrastructure, and configuration settings are fully documented and controlled through a formal configuration management process to support ongoing operation, maintenance, upgrades, and future system modifications.

3.5 Use of *Contractor*'s design

In addition to the rights granted to the Employer under NEC3, April 2013 Clause 22.1, the Employer shall have the unrestricted right to use, reproduce, modify, extend, maintain, and adapt the Contractor's design, drawings, calculations, reports, specifications, software configuration records, databases, naming conventions, asset registers, system documentation, training materials, operation manuals, maintenance manuals, and other design deliverables for the purposes of operating, maintaining, repairing, modifying, extending, upgrading, replacing, or replicating the smart metering solution at any ACSA Airport or facility.

The Contractor shall ensure that all design deliverables are provided in editable electronic formats acceptable to the Employer. Nothing contained in this clause shall relieve the Contractor of any responsibility for the adequacy, performance, functionality, or compliance of the design and the Works. The Contractor shall procure all licences, permissions, consents and intellectual property rights necessary to enable the Employer to exercise these rights without additional cost, restriction or dependency on the Contractor, OEM or any third-party following Completion.

3.6 Design of Equipment

The Contractor shall be responsible for the design, selection, provision, operation, maintenance and removal of all Equipment required to Provide the Works, including any temporary works, temporary communication infrastructure, temporary power supplies, lifting equipment, access equipment, testing and commissioning equipment, specialist installation equipment, temporary monitoring systems and any other equipment necessary for the execution of the Works.

Where the Contractor proposes to utilise Equipment or temporary works involving complex engineering, specialised design, operational interfaces with Airport infrastructure, or activities that may materially affect safety, security, Airport operations, programme performance or the execution of the Works, the Contractor shall submit details of the proposed Equipment and associated designs to the Project Manager or ACSA for information prior to implementation. Such submissions may include design calculations, drawings, specifications, operating procedures, risk assessments, method statements, inspection requirements, testing procedures and certification, as applicable.

The Project Manager or ACSA may review and comment on the information provided and may, in accordance with the Contract, require additional information where necessary to assess the potential impact on Airport operations, safety, security, existing infrastructure or the Works. Any review, comment, acknowledgement, acceptance or failure to comment by the Project Manager or ACSA shall not constitute acceptance of the Contractor's design and shall not relieve the Contractor of any responsibility or liability for the adequacy, suitability, safety, performance, reliability or compliance of the Equipment or any associated temporary works.

The Contractor shall remain solely responsible for ensuring that all Equipment is fit for its intended purpose, complies with all applicable legislation, standards and manufacturer requirements, and can provide the works efficiently, safely and without delay. The Contractor shall bear all risks associated with the design, procurement, operation, maintenance and use of such Equipment and temporary works throughout the duration of the Contract.

3.7 Equipment required to be included in the *works*

The Contractor shall provide, operate, maintain and remove all tools, plant, vehicles, testing equipment, commissioning equipment, access equipment, lifting equipment, temporary works, temporary services and all other Equipment necessary for the execution and completion of the Works. The Contractor shall provide all specialist equipment required for meter installation, configuration, calibration, communication network installation, system integration, testing, commissioning and fault-finding activities.

No Equipment will be provided by the Employer unless specifically stated elsewhere in the Scope. The Contractor shall ensure that all Equipment is suitable for its intended purpose, maintained in a safe and serviceable condition, and available as required to execute the Works in accordance with the Accepted Programme. All costs associated with the provision, operation, maintenance, transport, storage, security and removal of the Contractor's Equipment shall be deemed to be included in the Prices.

3.8 As-built drawings, operating manuals and maintenance schedules

The Contractor shall prepare, maintain and submit complete and accurate As-Built Drawings, Operating and Maintenance (O&M) Manuals, Maintenance Schedules and associated asset information for all Works undertaken under this Contract. Documentation shall be progressively updated throughout the Contract and shall reflect the actual installed configuration of the Works.

The Contractor shall submit draft As-Built Drawings and draft O&M documentation for review not less than 30 days prior to the planned commencement of Site Acceptance Testing (SAT) for each Airport or project phase. Final As-Built Drawings, O&M Manuals and Maintenance Schedules shall be submitted to the Project Manager or ACSA for acceptance prior to Completion of the relevant section of the Works and shall be updated to incorporate all approved changes, testing outcomes, commissioning results and final system configurations.

The As-Built Drawings shall include, as a minimum, meter locations, asset identifiers, communication network layouts, wiring diagrams, single-line diagrams, panel layouts, cable schedules, interface diagrams, IP addressing schedules, communication settings, database structures, system architecture diagrams, software configurations, equipment schedules and any other information necessary for the operation, maintenance, modification and future expansion of the system.

The O&M Manuals shall include equipment descriptions, manufacturer documentation, operating procedures, maintenance procedures, fault-finding guides, troubleshooting procedures, spare parts recommendations, calibration requirements, warranty information, software licence information, backup and recovery procedures, cybersecurity administration requirements, communication settings, configuration records and support contact details. Maintenance Schedules shall clearly identify all routine, preventative, predictive and corrective maintenance activities required to maintain the system in accordance with manufacturer recommendations and performance requirements.

The Contractor shall provide a complete asset register for all installed equipment in the format specified by the Employer, including asset numbers, equipment descriptions, serial numbers, model numbers, firmware versions, software versions, installation locations, warranty periods and maintenance requirements. All documentation shall be submitted in both searchable PDF format and editable native electronic formats acceptable to the Employer, including drawings in AutoCAD format (DWG's) and asset data in Microsoft Excel format (refer to Annexure B1), unless otherwise specified.

The Employer shall be granted unrestricted rights to use, reproduce, modify and distribute the documentation for the purposes of operating, maintaining, modifying, extending and replacing the Works. The submission and acceptance of complete As-Built Drawings, O&M Manuals, Maintenance Schedules, asset registers, software configuration records and associated handover documentation shall be a prerequisite for Completion and handover of the relevant Works. The following documents shall be provided at project handover and close-out.

No.	Description of handover requirement	Preferred format	Requirement met?	
			Yes	No
1	Construction or Installation drawings	A1 Hardcopies + PDF		
2	As-built drawings signed off by a Professional Engineer or Professional Technologist.	AutoCAD - DWG+PDF & A1 Hardcopies per Site		
3	Installation or Acceptance certificate and report	PDF		
4	Testing and Commissioning certificates and report	PDF		
5	Certificates of Compliance (CoC's)	PDF		
6	Guarantee and Warranty Documentation	PDF		
7	Maintenance and Operating manuals	PDF		
8	Datasheets of all equipment installed	PDF		
9	Training records of Operator & Maintenance Personnel	PDF		
10	Asset register as per attached Annexure B1	Microsoft Excel		
11	List of Critical Spares (with OEM names and OEM part numbers), refer to Annexure B1	Microsoft Excel		
12	Decommissioning certificates and report	PDF		
13	Close out report	PDF+DOCX/DOC		

Table Ten (C3): Summary of the project documentation to be provided or handover by Contractor to ACSA.

4 Procurement

The Contractor shall implement, provides and maintain procurement procedures that ensure the efficient, transparent, and compliant acquisition of all goods, materials, spare parts, software, firmware, communication equipment, metering devices, and third-party services required for the provision, operation, maintenance, and support of the Automated Meter Reading (AMR) Smart Metering Infrastructure. The Contractor shall obtain the Employer's prior written acceptance or approval before procuring any goods or services from third parties on behalf of the Employer. All procurement undertaken on behalf of the Employer shall be in accordance with the Contract and any agreed mark-up rates.

The Contractor shall procure equipment, components, software, firmware, licences, and spare parts from Original Equipment Manufacturers (OEMs) or their authorised distributors wherever required to preserve OEM warranties, product certifications, technical support arrangements, and system integrity. The Contractor shall be solely responsible for ensuring that all OEM warranty conditions, maintenance requirements, firmware compatibility requirements, and support obligations are always complied with. The Contractor shall establish and maintain effective working relationships with the relevant OEMs, manufacturers, authorised suppliers, and service providers associated with the AMR Smart Metering Infrastructure to ensure continued support, availability of spare parts, firmware updates, software upgrades, and technical assistance.

Where the Contractor proposes the use of alternative, refurbished, remanufactured, or non-OEM spare parts, equipment, or services that differ from OEM recommendations or specifications, such deviations shall be clearly identified and justified in writing to the Project Manager or ACSA at quotation stage and shall not be supplied or installed without the Employer's prior acceptance. The Contractor shall ensure that all replacement equipment, materials, and services procured comply with the Employer's technical standards, cybersecurity requirements, Airport operational requirements, and all applicable fire, health, safety, security, and environmental regulations governing work within Airport environments.

4.1 People

4.1.1 Minimum requirements of people employed on the Site

The Contractor shall provide the Project Manager with a schedule of all key personnel assigned to this Contract at the commencement of the service. The schedule shall include, as a minimum, all personnel from technician level to management level who are responsible for the delivery, operation, maintenance and support of the Smart Metering (AMR) Infrastructure.

The Contractor shall ensure that all personnel employed under this Contract possess the qualifications, competencies, certifications, training and experience necessary to perform their assigned duties safely and effectively. Personnel performing specialised work, including metering, communications, software, networking, cybersecurity and electrical activities, shall hold the relevant industry-recognised qualifications and certifications applicable to their role. The Contractor shall not replace any key personnel identified in the schedule with personnel of lesser qualifications, experience or competence without the prior acceptance of the Project Manager or ACSA. Any proposed replacement of key personnel shall be submitted to the Project Manager or ACSA together with the replacement person's qualifications, experience and competency records.

