



**AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED**

**PROJECT NAME AND NUMBER: SOLAR PLANT MAINTENANCE FOR A PERIOD OF FIVE (5) YEARS**

**TITLE OF PROJECT: SOLAR PLANT MAINTENANCE FOR BRAM FISCHER AIRPORT**

**NEC 3: TERM SERVICE CONTRACT (TSC)**

**Between AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED**

**Applicable at, Bram Fischer Airport.**

(Registration Number: 1993/004149/30)

and \_\_\_\_\_

(Registration Number : \_\_\_\_\_)

for **Solar Plant Maintenance at Bram Fischer Airport for a period of three (3) years**

<b>Contents:</b>	<b>Page</b>
Part C1 Agreements & Contract Data	
C1.1 Form of Offer and Acceptance	2
C1.2a Contract Data: Part 1 – Data provided by Employer	5
C1.2b Contract Data; Part 2 – Data provided by Service Provider	18
C1.3 Occupational Health and Safety Agreement	20
C1.4 ACSA Insurance Schedule	24
C1.5 Environmental Terms and Conditions	27
Part C2 Pricing Data	30
C2.1 Pricing Assumptions	
C2.2 The Price List	
Part C3 Employer Service Information	36
Part C4 Site Information	70
Part C5 Annexes	73

**PART C1: AGREEMENT AND CONTRACT DATA**

**C1.1 FORM OF OFFER AND ACCEPTANCE**

**Offer**

The employer, identified in the acceptance signature block, wishes to enter into a contract for:

**Solar Plant Maintenance for Bram Fischer Airport for a period of five (5) years.**

The contractor, identified in the offer signature block, has examined this document and addenda hereto as listed in the schedules, and by submitting this offer has accepted the conditions thereof.

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

The offered total of the prices (**INCLUSIVE OF VAT**) is:

(in words); (in figures)

*(The above amount should be calculated as per the guide provided in the Activity Schedule. In the event of any conflict between the amount above and the Activity Schedule, the latter shall prevail.)*

**for the contractor**

Signature ..... Date .....

Name ..... Capacity .....

(Name and address of organisation) .....

Name and signature of witness .....

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 to the tenderer before the end of the period of validity stated in the tender data, whereupon the tenderer becomes the party named as the contractor in the conditions of contract identified in the contract data.

**Acceptance**

By signing this part of this form of offer and acceptance, the employer identified below accepts the contractor'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 contractor's offer shall form an agreement between the employer and the contractor 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 agreement)
- Part C2: Pricing data and Price List
- Part C3: Service information.
- Part C4: Site information
- Part C5 : Annexes

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the tender 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 agreement. No amendments to or deviations from said documents are valid unless contained in this schedule.

The contractor shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the Service manager (to be confirmed) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five working days of the date of such receipt notifies the employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

**for the Employer**

Signature ..... Date .....

Name ..... Capacity .....

Airports Company South Africa,  
 Bram Fischer International Airport  
 Thaba Nchu Road  
 Bloemfontein  
 9301

Name and  
 signature  
 of witness ..... ..

**Schedule of Deviations**

- 1 Subject .....
- Details .....
- .....
- .....
- .....
- 2 Subject .....
- Details .....
- .....
- .....
- .....
- 3 Subject .....
- Details .....
- .....
- .....
- .....
- 4 Subject .....
- Details .....
- .....
- .....
- .....
- 5 Subject .....
- Details .....
- .....
- .....
- .....

By the duly authorised representatives signing this agreement, the employer and the contractor agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as 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 Agreement shall have any meaning or effect in the contract between the parties arising from this agreement.

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**C1.2a CONTRACT DATA****PART ONE - DATA PROVIDED BY THE EMPLOYER**

<b>Clause</b>	<b>Statement</b>	<b>Data</b>
1	<b>General</b>	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option:  dispute resolution Option:  and secondary Options:	<b>A: Priced contract with price list</b>  <b>W1: Dispute resolution procedure</b>  <b>X1 Price Adjustment for inflation</b> <b>X2 Changes in the law</b> <b>X18: Limitation of Liability (as amended in Option Z)</b>  <b>Z: Additional conditions of contract</b>
	of the NEC3 Term Service Contract (April 2013)	
10.1	The <i>Employer</i> is (Name):	<b>Airports Company South Africa SOC Limited</b>
	Address	<b>Thaba Nchu Road</b> <b>Bloemfontein</b> <b>9301</b>
10.1	The <i>Service Manager</i> is:	
11.2(1)	The <i>Accepted Plan</i> is	<b>Included in Part C5 of this document, including Annexes thereto as submitted by the Contractor and accepted by the <i>Service Manager</i>.</b>
11.2(2)	The <i>Affected Property</i> is	<b>Bram Fischer Airport as set out in Part C4 the Site Information.</b>