The Contractor shall notify the Project Manager or ACSA of planned absences of key personnel and shall provide suitable replacement resources where required to ensure continuity of service. No casual labour, temporary labour or "off-the-street" labour shall be employed on the Site without the prior approval of the Employer. Where such labour is required, the Contractor shall agree with the Employer the process for sourcing, screening, induction, security clearance and deployment of such personnel before they are engaged. All personnel working at the Airport shall comply with the Employer's security, access control, safety, health, environmental and operational requirements.

4.1.2 BBBEE and preferencing scheme

The Contractor shall maintain, as a minimum, the Broad-Based Black Economic Empowerment (B-BBEE) contributor status level submitted in its tender. Any change that may adversely affect the Contractor's B-BBEE status shall be notified to the Project Manager or ACSA within Five (5) Working Days of the Contractor becoming aware of such change.

The Contractor shall comply with all applicable B-BBEE commitments, supplier development obligations, subcontracting commitments and preferencing requirements stated in the Contract Data and Scope of Work. Where opportunities exist, the Contractor shall actively support the Employer's transformation objectives through the utilisation and development of qualifying suppliers and service providers.

4.2 Subcontracting

The Contractor shall provide all management, supervision, facilities, resources and coordination necessary to manage its Subcontractors, where applicable and ensure that all subcontracted work is carried out in accordance with:

- The accepted programme,
- The requirements of this Contract,
- The Employer's operational requirements,
- Airport security, access control and permit requirements,
- The safety plan,
- The Environmental Management Plan, and
- All applicable Airport operational procedures.

The Contractor shall ensure that all Subcontractors comply with the requirements of this Contract as if they were the Contractor's own personnel. The Contractor remains fully responsible for the acts, omissions, defaults and performance of its Subcontractors and suppliers. The appointment of a Subcontractor does not relieve the Contractor of any obligation or liability under this Contract. The Contractor shall maintain all insurances required under this Contract and shall ensure that its Subcontractors maintain the insurance cover required for the performance of their subcontracted activities.

4.2.1 Preferred subcontractors

The Employer does not nominate any Subcontractors for the execution of the works. Where the works involve OEM-specific AMR systems, OEM-supported equipment, software, firmware, communications infrastructure, metering devices or cybersecurity services, the Contractor shall use suitably qualified OEMs, authorised distributors, approved service providers or specialist suppliers where necessary to maintain warranties, technical support arrangements and system integrity.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

All subcontract agreements shall contain provisions requiring compliance with the obligations, standards, procedures, safety requirements, security requirements and operational requirements applicable to the Contractor under this Contract. The Contractor shall provide copies of proposed subcontract agreements and supporting documentation to the Project Manager or ACSA upon request.

4.2.3 Limitations on subcontracting

The Contractor shall not subcontract any part of the works without the prior written acceptance of the Project Manager or ACSA. The Project Manager or ACSA are not obliged to grant such acceptance. Where specialist services are required to comply with operational, technical, OEM, software, firmware, communications or cybersecurity requirements, the Project Manager or ACSA may consider requests to subcontract such services.

The Contractor shall not subcontract more than Thirty percent (30%) of the total Contract value without the prior written acceptance from ACSA. Where subcontracting is undertaken, the Contractor shall, where reasonably practicable and subject to technical and OEM requirements, allocate subcontracting opportunities in support of the Employer’s transformation objectives and applicable B-BBEE requirements.

4.2.4 Attendance on subcontractors

The Contractor shall provide all supervision, coordination, access arrangements, permits, escorts, facilities, utilities, safety inductions and operational support required for the performance of the Subcontractors' work where applicable. The Contractor shall coordinate the activities of all Subcontractors to ensure that Airport operations are not disrupted and that all access to and from Airport facilities is managed in accordance with the Employer's requirements.

4.3 Plant and Materials

4.3.1 Quality

The Contractor implements and maintains a Quality Management System in accordance with Z9 and the requirements stated in the Scope. The Contractor submits a Quality Plan for acceptance by the Project Manager or ACSA. The initial Quality Plan is submitted at tender stage, and the revised Quality Plan is submitted within Two (2) weeks of the Contract Date. Where applicable, the Contractor provides proof of compliance with applicable standards, including South African National Standards (SANS), manufacturer specifications, and Employer technical requirements. This includes submission of samples, test certificates, and shop drawings where required by Scope.

All Plant and Materials used in the works shall comply with applicable SANS standards where such standards exist. Where materials are not covered by SANS, the Contractor provides evidence of compliance with recognised international or manufacturer standards acceptable to the Project Manager or ACSA. Defective Plant and Materials shall be repaired or replaced to the satisfaction of the Project Manager or ACSA. Replacement shall be with new materials where repair is not acceptable.

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

The Employer provides no free-issue Plant and Materials unless stated otherwise in the Scope. The Contractor provides all Plant, Materials, tools, test equipment, spare parts and consumables required to perform the services. Where the Employer provides Plant and Materials, the Contractor is responsible for their receipt, storage, protection, security, maintenance of condition, and use until they are incorporated into the works or returned to the Employer. The Contractor ensures that such items are used strictly in accordance with the manufacturer's instructions and the Contract requirements.

4.3.3 *Contractor*'s procurement of Plant and Materials

The Contractor procures all Plant and Materials required for the execution of the Works in accordance with the Contract. All Plant and Materials remain the responsibility of the Contractor until Take Over unless otherwise stated in the Scope. The Contractor ensures that all procured Plant and Materials are:

- Fit for purpose;
- Compatible with the existing Smart Metering (AMR) Infrastructure;
- OEM-supported where applicable; and
- Compliant with the Employer's technical, cybersecurity, and operational requirements.

Where required, warranties are issued in the name of the Employer or assigned to the Employer upon completion. The Contractor provides all vendor data, manuals, configuration files, firmware details, and maintenance information required for operation and maintenance of the Plant and Materials after Completion.

4.3.4 Spares and consumables

The Contractor provides a minimum level of spares and consumables necessary for commissioning, testing, and initial operation of the Smart Metering (AMR) Infrastructure, including confidence testing and system acceptance activities. The Contractor further provides a recommended list of critical spares and consumables required by the Employer for ongoing operation and maintenance after Take Over (refer to Annexure B1). All spares and consumables shall be compatible with OEM requirements and shall not invalidate manufacturer warranties or support agreements. The Contractor should include sufficient quantities of spares and consumables in the Scope to ensure uninterrupted operation during commissioning, handover, and initial operational stabilisation.

4.4 Tests and inspections before delivery

The Contractor shall ensure that all Plant, Materials, spare parts, equipment, software, firmware, communication devices and associated components supplied under this Contract are inspected and tested prior to delivery to Site and installation. The Contractor shall verify that all items supplied are of the correct specification, compatible with the Smart Metering (AMR) Infrastructure, fit for their intended purpose and free from defects.

Any costs arising from the supply, delivery or installation of incorrect, defective or incompatible items shall be the responsibility of the Contractor. Where required by the Project Manager/ACSA, or where equipment is being manufactured, assembled, configured or integrated specifically for the Works, the Employer may require a Factory Acceptance Test (FAT) to be conducted prior to shipment or delivery to Site.

The Contractor shall submit a FAT procedure to the Project Manager or ACSA for acceptance at least Ten (10) Working Days before the planned FAT. The FAT procedure shall include:

- The scope of testing;
- Test criteria and acceptance requirements;
- Test equipment to be used;
- Test records and reporting requirements;
- Verification of hardware, software and firmware versions; and
- Verification of compliance with the approved design, specifications and Scope.

The Employer and Project Manager/ACSA may attend and witness any FAT. The Contractor shall provide reasonable notice of the FAT date and location. Following completion of the FAT, the Contractor shall provide a FAT report containing the test results, identified defects/failures, corrective actions taken and confirmation that the equipment complies with the accepted requirements. Attendance by the Employer or Project Manager at any FAT, inspection or test, does not relieve the Contractor of any responsibility for the quality, performance, functionality or compliance of the Plant and Materials supplied under this Contract.

The Contractor shall demonstrate during FAT, where applicable, that the equipment, software, firmware, communication systems and associated components perform in accordance with the specified functional, operational and performance requirements and that the Contractor's Quality Management System has been applied throughout the manufacturing, configuration and testing process.

4.5 Visual Inspection

The Contractor shall carry out visual inspections of all Plant, Materials, equipment, spare parts, communication devices, metering equipment and associated installations at the following stages:

- Upon delivery to Site;
- During installation;
- Upon completion of installation; and
- Prior to commissioning, testing and placing the equipment into service.

Visual inspections shall be used to identify defects, damage, incomplete work, non-compliant installations, safety hazards and any conditions that may adversely affect the performance, reliability or operation of the Smart Metering (AMR) Infrastructure. Visual inspections shall include, as a minimum, verification of:

- Correctness of external connections and wiring;
- Compliance with approved drawings and specifications;
- Quality of workmanship;
- Cleanliness and condition of the installation;
- Safety hazards and unsafe conditions;
- Correct equipment identification and labelling;
- Physical damage or deterioration;
- Security of mounting and fixings; and
- Any specific inspection requirements applicable to the equipment concerned.

The Contractor shall notify the Project Manager or ACSA of planned visual inspections associated with major equipment deliveries and critical installations. The Employer and Project Manager may attend and witness such inspections. Any defects, damage, non-compliances or deficiencies identified during visual inspections shall be recorded and corrected by the Contractor before the equipment is commissioned or placed into service. The Contractor shall maintain records of all visual inspections and shall make such records available to the Project Manager or ACSA upon request.

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

The Contractor shall provide all Contractor's Equipment necessary to perform the works in accordance with the Contract. The Contractor's Equipment shall be fit for purpose, maintained in a safe and serviceable condition, and suitable for use within an operational Airport environment. The Contractor shall ensure that all testing equipment, calibration equipment, communication diagnostic tools, software tools and measurement instruments used in connection with the Smart Metering (AMR) Infrastructure are appropriately calibrated, certified and maintained throughout the duration of the Contract.

The Contractor shall provide calibration certificates and equipment records for inspection by the Project Manager upon request. Where the Contractor proposes to use specialised equipment, temporary installations, temporary communications infrastructure or equipment that may affect airport operations, security systems, operational technology networks or the Smart Metering (AMR) Infrastructure, the Contractor shall submit details to the Project Manager for acceptance before such equipment is brought onto Site.

The Employer and Project Manager may inspect the Contractor's Equipment at any reasonable time. Such inspection does not relieve the Contractor of any responsibility for the suitability, safety, performance or compliance of the Contractor's Equipment. The Contractor shall remove all Contractor's Equipment, temporary works, temporary services and temporary installations from the Site upon completion of the works unless otherwise instructed by the Project Manager or ACSA.

Any laptops, handheld devices, software tools, network equipment or removable media connected to the Employer's systems shall comply with the Employer's cybersecurity and information technology requirements.

5 Construction

The Contractor acknowledges that the Airport is a live operational environment that is continuously undergoing maintenance, refurbishment, expansion and improvement activities involving multiple stakeholders, contractors, service providers, OEM's and operational personnel. The Contractor shall cooperate with the Employer, Project Manager, Other contractors and service providers to ensure the safe and efficient execution of the Works and to minimise disruption to Airport operations. Subject to reasonable notice and where operationally necessary, the Project Manager may instruct the Contractor to:

- Reschedule work activities to accommodate Airport operations or the activities of Others,
- Provide reasonable access to other Contractors, OEM representatives, specialist suppliers and service providers,
- Coordinate and communicate with existing service providers to minimise operational risks and service interruptions,
- Facilitate access to equipment, systems and installations for inspection, maintenance, defect correction or testing,
- Remove scrap, waste materials and redundant equipment from Site,
- Implement approved improvements to maintenance procedures, work practices or operational processes, and
- Ensure the safe, lawful and environmentally responsible disposal of obsolete, damaged or irreparable materials, equipment and spare parts.

The Contractor shall comply with all operational, safety, security and work procedures issued by the Employer or Project Manager from time to time. The Contractor shall ensure that all personnel and Subcontractors are informed of such procedures and always comply with them. Nothing in this clause relieves the Contractor of its obligations under the Contract or entitles the Contractor to interfere with Airport operations without the prior approval or acceptance of the Employer (ACSA).

5.1 Temporary works, Site services & construction constraints

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

The Employer has made provision in the Bills of Quantities (BoQ's) for costs associated with permits, access authorisations, security clearances, inductions and other Site access requirements necessary for the execution of the Works. The Contractor shall be responsible for obtaining and maintaining all permits, access authorisations and approvals required to perform the Works and shall comply with all Employer safety, security and Site access procedures.

The Contractor shall familiarise itself with the Employer's permit application processes and shall submit all applications timeously to avoid delays to the Works. The allowance provided in the Bills of Quantities is intended to cover the costs of all permits, access authorisations, security clearances and inductions reasonably required for the execution of the Works. No additional payment shall be made for such costs unless instructed or approved by the Project Manager or Employer. The Employer shall be responsible for funding the allowance provided in the Bills of Quantities for permit-related costs, while the Contractor remains responsible for the administration, application and management of the permit process.

Proof of attendance of the Airside Induction Training Course shall be provided for all personnel permit applications. Personnel applying for an Airside Vehicle Operator's Permit (AVOP) shall provide proof of attendance of the applicable AVOP training course. The Contractor shall ensure that all personnel maintain valid permits, training certificates and authorisations for the duration of the Contract. Fees may be levied by the Employer or the relevant Airport authority for inductions, AVOP training, permit applications, permit renewals and refresher courses where applicable.

The Contractor shall make the necessary arrangements to ensure that personnel remain compliant with all permit requirements. Where vehicle permits are required for the execution of the Works, the Contractor shall ensure that all vehicles comply with the Employer's vehicle permit requirements, including the following:

- Valid vehicle licence disc,
- Valid public liability insurance,
- Vehicle registration certificate,
- Light commercial and passenger vehicles up to Twelve (12) passengers and shall be in good conditions,
- Reflective striping installed in accordance with Airport requirements and maintained in good conditions,
- Three (3) identification decals displaying the approved company code shall be affixed to the vehicle, one on the left front door, one on the right front door, and one on either the roof, bonnet or rear of the vehicle. The decals should be clearly visible, legible and maintained in good condition at all times.
- An operational amber strobe light fitted to the vehicle where required by Airport regulations, and
- The designated driver of the vehicle shall hold a valid AVOP endorsement applicable to the operational area concerned.

The Contractor shall ensure that all personnel, vehicles and equipment comply with the Employer's security and operational requirements before access to restricted areas is requested. The following table is not all inclusive, but is provided for illustration purposes:

Permit for:	Required for:	Department:
AVOP – Airside Vehicle Operator	All drivers of vehicles on airside	ACSA Safety
Airside Vehicle	All vehicles that enter airside	ACSA Safety
Basement Parking	All vehicles allowed to enter the delivery basement	ACSA Parking
Personal	All persons employed on the airport	ACSA Security
Cell phone	All persons taking cell phones to airside	ACSA Security
Laptop	All persons taking laptop to airside	ACSA Security
Camera	All persons taking cameras or camera equipment to airside	ACSA Security
Hot works	All welding and/metal cutting work	ACSA Safety

Table Eleven (C3): Summary of the Permits required.

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

The Contractor shall comply with all access restrictions, operational zones, airside/landside separation requirements, and traffic management rules. The Contractor shall ensure safe segregation of working areas using approved barricading, signage and physical controls. Access routes, walkways and emergency exits shall not be obstructed at any time.

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

Work shall be undertaken during hours agreed with the Project Manager and the Employer, subject to Airport operational constraints. The Contractor shall maintain accurate daily records of all personnel (including Subcontractors) on Site and shall make such records available to the Project Manager upon request. These records may be needed when assessing compensation events. The Contractor shall ensure all personnel comply with Employer conduct, safety and security requirements.

5.1.4 Health and safety facilities on Site

The Contractor shall comply with all applicable health and safety legislation and Employer safety requirements. The Contractor shall ensure that appropriate first aid, emergency response and incident reporting arrangements are in place for all work activities. The Contractor shall immediately report all incidents, near misses and unsafe conditions in accordance with the Employer’s procedures.

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

The Contractor shall comply with all applicable environmental legislation and Employer environmental requirements. The Contractor shall prevent pollution, uncontrolled waste disposal, and unnecessary disturbance to the environment. Any archaeological, historical or heritage items discovered during the Works shall be immediately reported to the Project Manager or Employer and shall not be disturbed without instruction.

5.1.6 Title to materials from demolition and excavation

All materials, equipment, components, fittings, cables, meters, communication devices, scrap materials and other items arising from demolition, dismantling, removal or excavation activities undertaken in connection with the Works shall remain the property of the Employer. The Contractor shall not dispose of, sell, remove from Site, reuse or otherwise deal with such materials without the prior written instruction of the Project Manager. The Contractor shall safely store, protect, handle and account for all such materials until they are handed over to the Employer or disposed of in accordance with the Project Manager's instructions.

5.1.7 Cooperating with and obtaining acceptance of Others

The Contractor shall cooperate with the Employer, other contractors, utility providers, Airport operations personnel and statutory authorities as required to ensure safe and efficient execution of the Works. The Contractor shall coordinate its activities with Others and shall obtain any required approvals, permits or wayleaves necessary to execute the Works.

5.1.8 Publicity and progress photographs

The Contractor shall not issue any public statements, media releases or publicity relating to the Works without the prior written consent of the Employer. The Contractor shall provide progress photographs at intervals agreed with the Project Manager.

5.1.9 *Contractor*'s Equipment

The Contractor shall maintain records of all Contractor's Equipment on Site, including ownership status (owned or hired), calibration status (where applicable), and usage records. All lifting equipment, cranes where applicable, access platforms and specialised tools shall comply with applicable safety regulations and be operated by competent person. The Contractor shall ensure that all equipment used on Site is suitably maintained and does not create noise, vibration or safety risks exceeding Airport limits.

5.1.10 Equipment provided by the *Employer*

The Employer is under no obligation to provide any equipment, tools, instruments, vehicles, test equipment, software, communication devices, materials or facilities for the execution of the Works. The Contractor shall provide, at its own cost, all tools, equipment, instruments, testing equipment, software, vehicles, communication devices, temporary works and other resources necessary to execute the Works in accordance with the Contract. The Contractor shall ensure that all equipment used in connection with the Works is fit for purpose, properly maintained, safe to operate and, where applicable, calibrated and certified in accordance with applicable standards and manufacturer requirements.

5.1.11 Site services and facilities

The Employer shall provide access to existing connection points for electricity and water at locations determined by the Employer. The Contractor shall be responsible for making all arrangements necessary to connect to and use such services and shall comply with all Employer requirements relating to their use, protection and consumption. The Contractor shall be liable for the cost of electricity and water consumed in connection with the Works. The Employer may recover such costs based on metered consumption, reasonable estimates, or applicable tariff rates where separate metering is not available.

The Contractor shall be responsible for providing all other utilities, services and facilities required for the execution of the Works, including telecommunications, internet connectivity, waste collection and disposal, fire protection equipment, temporary lighting, storage facilities, welfare facilities, temporary power distribution and any other operational support services required for the Works. All utilities, services and facilities provided or arranged by the Contractor under this clause shall be maintained in a safe, secure and serviceable condition for the duration of the Contract and shall be removed and reinstated upon completion of the Works unless otherwise instructed by the Project Manager or ACSA.

5.1.12 Facilities provided by the *Contractor*

The Contractor shall provide, at its own cost, site establishment facilities required for the execution of the Works, including construction camps, offices, storage facilities, workshops, laboratories (where applicable), vehicles, equipment and all associated site accommodation.