11.2(13)	The <i>Service</i> is	<b>The Maintenance of the Solar Plant for Bram Fischer Airport as set out in Part C3 <i>Service Information</i>.</b>
11.2(14)	The following matters will be included in the Risk Register	<b>The method statement Planned maintenance work Safety Legislated Annexes update</b>
11.2(15)	The <i>Service Information</i> is in	<b>The section titled <i>Service Information</i> included as Part C3 of this document.</b>
12.2	The <i>law of the contract</i> is the law of	<b>The Republic of South Africa</b>
13.1	The <i>language of this contract</i> is	<b>English</b>
13.3	The <i>period for reply</i> is	<b>7 calendar days</b>
21.1	The period within which the Contractor provides the Contractor's Plan	<b>14 calendar days from Contract Date</b>
<b>2</b>	<b>The Contractor's responsibilities</b>	<b>main Detailed in Part C3 (Service Information)</b>
<b>3</b>	<b>Time</b>	
30.1	The <i>starting date</i> is	<b>Approved BPA</b>
30.2	The <i>Service Period</i> is	<b>Five (5) years from the <i>starting date</i></b>
<b>4</b>	<b>Testing and Defects</b>	<b>No data is required for this section of the <i>conditions of contract</i></b>
<b>5</b>	<b>Payment</b>	
50.1	The <i>assessment interval</i> is on the	25 <sup>th</sup> day of each successive month Effective payment to be made within 30 days of invoice receipt. Assessment will be done immediately after the <i>service</i> .
51.1	The <i>currency of this contract</i> is the	<b>South African Rand (ZAR)</b>
51.2	The period within which payments are made is	<b>30 days</b>
51.4	The <i>interest rate</i> is	<b>The prime lending rate of the Nedbank Bank, as determined from time to time.</b>

<b>6</b>	<b>Compensation events</b>	<b>No data is required for this section of the conditions of contract.</b>
<b>7</b>	<b>Title</b>	<b>No data is required for this section of the conditions of contract.</b>
<b>8</b>	<b>Risks and insurance</b>	<b>Refer to Part C1.4</b>
83.1	The Employer provides these insurances from the Insurance Table	<p>Insurance against loss of or damage to the services, Plant and Materials comprising Contract Works Insurance, SASRIA Special Risks Insurance and Marine &amp; Air Cargo insurance; and</p> <p>Insurance (Public Liability Insurance) against liability for loss or damage to property (except the services, Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the Contractor) caused by activity in connection with the contract;</p> <p>Note: The terms and other matters applicable to these insurances provided by the Employer (and to insurances generally) are detailed in the insurance schedule attached as section C1.4 to the contract ("the Insurance Schedule").</p>
83.1	The Contractor provides these additional insurances	<p>Professional Indemnity Insurance</p> <p>Note: The terms and other matters applicable to this insurance provided by the Employer are likewise detailed in section C1.4 to the contract.</p>
83.2	The minimum amounts of cover or minimum limits of indemnity required for the insurance table	<b>Refer to Part C1.4</b>
<b>9</b>	<b>Termination</b>	<b>No data is required for this section of the conditions of contract.</b>
<b>10</b>	<b>Data for main Option clause</b>	
<b>A</b>	<b>Priced contract with price list</b>	<b>Refer to Part C2</b>

<b>11</b>	<b>Data for Option W1</b>	
W1.1	The Adjudicator is	<b>The person appointed jointly by the parties from the list of adjudicators contained below</b>
W1.2	The Adjudicator nominating body is	<b>The current Chairman of Johannesburg Advocate's Bar Council</b>
W1.4	The tribunal is	<b>Arbitration</b>
W1.4	If the tribunal is arbitration, the arbitration procedure is	<b>The arbitration procedure is set out in The Rules for the Conduct of Arbitrations 2013 Edition, 7th Edition, published by The Association of Arbitrators, (Southern Africa)</b>
W1.4	The place where arbitration is to be held is	<b>Johannesburg, South Africa.</b>
W1.4	The person or organisation who will choose an arbitrator	<b>The Arbitrator is the person selected by the Parties as and when a dispute arises in terms of the relevant Z Clause, from the Panel of Arbitrators provided under the relevant Z clause if the arbitration procedure does not state who selects an arbitrator. The Arbitrator nominating body is the Chairman of the Johannesburg Advocates Bar Council.</b>
<b>12</b>	<b>Data for secondary Option</b>	
<b>X1</b>	<b>Price Adjustment for inflation</b>	<b>The index referred to in this clause shall be deemed to refer to the CPI index on the <i>starting date</i> as stated under section 30.1. Price adjustment for inflation shall only take place on contract anniversary</b>
<b>X2</b>	<b>Changes in the law</b>	<b>No data is required for this secondary option.</b>
<b>X18</b>	<b>Limitation of liability</b>	
X18.1	The Contractor's liability to the Employer for indirect or consequential loss is limited to	<b>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</b>
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	<b>The total of the Prices</b>
X18.3	The Contractor's total liability to the Employer for defects due to his design which are not listed on the Defects Certificate is limited to	<b>The total of the Prices</b>