The Contractor shall also provide suitable facilities for use by the Project Manager and Supervisor, including office accommodation, storage space and access to testing support facilities as required for the administration, inspection and supervision of the Works.

The location, layout and design of all site establishment facilities shall be subject to the approval of the Project Manager, and the Contractor shall submit drawings and details of such facilities prior to establishment on Site. The Contractor shall be responsible for the maintenance, operation, servicing and security of all facilities provided under this clause, and for their removal and reinstatement of the Site upon completion of the Works. The Contractor shall ensure that all site facilities comply with applicable Airport operational, safety and security requirements, including those of ACSA.

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

Prior to commencing any part of the Works that may affect adjacent buildings, structures, property or infrastructure, the Contractor shall inspect the relevant areas together with the owners or occupiers of such properties, representatives of the Employer, and any relevant local authority or service provider, as required. The Contractor shall record the condition of all such adjacent properties and infrastructure prior to commencement of the affected Works. Such records shall include written descriptions, photographs and any other relevant documentation and shall be submitted to the Project Manager or ACSA for review.

The Contractor shall take all necessary precautions to prevent damage to adjacent properties, existing infrastructure and Third-party works arising from the execution of the Works. The Contractor shall be liable for any damage caused by its operations. Where the Contractor is required to connect its Works to, or interface with, the works of others, the Contractor shall inspect and verify such works prior to commencing its related activities. Any failure by the Contractor to carry out such inspection shall not relieve the Contractor of responsibility for delay or additional cost arising from interface issues that could reasonably have been identified.

The Contractor shall notify the Project Manager or ACSA without delay of any defects, discrepancies or incomplete works of others that may affect the execution of the Works. The Contractor shall plan and programme its Works to take account of all interface requirements and shall not be entitled to any adjustment to the Prices or Completion Date arising from failure to carry out adequate inspection or coordination with the works of others, except where expressly stated otherwise in the Contract Data.

5.1.14 Survey control and setting out of the *works*

The Employer shall provide any existing survey control data and benchmarks available for the Site. Such information is provided for guidance only and shall not relieve the Contractor of its responsibility for verification.

The Contractor shall be responsible for all survey control required for the execution of the Works, including the establishment, maintenance, protection and re-establishment of all setting-out points, benchmarks and reference controls necessary for the accurate execution of the Works. The Contractor shall verify the accuracy of all Employer-provided survey information prior to use and shall notify the Project Manager or ACSA without delay of any discrepancies, errors or omissions.

The Contractor shall carry out all setting out of the Works at its own cost and shall be responsible for the correctness thereof. Any errors in setting out shall be rectified by the Contractor at its own cost, including any consequential work required to correct such errors. Where required by the Project Manager or ACSA, the Contractor shall submit survey records, setting out data and As-built surveys for review and record purposes.

The Contractor shall ensure that all survey work is carried out by suitably qualified personnel using appropriate equipment and methods consistent with good industry practice and any applicable Airport operational

requirements.

5.1.15 Excavations and associated water control

The Contractor shall be responsible for the safe execution of all excavations, including trenching, pits and deep foundations, and shall ensure that all excavations are adequately designed, always supported and maintained in a safe condition. The Contractor shall be responsible for the selection, design, installation, maintenance and removal of all temporary works associated with excavation support, including shoring, bracing, battering, sheet piling or other systems necessary to ensure stability and safety.

The Contractor shall implement and maintain all necessary measures to prevent the ingress of surface water, groundwater or seepage into excavations and shall provide and operate all dewatering systems required for this purpose. The Contractor shall be responsible for the control, treatment and lawful discharge of all water removed from excavations and shall comply with all applicable environmental and Airport authority requirements in this regard.

The Contractor shall ensure that excavations are kept free of water and in a safe condition for the execution of the Works and shall take all necessary precautions to prevent damage to adjacent structures, services, pavements and infrastructure. All costs associated with excavation support, dewatering, water control and reinstatement of affected areas should be deemed to be included in the Prices, unless otherwise stated in the Contract Data.

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

The Employer may provide any available information relating to existing underground and above-ground services. Such information is not warranted as complete, accurate or up to date and shall be used by the Contractor for guidance only. The Contractor acknowledges that complete As-built records of existing services may not be available and shall not rely on any information provided by the Employer for the purposes of locating or protecting services.

Prior to commencing any excavation or intrusive Works, the Contractor shall carry out all necessary investigations, surveys and detections using appropriate equipment and competent personnel to identify the location, depth and extent of all existing services that may be affected by the Works. The Contractor shall be fully responsible for the identification, protection and safeguarding of all existing services, whether recorded or unrecorded, visible or concealed, during the execution of the Works.

Any damage to existing services shall be immediately reported to the Project Manager or ACSA and the relevant service authority and shall be made safe and repaired by the Contractor without delay at its own cost, unless otherwise instructed by the Project Manager or ACSA. Where diversion, alteration, termination or isolation of any existing service is required, the Contractor shall obtain prior approval from the Project Manager or ACSA and the relevant service authority and shall be responsible for executing and reinstating such works in accordance with the requirements of the relevant authority.

The Contractor shall provide and maintain all necessary temporary protection, support, marking and access arrangements for existing services for the duration of the Works. All costs associated with locating, investigating, protecting, supporting, diverting, reinstating and repairing existing services shall be deemed to be included in the Prices unless otherwise stated in the Contract Data.

5.1.17 Control of noise, dust, water and waste

The Contractor shall be responsible for the control and mitigation of all noise, dust, vibration, water pollution and waste arising from the execution of the Works.

The Contractor shall comply with all applicable environmental legislation, Airport authority requirements, and any environmental management plans applicable to the Site. The Contractor shall implement and maintain all necessary measures to prevent nuisance, pollution or hazard to persons, property or operational Airport activities, including but not limited to dust suppression, noise attenuation, erosion control, sediment control and containment of runoff water.

The Contractor shall ensure that all construction activities are planned and executed in a manner that minimises disturbance to Airport operations and surrounding areas, including restrictions on timing or methods of working where required by the Project Manager or Airport authorities. The Contractor shall be responsible for the collection, handling, transportation and lawful disposal of all waste generated in connection with the Works and shall ensure that no waste is disposed of on Airport property unless expressly authorised.

The Contractor shall regularly monitor environmental impacts arising from the Works and shall immediately implement corrective measures where required by the Project Manager or relevant authority. All costs associated with compliance with this clause, including environmental protection measures, monitoring, mitigation and waste disposal, shall be deemed to be included in the Prices unless otherwise stated in the Contract Data.

5.1.18 Sequences of construction or installation

The Contractor shall plan, sequence and execute the Works in accordance with the Accepted Programme.
The Employer's intended approach to implementation includes a Two (2) phase strategy comprising:

- **Phase 1**: Replacement of existing meters and establishment of the measurement and billing framework, including all associated installation, integration and commissioning activities required to enable accurate measurement and billing of utilities.
- **Phase 2**: Expanding of metering coverage to additional locations and systems to support demand management, optimisation programmes and extended monitoring capability.

This phased approach is provided for planning and coordination purposes only and does not constitute a mandatory sequence. The Contractor may propose its own sequencing, methodology and programme for execution of the Works, including overlapping or concurrent implementation of activities and commissioning, provided that all requirements of the Scope are satisfied, refer to item 1.1.1 of the "Works Information".

The Contractor may commission parts of the Works progressively or simultaneously where technically feasible and where such approach does not adversely affect compliance with the Scope, operational requirements, or safety constraints. Where the Contractor proposes to depart from the Employer's indicative phasing approach, such departure shall be reflected in the Accepted Programme. The Contractor shall notify the Project Manager or ACSA of any sequencing proposals that may affect operational interfaces, access arrangements, or the integration of metering and billing systems.

5.1.19 Giving notice of work to be covered up

The Contractor shall give the Project Manager not less than Two (2) working days' notice before covering up, enclosing or concealing any part of the Works that may require inspection, testing, measurement or verification. The Contractor shall provide the Project Manager and authorised ACSA representatives with reasonable access and opportunity to inspect such work before it is covered.

If the Contractor covers, encloses or conceals any work without providing the required notice, the Project Manager may instruct the Contractor to uncover the work for inspection and thereafter reinstate the work. The cost of uncovering and reinstatement shall be the responsibility of the Contractor. The Contractor shall not be entitled to any adjustment to the Prices or the Completion Date arising from compliance with this clause unless otherwise instructed by the Project Manager.

5.1.20 Hook ups to existing works

The Contractor shall coordinate, plan and execute all connections, tie-in and interfaces to existing works and systems, including electrical, communication, control, monitoring and metering systems, in accordance with the requirements of the Project Manager and ACSA. No connection to, modification of, or interference with any existing system shall be undertaken without the prior acceptance and approval of the Project Manager and, where applicable, the relevant ACSA representative.

The Contractor shall submit a method statement and implementation plan for each proposed connection or tie-in activity, including details of any required shutdowns, isolations, temporary works, testing procedures, commissioning activities and risk mitigation measures. The Contractor shall plan and execute all hook-ups in a manner that minimises disruption to Airport operations and existing services. Where shutdowns or outages are required, these shall be scheduled in accordance with ACSA operational requirements and approved by the Project Manager or ACSA.

The Contractor shall be responsible for ensuring compatibility between new and existing systems and shall verify all interfaces prior to undertaking any connection works. Following completion of each hook-up, the Contractor shall carry out all required testing and commissioning to demonstrate that the existing and new systems operate correctly and safely. Any damage to, interruption of, or adverse impact on existing systems arising from the Contractor's operations shall be immediately reported to the Project Manager and rectified by the Contractor at its own cost.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

On or before the Completion Date, the Contractor shall have done everything required to Provide the Works except for the work listed below, which may be completed after the Completion Date but, in any case, no later than the dates stated. The Project Manager or ACSA shall not certify Final Completion until all the work, other than that listed below, has been completed and is free of Defects which, in the opinion of the Project Manager, would prevent the Employer from using the works or Others from carrying out their work.

Work permitted on the Completion Date	**Date by which work is to be completed**
Overall performance testing of the Works in use (End-to-end system testing)	During completion date
Construction or installations drawings (systems architecture)	
Shop drawings	
Testing, commissioning, and quality control procedures.	
Factory Acceptance Test (FAT) records, where applicable	
Asset registers and equipment schedules	
Site Acceptance Test (SAT) records	
Practical Completion Commissioning records or reports	
Safe disposal certificates (Decommissioning)	
Certificates of Compliance (CoC's), and statutory certificates where applicable	
Administrator credentials and licence information	
Ownership rights to ACSA	
Work permitted after Completion (post-Completion deliverables)	**Date by which work is to be completed**
Overall performance testing of the Works in use (End-to-end system testing)	Within 30 calendar days after Completion

Submission of Close-out documentation (Report, manuals, technical specifications, warrantees and operating and maintenance manuals etc.)	Within 20 working days after Completion
Final user training sessions (training records)	
Final As-built drawings, showing exactly where every meter, gateway and communication device is installed, (DWG or similar CAD, and pdf format)	
Final software configuration records and system Backups.	
Final licence, password and administrator credential handover	
Final asset registers and equipment schedules, as per Annexure B1	
Permits handover to ACSA	During the Contract Close-Out.

Table Twelve (C3): Summary of the Works to be done by Completion and post the Final Completion.

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

For the purposes of Clause 35.2 of the Conditions of Contract, the Employer may, prior to Completion, use portions of the Works for operational, testing, commissioning, monitoring, integration or training purposes. Such use shall not be regarded as Take Over under Clause 35.2 of the Conditions of Contract. The reasons for which the Employer may use portions of the Works prior to Completion include:

- Inspection, testing, commissioning or verification of the Works,
- Monitoring, collection, validation and analysis of utility consumption data,
- Operation, evaluation or demonstration of metering, communication, monitoring, reporting or energy management systems,
- Integration of the Works with existing Airport systems, networks, billing platforms and operational infrastructure,
- Training of Employer personnel, operators, maintenance and other authorised users,
- Operational requirements associated with maintaining Airport operations, continuity of service and business processes, and
- Any other purpose agreed by the Project Manager and the Contractor.

The Contractor shall provide all reasonable assistance required to facilitate such use and shall coordinate its activities to minimise disruption to Airport operations. Use of any part of the Works by the Employer in accordance with this clause does not relieve the Contractor of any obligation under the Contract, including responsibility for completing the Works, correcting Defects, carrying out testing and commissioning, and achieving Completion.

5.2.3 Materials, facilities and samples for tests and inspections

The Contractor shall provide all materials, equipment, instruments, labour, facilities, access, test equipment and other resources necessary to carry out the tests and inspections required by the Scope and the Conditions of Contract. The Contractor shall provide reasonable access to the Works, records, equipment, installations and test results for inspection by the Project Manager and authorised ACSA representatives. Where requested by the *Project Manager* or *Employer*, the Contractor shall provide samples of materials, components or equipment proposed for incorporation into the Works for review, testing or verification, before bulk purchase.

The Contractor shall make available all manufacturer's certificates, calibration certificates, factory acceptance test records, commissioning records, product data sheets and other documentation necessary to demonstrate compliance with the Scope. The Employer may carry out or witness inspections, tests, demonstrations and commissioning activities at any reasonable time. The Contractor shall provide all reasonable assistance necessary to facilitate such activities. Where independent testing is required by the Project Manager, the Contractor shall provide access to the relevant equipment, installations and information necessary to enable such testing to be undertaken. Unless otherwise stated in the Contract Data, the cost of providing materials, facilities, samples, access, testing equipment and assistance required under this clause is deemed to be included in the Prices.

5.2.4 Commissioning

The Contractor shall develop and submit comprehensive commissioning and acceptance testing procedures for all equipment, systems, software, firmware, communications infrastructure, metering devices and installations provided under this Contract. The procedures shall be submitted to the Project Manager or Employer for review and acceptance before any commissioning or acceptance testing is undertaken.

Commissioning and acceptance testing shall only commence once the installation of the relevant equipment, systems and associated works has been fully completed and all pre-commissioning inspections, including delivery inspections and visual inspections, have been satisfactorily completed. The commissioning and acceptance testing procedures shall include:

- Test objectives and acceptance criteria,
- Inspection requirements,
- Functional testing requirements,
- Communication and integration testing requirements,
- Software and firmware verification requirements,
- Metering accuracy verification requirements where applicable,
- Test equipment to be used,
- Test records and reporting requirements, and
- Defect identification and rectification procedures.

The Employer may specify additional testing requirements where these are not adequately addressed in the Contractor's submitted procedures. Equipment, systems and installations shall not be commissioned until:

- Delivery inspections have been completed,
- Visual inspections have been completed,
- Installation has been completed,
- All identified defects have been corrected, and
- The Project Manager or Employer has accepted the commissioning arrangements.

During commissioning and acceptance testing, the Contractor shall demonstrate that the equipment, software, firmware, communications systems and associated components operate in accordance with the Contract requirements, approved designs, manufacturer specifications and operational requirements of the Employer. Commissioning and acceptance testing shall include verification, where applicable, of:

- Meter functionality and accuracy,
- Communications between field devices and the AMR platform,
- Data collection, storage and reporting functionality,
- Alarm and event reporting,
- Integration with existing systems,
- Cybersecurity settings and access controls,
- Firmware and software versions, and
- System performance under normal operating conditions.

The Contractor shall provide the Project Manager or Employer with commissioning records, test certificates and acceptance test reports following completion of the testing activities. Any defects identified during commissioning and acceptance testing shall be corrected by the Contractor and the affected tests repeated until the specified acceptance criteria have been achieved. Acceptance by the Employer (ACSA) following commissioning and acceptance testing does not relieve the Contractor of any responsibility for defects or non-compliance with the Contract requirements.

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

The Contractor shall submit a detailed start-up and commissioning methodology or procedure to the Project Manager and/or Employer for acceptance and approval prior to commencement of any start-up activities. The methodology shall define all procedures, responsibilities, testing requirements, commissioning sequences, safety requirements, and any special arrangements associated with the operation of the Smart Metering System, including metering devices, communications infrastructure, data acquisition systems, monitoring platforms, and billing interfaces.

The Contractor shall be responsible for planning, coordinating, and carrying out all testing, commissioning, integration, and start-up activities necessary to place the Works into operation in accordance with the Contract requirements, applicable standards, and manufacturers' recommendations. The Contractor shall provide suitably qualified and experienced personnel during testing, commissioning, and start-up and shall provide all reasonable assistance required by the Project Manager or Employer to verify the functionality, performance, reliability, and integration of the Smart Metering System with existing utility infrastructure, monitoring systems, and operational processes.

The Contractor shall ensure that all meters, communication networks, data concentrators, software platforms, dashboards, reporting systems, and associated equipment are fully operational prior to Completion. The Contractor shall demonstrate that all data collection, transmission, storage, monitoring, alarm, reporting, and billing functions are operating correctly and accurately. The Contractor shall verify the accuracy of all meter readings and data transfers and shall demonstrate successful communication between field devices and the central management platform. Any defects, communication failures, configuration errors, or data discrepancies identified during commissioning shall be rectified prior to acceptance.

The Contractor shall coordinate all commissioning and start-up activities with ACSA and any affected utility service providers and shall comply with all applicable operational, safety, security, and access requirements. Any interruptions to existing services required for commissioning or cut-over activities shall be subject to prior approval by the Employer or Project Manager and shall be undertaken in accordance with approved procedures. No part of the Works shall be placed into operational service unless all specified inspections, tests, commissioning activities, integration tests, and performance verification activities have been successfully completed and accepted by the Employer or Project Manager.

The Contractor shall be solely responsible for carrying out and managing all start-up activities necessary to place the Works into operation. The Contractor shall execute such activities in accordance with the approved methodology and shall provide all personnel, equipment, tools, and technical support required to achieve successful operation of the Smart Metering System to the satisfaction of the Project Manager and ACSA. Upon successful completion of start-up activities, the Contractor shall submit all commissioning records, calibration certificates, communication test results, meter verification reports, operating manuals, user training records, As-built documentation, and any other documentation required by the Contract as a prerequisite for Completion.

5.2.6 Take over procedures

Upon Final Completion, the Contractor shall assist the Project Manager and ACSA in facilitating the orderly Take Over of the Works. The Contractor shall provide all information, records, operating instructions, warranties, certificates, licences, user documentation and other information required for the operation and maintenance of the Works. The Contractor shall provide reasonable assistance during the Take Over process and shall cooperate with ACSA personnel to ensure continuity of service and operational readiness.

The final Take Over of the Works shall only occur upon achievement of Final Completion and after all outstanding defects, snags, commissioning requirements, testing requirements, documentation submissions, training obligations, and contractual deliverables have been completed to the satisfaction of the Project Manager and ACSA. Any interim use, operation, or partial occupation of the Works by the Employer shall not constitute Final Take Over or relieve the Contractor of any obligations under the Contract.

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

Where access to the Works is required after Take Over for the correction of Defects, the Contractor shall comply with all applicable Airport safety, security and operational requirements. The Contractor shall obtain all permits, passes and approvals required for access and shall coordinate all activities with the Project Manager and ACSA. Any work undertaken after Take Over shall be planned, coordinated, and executed in a manner that minimises disruption to Airport operations and existing services and shall be carried out in accordance with ACSA's operational and access requirements.

5.2.8 Performance tests after Completion

Where required by the Project Manager or Employer, the Contractor shall carry out performance testing after Completion to demonstrate that the Works achieve the performance requirements stated in the Scope. The performance testing may include verification of meter accuracy, communications reliability, system availability, data integrity, reporting functionality, integration with existing systems and any other performance criteria specified in the Scope. The Contractor shall provide all personnel, equipment and resources necessary to undertake such testing and shall submit the results to the Project Manager or Employer for review.

5.2.9 Training and technology transfer

The Contractor shall provide training to ACSA Energy and Demand Management (EDM) personnel in the operation, administration, monitoring, reporting and basic maintenance of the Works. Training shall be conducted prior to Final Completion and shall include practical demonstrations, user guidance and the provision of training materials. The Contractor shall transfer sufficient knowledge and information to enable ACSA personnel to operate and manage the Works safely and effectively following Final Completion.

5.2.10 Operational maintenance after Completion

The operational maintenance and monthly billing services shall form part of the Contractor's obligations under this Contract and shall be performed in accordance with the requirements set out in the Scope of Work and Part 2 of the Bill of Quantities.

The operational maintenance services shall include, but not be limited to, routine inspections, preventative maintenance, software and firmware updates, communication network monitoring, fault diagnosis and rectification, meter performance verification, reporting support, data management, and maintenance of the metering infrastructure necessary to ensure the continued reliable operation of the Smart Metering System. The Contractor shall also be responsible for the collection, validation, processing, and submission of monthly utility consumption and billing data in accordance with the requirements of ACSA and the Contract.

The operational maintenance and monthly billing services shall commence on the Contract Commencement Date and shall run concurrently with the execution of the Works. Such services shall continue for a period of Five (5) years from the Contract Commencement Date and shall be performed in accordance with the Scope and Part 2 of the Bill of Quantities. The Contractor shall maintain adequate technical resources and suitably qualified personnel throughout the Five (5) year service period to ensure the effective delivery of the services. From the Contract Commencement Date, the Contractor shall provide system support and operational readiness services to enable phased implementation, commissioning, and progressive activation of the Smart Metering System, including support for live data capture, system configuration, and billing readiness as each portion of the Works is completed and taken into operation.

The Contractor shall provide technical support during the Defects Correction Period in addition to the ongoing operational maintenance obligations and shall rectify any Defects in accordance with the Contract. All maintenance and operational services shall be coordinated with the installation, testing, commissioning, and start-up activities to ensure safe and uninterrupted execution of the Works and continued service availability of operational components.

6 Plant and Materials standards and workmanship

This section sets out the minimum standards, specifications, quality requirements and workmanship standards applicable to the design, supply, installation, testing, commissioning and completion of the Works. All Plant, Materials, equipment, software, systems and associated services incorporated into the Works shall be new, fit for purpose, of good quality and suitable for the intended operating environment.

The Contractor shall ensure that all work is carried out in accordance with the Scope, applicable legislation, relevant South African National Standards (SANS), international standards, manufacturer recommendations and recognised industry best practice. Where more than one standard applies, the heaviest requirement shall apply unless otherwise approved by the Project Manager.

The Contractor remains responsible for ensuring that all Plant, Materials and workmanship comply with the requirements of the Contract and achieve the performance, functionality, reliability and operational outcomes specified in the Scope.

6.1 Investigation, survey and Site clearance

The Contractor shall be responsible for carrying out all necessary site investigations, surveys, and verification of existing conditions required for the proper execution of the Works, including but not limited to the design, installation, and commissioning of the Smart Metering System. Such investigations shall include, where applicable, verification of existing electrical infrastructure, communication networks, utility services, and physical site conditions affecting installation of meters, communication devices, and associated infrastructure.

The Contractor shall identify and assess any constraints, risks, or interfaces with existing services and shall incorporate such findings into the design and execution of the Works. Site clearance shall be carried out only to the extent necessary for the execution of the Works and shall comply with all applicable Airport operational, environmental, and safety requirements. The Contractor shall ensure that all clearance activities are undertaken in a manner that does not disrupt Airport operations or existing services.

Any damage to existing infrastructure or services arising from site investigation or clearance activities shall be reinstated by the Contractor at its own cost.

6.2 Building works

All building works shall comply with applicable South African National Standards (SANS), relevant local authority requirements, and recognised industry best practice. Where applicable, elements of standardised construction specifications may be referenced, provided that they are interpreted in a manner consistent with this Contract and the NEC form of contract. This subsection includes, where applicable:

- Construction of meter rooms, enclosures, kiosks, and housing structures,
- Installation of cable ducts, service routes, and associated civil infrastructure,
- Structural modifications required for installation of metering and communication equipment,
- Finishing works associated with reinstatement and integration into existing facilities, and
- Any minor building works required to support installation of the Smart Metering System.

All building works shall be executed to a high standard of workmanship, suitable for installation of sensitive metering and communication equipment, and appropriate for a live Airport operational environment.

6.3 Civil engineering and structural works

All Civil Engineering and Structural Works shall comply with applicable South African National Standards (SANS), including where relevant the SANS 1200 series, or any updated standards issued by South African National Standards (SANS). Where SANS 1200 specifications are referenced, they shall be applied in a manner consistent with modern construction practice and the requirements of this Contract. In the event of any conflict between SANS standards and the Scope, the requirements of the Scope and the Contract shall take precedence. This subsection includes, where applicable:

- Excavation, trenching, and backfilling for cable routes and service ducts,
- Installation of foundations, meter kiosks, enclosures, and supporting structures,
- Reinstatement of surfaces including roads, pavements, and finishes,
- Protection of existing services and utilities, and
- All associated Civil Works required for installation of the Smart Metering System infrastructure.

All Civil Works shall be executed to ensure durability, safety, and suitability for installation and long-term operation of metering and communication infrastructure within an operational airport environment.

6.4 Electrical & mechanical engineering works

All electrical and mechanical works shall comply with applicable SANS standards, IEC standards, manufacturer requirements, and recognised industry best practice. All equipment, materials, components and workmanship shall comply with the latest applicable editions of relevant SANS, IEC and NRS standards. This subsection includes, where applicable:

- Installation of smart meters and associated electrical connections,
- Installation of distribution boards, isolators, and protection devices where required,
- Installation of communication power supplies and backup systems,
- Earthing, bonding, and lightning protection systems, and
- Integration of electrical systems with communication and data acquisition infrastructure.

All electrical installations shall be safe, reliable, and suitable for continuous operation in a live operational environment and shall comply with all applicable statutory and regulatory requirements.

6.5 Process control and IT works

The Contractor shall provide all hardware, software, communication devices, gateways, data concentrators, servers, cloud services, interfaces and associated systems necessary for the operation of the Works. All process control, communications, and IT systems shall be designed, supplied, installed, configured, and commissioned in accordance with applicable international standards, cybersecurity requirements, manufacturer specifications, and the functional requirements of the Smart Metering System. The Contractor shall ensure compatibility and integration with existing ACSA systems where specified in the Scope. This subsection includes:

- Smart metering communication networks (wireless dominant and/or wired),
- Data concentrators, gateways, and communication devices,
- Head-end systems (HES) and meter data management systems (MDMS),
- Software platforms for monitoring, reporting, and analytics,
- Integration with ACSA systems and billing platforms, and
- Cybersecurity, data protection, and access control requirements.

The Contractor shall ensure full interoperability between field devices, communication infrastructure, and software systems, ensuring secure, accurate, and reliable data transmission and storage. All software licences, configuration information, passwords, access credentials and administrative rights required for operation and maintenance of the Works shall be provided to ACSA upon Final Completion. The Contractor shall implement appropriate cyber-security measures to protect metering, communication and data management systems against unauthorised access, modification or disruption.

Upon Final Completion, the Contractor shall provide ACSA with all software licences, licence keys, passwords, encryption keys, administrator credentials, configuration files, databases, interface specifications, communication settings, technical manuals, operating procedures, backup files, source configuration information, and all other information necessary to operate, maintain, modify, support and administer the Works. The Contractor shall not withhold any information, access credentials, configuration settings or licences necessary for the continued operation of the Works. All such information shall be provided in a format acceptable to ACSA and shall form part of the Close-out Documentation.

6.6 POPIA, Confidentiality and Data Protection

The Contractor shall comply with all applicable legislation relating to the protection of personal information, confidentiality, cybersecurity and data management, including but not limited to the Protection of Personal Information Act, 2013 (Act No. 4 of 2013) ("POPIA"), and any regulations issued.

The Contractor acknowledges that, in the performance of the Works and the operational maintenance services, it may have access to confidential information, operational information, consumption data, billing data, personal information, security-sensitive information and other information relating to ACSA, its customers, tenants, service providers, employees and Airport operations.

The Contractor shall use such information solely for the purposes of performing its obligations under the Contract and shall not disclose, distribute, publish, copy, reproduce, modify or use such information for any other purpose without the prior written consent of ACSA.

6.6.1 Confidentiality

The Contractor shall keep confidential all information obtained during the execution of the Works and shall implement appropriate measures to prevent unauthorised access, disclosure, loss, theft, alteration or misuse of such information.

The Contractor shall ensure that its employees, agents, subcontractors, consultants and service providers are bound by written confidentiality obligations no less restrictive than those contained in this Contract. The confidentiality obligations contained in this clause shall survive Completion, Final Completion, Take Over, expiry or termination of the Contract.

6.6.2 Protection of Personal Information

Where the Contractor processes Personal Information as defined in POPIA, the Contractor shall:

- Process Personal Information only for the purposes of performing the Contract,
- Process Personal Information lawfully and in accordance with POPIA,
- Implement appropriate technical and organisational measures to safeguard Personal Information against loss, damage, unauthorised destruction, unlawful access, disclosure or processing,
- Restrict access to Personal Information to authorised personnel only,
- Ensure that all personnel handling Personal Information receive appropriate training regarding data protection obligations,
- Not transferring Personal Information to any Third (3rd) party without the prior written approval of ACSA unless required by law,
- Immediately notify ACSA of any actual or suspected data breach, unauthorised access, disclosure, loss or compromise of Personal Information, and
- Cooperate fully with ACSA in investigating and responding to any data protection incident.

6.6.3 Data Security

The Contractor shall implement and maintain appropriate cybersecurity controls and data protection measures for all software, databases, communication systems, cloud services, servers, gateways, metering infrastructure and associated systems provided under the Contract. Such measures shall include, where applicable:

- User authentication and access controls,
- Password management procedures,
- Encryption of sensitive data in transit and at rest,
- Security logging and monitoring,
- Malware protection,
- Backup and recovery procedures,
- Vulnerability management processes, and
- Protection against unauthorised access, alteration or disruption.

6.6.4 Data ownership

All data generated, collected, stored, processed or transmitted through the Smart Metering System, including consumption data, billing data, reports, system records, configuration information and operational information, shall remain the property of ACSA. The Contractor shall not claim any ownership rights in such data and shall make all such data available to ACSA upon request and upon expiry or termination of the Contract.

6.6.5 Return and Deletion of Information

Upon Completion, Final Completion, expiry or termination of the Contract, or upon request by ACSA, the Contractor shall return all confidential information and Personal Information belonging to ACSA and shall permanently delete any copies retained by the Contractor, except where retention is required by law. The Contractor shall provide written confirmation of such return or deletion if requested by ACSA.

6.6.6 Data Breach Notification

The Contractor shall notify ACSA immediately, and in any event within Twenty-Four (24) hours, of becoming aware of any actual or suspected data breach, cybersecurity incident, unauthorised access, loss, disclosure, corruption or compromise of confidential information or Personal Information relating to the Contract. The Contractor shall take all necessary steps to contain, investigate, mitigate and remediate the incident and shall provide ACSA with regular updates until the matter has been resolved.

6.6.7 Audit Rights

ACSA and the Project Manager shall have the right to audit and verify the Contractor's compliance with the requirements of this clause. The Contractor shall provide all reasonable access, records and information necessary to demonstrate compliance with its confidentiality, data protection and cybersecurity obligations.

7 List of drawings

7.1 Drawings issued by the *Employer*

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

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

C3.2 *CONTRACTOR*'S WORKS INFORMATION

The Contractor shall submit and maintain the Contractor's Works Information as part of its tender submission and subsequent Contract obligations. The Contractor's Works Information shall include all information necessary to describe the Contractor's proposed solution, design approach, equipment, systems, methodologies, resources, programmes, commissioning arrangements and operational support services required to Provide the Works.

The Contractor's Works Information shall form part of the Contract and shall be consistent with the Employer's Works Information. Where any conflict exists between the Contractor's Works Information and the Employer's Works Information, the Employer's Works Information shall take precedence unless otherwise agreed by the Employer.

3.2.1 Brochures, Product Data and Technical Literature

The Contractor shall provide technical brochures, product data sheets, catalogues, manufacturer's specifications, certifications and technical literature for all major equipment, software, communication devices, meters, gateways, servers, monitoring platforms, communication infrastructure and associated components proposed for incorporation into the Works. The submitted information shall clearly demonstrate compliance with the requirements of the Contract and shall identify equipment ratings, performance characteristics, communication protocols, environmental ratings, accuracy classes, certifications and other relevant technical information.

3.2.2 Design

The Contractor shall prepare and submit a framework Design Report describing the proposed Smart Metering System and associated infrastructure. The framework Design Report shall include where applicable:

- Executive summary,
- Design philosophy,
- System architecture,
- Metering strategy,
- Communication network design,
- Data acquisition and management architecture,
- Integration requirements,
- Specification and requirements for linking the AMR system with ACSA virtual Server Infrastructure at each Airport,
- Cybersecurity strategy,
- System availability and reliability requirements,
- Functional descriptions,
- Preliminary equipment schedules,
- Preliminary drawings and schematics,
- Risk assessment,
- Design assumptions and constraints,
- Compliance matrix demonstrating compliance with the Scope, and
- Any other information necessary to describe the proposed design solution.

The Contractor shall subsequently prepare and submit all detailed designs, calculations, drawings, specifications and supporting documentation required to execute the Works. Such information shall be submitted to the Employer and/or Project Manager for review and acceptance in accordance with the Contract prior to commencement of the relevant construction, installation, commissioning or implementation activities.

3.2.3 Plant and Materials Specifications and Schedules

The Contractor shall provide schedules and specifications for all Plant and Materials proposed for the Works including, where applicable:

- Smart meters,
- Communication modules,
- Gateways and data concentrators,
- Virtual Servers and linking with ACSA IT infrastructure,
- Head-End Systems (HES),
- Meter Data Management Systems (MDMS),
- Software platforms,
- Dashboards and reporting tools,
- Communication networks,
- Power supplies and backup systems,
- Meter kiosks and enclosures,
- Cabling and accessories, and
- Any other equipment necessary for the operation of the Works.

The schedules shall identify manufacturers, model numbers, quantities, technical specifications, communication protocols, certifications, warranty periods and expected service life.

3.2.4 Commissioning and Acceptance Testing

The Contractor shall submit preliminary commissioning methodologies, testing procedures, acceptance criteria and commissioning programmes describing how compliance with the Contract requirements will be demonstrated.

3.2.5 Programme and Resource Planning

The Contractor shall submit a detailed programme identifying key activities, milestones, procurement activities, installation activities, commissioning activities, testing activities, training activities and operational maintenance activities. The Contractor shall identify key personnel, specialist resources, subcontractors and support arrangements proposed for the execution of the Works.

3.2.6 Operational Maintenance and Billing Services

The Contractor shall provide details of the proposed operational maintenance and monthly billing services including:

- Organisational structure,
- Staffing arrangements,
- Helpdesk arrangements,
- Response times,
- Preventative maintenance procedures,
- Software support arrangements,
- Reporting procedures,
- Billing support procedures,
- Fault management procedures,
- Service level commitments, and
- Technical support arrangements.

3.2.7 Other Information

The Contractor shall provide any additional information necessary to demonstrate compliance with the Contract and successful implementation of the Works, including quality management procedures, health and safety plans, environmental management procedures, cybersecurity procedures, training plans, risk management plans, warranty information and any other information required by the Project Manager or ACSA. This section may be compiled and submitted as a separate document forming part of the Contractor's Works Information.

PART 4: SITE INFORMATION

Document reference	Title	No of pages
	This cover page	[1]
C4	Site Information	[4]
	Total number of pages	[5]

Part C4: 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.

The smart metering infrastructure will be installed across various operational areas within the Airport precinct, including but not limited to terminal buildings, substations, fuel farms, airside facilities, transformers, kiosks, and associated utility infrastructure. Certain installation locations, particularly the airside and fuel farm areas, are classified as restricted zones and are subject to stringent Airport security and access control requirements. Access to these areas will only be permitted through approved Airport procedures and in compliance with all applicable operational and security protocols.

The Contractor is reminded that the Airport is designated as a National Key Point. Accordingly, all personnel, subcontractors, and service providers shall strictly comply with the Airport's rules, regulations, and procedures relating to:

- Health and Safety,
- Environmental management,
- Security compliance,
- Fire prevention and protection measures, and
- Access control requirements.

The Contractor shall liaise directly with Airports Company South Africa Security personnel to obtain all necessary access permits, vehicle permits, gate permits, and operational approvals required for personnel, plant, equipment, materials, and vehicles entering the Airport precinct and restricted operational areas. All personnel, vehicles, tools, materials, and equipment entering or leaving the Site may be subjected to routine security searches and inspections in accordance with Airport security procedures and applicable aviation regulations. Access to airside and restricted operational areas shall be strictly controlled, and no materials, equipment, or personnel shall enter or leave such areas without prior approval and the necessary written permits or works orders issued by the relevant authority.

The Contractor shall familiarise itself with all ACSA operational, safety, and security requirements relating to permits, inductions, access control procedures, and operational coordination processes in order to prevent unnecessary delays to the Works. Required permits may include, but shall not be limited to, AVOP (Airside Vehicle Operator Permits) for all drivers operating vehicles on the airside, Airside Vehicle Permits for all vehicles entering airside operational areas, Basement Parking Permits for vehicles accessing delivery basement areas, Personal Permits for all personnel working within the Airport precinct, Cell Phone Permits for personnel carrying cellular phones into restricted areas, Tools and Laptop Permits for personnel carrying tools or electronic devices into airside environments, Camera Permits for photographic equipment, Hot Works Permits for welding, grinding, cutting, or similar activities, Airside Projects/Works Permits for all project activities within operational airside areas, and Low/Medium Voltage Permits to Work for all work involving substations, transformers, switchgear, distribution boards, and electrical cabling.

Proof of attendance of Airside Induction Training and General Aviation Security Awareness Training shall be mandatory for all personnel requiring permits or unescorted access to restricted Airport areas. The Client (ACSA) shall be responsible for all costs associated with permit applications, permit renewals, training courses, refresher courses, inductions, security clearances, approved communication devices, escorts, and related administrative requirements, and such costs shall be deemed included within the tendered rates and prices.

The use of cellular phones and two-way radios within the Airport environment shall only be permitted where authorised by the relevant ACSA departments and where the devices comply with approved Airport operational and frequency requirements. Approved communication devices and frequency allocations shall be subject to authorisation by the relevant ACSA Security, Safety, Information Technology, Airport Operations, or Electrical Maintenance departments as applicable.

The Contractor shall ensure that all required permits, inductions, clearances, and approvals are obtained prior to commencement of any work within restricted or controlled areas. All works shall be planned and executed in a manner that minimises disruption to Airport operations while maintaining full compliance with statutory and Airport specific requirements.

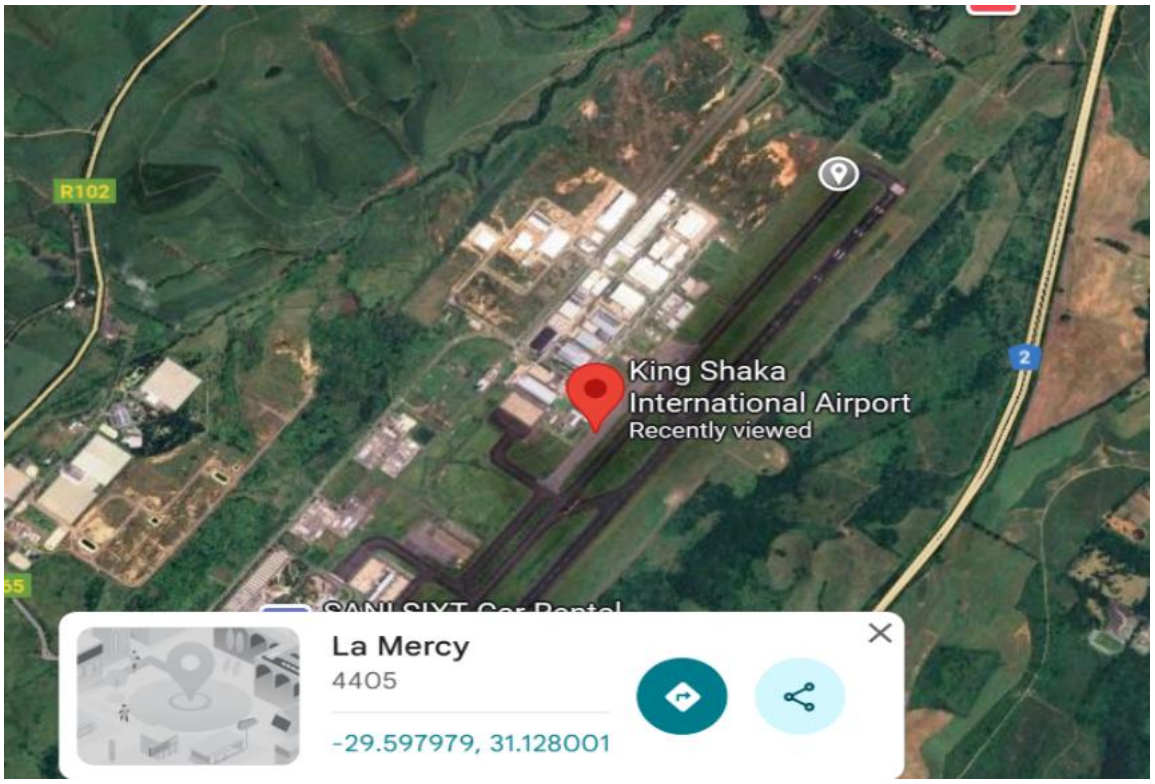
1. Description of the Site and its surroundings

1.1. General description

King Shaka International Airport (KSIA) is major aviation facility operated by Airports Company South Africa (ACSA). The Airport form part of the national Airport network and support continuous 24-hour aviation operations, including domestic, regional, and international passenger services, cargo handling, and associated Airport support infrastructure. The Airport is located in KwaZulu Natal Province, serving as key transport hubs that facilitate economic activity, logistics, tourism, and regional connectivity within South Africa and neighbouring countries.

Site	Location	Latitude	Longitude
KSIA	King Shaka Dr, La Mercy, KwaZulu Natal	29.597979° S	31.128° E

The site is in La Mercy, KwaZulu-Natal, approximately 35 km North of the City Centre of Durban. The site has a full range of vehicular access. The site is located at GPS Co-ordinates: -29°36'25.42" S 31°11'2.12" E



The Airport precincts comprise extensive aviation and engineering infrastructure including passenger terminal buildings, aircraft aprons, airside operational areas, cargo facilities, fuel farms, electrical substations, transformers, utility kiosks, maintenance facilities, fire and rescue services, internal road networks, and associated utility and support systems required for safe and continuous Airport operations.

the Airport operate within highly regulated aviation environments where safety, security, and operational continuity are critical. Certain areas within each Airport, particularly airside zones, fuel farms, substations, baggage handling areas, and other restricted operational facilities, are subject to strict access control measures, security clearance requirements, and permit to work systems due to their classification as controlled environments. KSIA is additionally designated as a National Key Point, requiring enhanced security compliance and access management.

All works within the Airport precinct shall be executed in live operational environments and must be carefully planned, coordinated, and managed to avoid disruption to aircraft operations, passenger flows, cargo handling, and essential Airport services. Contractors and personnel shall comply with all applicable ACSA regulations, including occupational health and safety requirements, environmental management procedures, fire safety standards, aviation security protocols, and access control requirements at all times.

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

The Site comprises existing operational Airport infrastructure including buildings, structures, plant, equipment, and associated utility services necessary for continuous airport operations. Existing facilities may include passenger terminal buildings, substations, electrical rooms, plant rooms, transformers, fuel farms, maintenance buildings, utility kiosks, cargo facilities, aircraft aprons, airside operational infrastructure, parking facilities, internal roadways, fire and rescue facilities, communication rooms, and associated Airport support structures. Existing plant and machinery may include generators, UPS systems, HVAC equipment, pumps, switchgear, metering infrastructure, fuel handling systems, baggage handling equipment, and other operational and engineering systems serving the Airport environment.

As-built drawings of the existing facilities generally provide the necessary information relating to existing infrastructure and services. However, no As-built drawings are available for the existing metering infrastructure, and the Contractor shall therefore satisfy itself as to the condition, configuration, and location of all existing metering systems and associated services prior to commencement of the Works. The Works will predominantly take place within indoor operational environments and external areas where remote metering infrastructure and associated utility services are located.

The Contractor shall take all necessary precautions to protect existing buildings, structures, plant, machinery, utilities, and operational systems from damage or interruption during the execution of the Works. The Airport environment remains fully operational throughout the duration of the project, and any interference with existing services or operations shall be strictly controlled and coordinated with the Employer and relevant Airport authorities. The Contractor shall verify the location and condition of all existing infrastructure prior to commencement of work and shall immediately report any discrepancies, damage, or unforeseen conditions encountered on Site. Any temporary shutdowns, isolations, or modifications to existing systems shall only be undertaken with prior approval and in accordance with Airport operational and permit to work procedures.

1.3. Subsoil information

No geotechnical reports, borehole logs, or subsoil condition data are available for the Site. The Contractor shall therefore be fully responsible for undertaking all necessary investigations to determine the nature and extent of subsoil conditions relevant to the execution of the Works, including but not limited to foundation design, excavation, earthworks, trenching, and the installation of underground services. Such investigations shall include, where necessary, geotechnical assessments, site investigations, trial pits, service detection surveys, and any other exploratory works required to adequately assess ground conditions and inform construction methodologies. The Contractor shall be deemed to have satisfied itself as to all site and ground conditions prior to submission of its tender and execution of the Works.

The Employer shall accept no liability for any assumptions, interpretations, or conclusions made by the Contractor regarding subsoil or ground conditions. However, where unforeseen physical conditions are encountered which could not reasonably have been identified through adequate investigation and which materially affect the execution of the Works, such conditions may constitute a Compensation Event in accordance with the applicable provisions of the Contract. Any such occurrence shall be promptly notified and assessed in accordance with the Contract procedures and requirements.

1.4. Hidden and other services within site

Airport precincts operated by Airports Company South Africa contain extensive hidden and concealed services that are critical to the continuous and safe functioning of the facilities. These services are typically located underground, within duct banks, service tunnels, ceiling voids, plant rooms, and airside service corridors, and are not visible during normal site inspection. They include electrical reticulation systems such as medium and low voltage cabling, ring main units, backup generator connections, UPS systems, and airfield lighting circuits, water supply infrastructure including potable water networks, firewater ring mains, booster pumps, and storage systems, sewer and wastewater systems comprising underground reticulation, pump stations, and grease traps, and stormwater drainage systems designed to manage surface runoff and apron discharge.

In addition, fuel distribution systems at fuel farms and hydrant networks include buried pipelines, pumping stations, and monitoring systems, while ICT and communication networks consist of fibre optic cabling, CCTV systems, access control infrastructure, and operational data networks. Fire detection and suppression systems, HVAC ducting and chilled water piping, and various mechanical services are also concealed within building structures and service routes. These hidden services are essential for maintaining uninterrupted Airport operations, safety, security, and regulatory compliance, and therefore any excavation, installation, or modification works within Airport environments must be carefully coordinated, preceded by utility detection, and executed under strict permit to work and operational control procedures.

1.5. Other reports and publicly available information

Designs and technical reports for George Airport (GRJ) and King Phalo Airport (ELS/KPA) may be provided by the Employer for reference purposes. However, no mapping, hydrological, geotechnical, or geological data are available from the Employer for any of the Sites. The Contractor shall therefore be fully responsible for obtaining, reviewing, and verifying any publicly available information, records, surveys, or data necessary to assess existing site conditions, underground services, environmental constraints, access limitations, and any other factors that may influence the execution of the Works. Such information may include topographical data, utility records, hydrological information, geological and geotechnical data, municipal service information, and any statutory or regulatory requirements applicable to the Site.

The Contractor shall ensure that all relevant information required to develop construction methodologies, temporary works, installation approaches, and any associated designs is adequately investigated and incorporated into the planning and execution of the Works. The Employer accepts no liability for the accuracy, completeness, or availability of publicly sourced information relied upon by the Contractor.

Part C5: Annexes

PART 4: ANNEXES

- **Annexure A1**: Annexure A Bills of Quantities Option B_ Part 1
- **Annexure B1**: Preliminary Decommissioning, New Smart Metering Asset Register & Spares. Excel
- **Annexure C1**: Utility Metering Technical Specifications and Guidelines.