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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	<p><b>The Contractor’s total direct liability to the Employer for all matters arising under or in connection with this contract, other than the excluded matters, is limited to the total of the Prices and applies in contract, tort or delict and otherwise to the extent allowed under the law of the contract.</b></p> <p><b>The excluded matters are amounts payable by the Contractor as stated in this contract for:</b></p> <ul style="list-style-type: none"> <li>- <b>Loss of or damage to the Employer’s property,</b></li> <li>- <b>Defects liability,</b></li> <li>- <b>Insurance liability to the extent of the Contractor’s risks</b></li> <li>- <b>death of or injury to a person;</b></li> <li>- <b>infringement of an intellectual property right</b></li> </ul>
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**X19      Task Order**

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X19.1	Task Order	<b>No Data is required for this secondary option</b>
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**Z        The Additional conditions of Z1 – Z19 contract are**

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**Amendments to the Core Clauses**

**Z1**        Interpretation of the law

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**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 *Service 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.

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**Z2        Providing the Service:**

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**Z2.1      Delete core clause 20.1 and replace with the following:**

The *Contractor* provides the Service in accordance with the Service Information and warrants that the results of the Service, when complete, shall be fit for their intended purpose.

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**Z5        Termination**

**Z5.1      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 rescue proceedings”.

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**Amendment to the Secondary Option Clauses**

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**Z7        Limitation of liability:**

**Insert the following new clause as Option X18.6:**

**Z7.1**      The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00

**Z7.2**      Notwithstanding any other clause in this contract, any proceeds received from 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

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**Additional Z Clauses**

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**Z8        Cession, delegation and assignment**

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**Z8.1** 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*.

**Z8.2** The *Employer* may cede and delegate its rights and obligations under this contract to any person or entity.

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**Z9 Joint and several liability**

**Z9.1** 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.

**Z9.2** The *Contractor* shall, within 1 week of the Contract Date, notify the *Service Manager* and the *Employer* of the key person who has the authority to bind the *Contractor* on their behalf.

**Z9.3** 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*.

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**Z10 Ethics**

**Z10.1** The *Contractor* undertakes:

**Z10.1.1** 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;

**Z10.1.2** 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.

**Z10.2** 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.

**Z10.3** 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.

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**Z11 Confidentiality**

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- Z11.1** 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 *Service Manager* or the *Employer*, which consent shall not be unreasonably withheld.
- Z11.2** If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until otherwise notified by the *Service Manager*.
- Z11.3** This undertaking shall not apply to –
- Z11.3.1** 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;
- Z11.3.2** 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;
- Z11.3.3** 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);
- Z11.4** 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 *Service Manager*. All rights in and to all such images vests exclusively in the *Employer*
- Z11.5** The *Contractor* ensures that all his Subcontractors abide by the undertakings in this clause.

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**Z12** ***Employer's Step-in rights***

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- Z12.1** If the *Contractor* defaults by failing to comply with his obligations and fails to remedy such default within 2 weeks of the notification of the default by the *Service Manager*, the *Employer*, without prejudice to his other rights, powers and remedies under the contract, may remedy the default either himself or procure a third party (including any subcontractor or supplier of the *Contractor*) to do so on his behalf. The reasonable costs of such remedial works shall be borne by the *Contractor*
- Z12.2** The *Contractor* co-operates with the *Employer* and facilitates and permits the use of all required information, materials and other matter (including but not limited to documents and all other drawings, CAD materials, data, software, models, plans, designs, programs, diagrams, evaluations, materials, specifications, schedules, reports, calculations, manuals or other documents or recorded information (electronic or otherwise) which have been or are at any time prepared by or on behalf of the *Contractor* under the contract or otherwise for and/or in connection with the *works*) and generally does all things required by the *Service Manager* to achieve this end.
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**Z13 Liens and Encumbrances**


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**Z13.1** 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

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**Z14 Intellectual Property**


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**Z14.1** 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.

**Z14.2** IP rights remain vested in the originator and shall not be used for any reason whatsoever other than carrying out the *works*.

**Z14.3** 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

**Z14.4** 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

**Z14.5** 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:

**Z14.5.1** the *Contractor's* design, manufacture, construction or execution of the Works

**Z14.5.2** the use of the *Contractor's* Equipment, or

**Z14.5.3** the proper use of the Works.

**Z14.6** 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.

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**Z15 Dispute resolution:**


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**Z15.1 Appointment of the Adjudicator**

An *Adjudicator* is appointed when a dispute arises, from the Panel of Adjudicators below. The referring party nominates an *Adjudicator*, which nomination is either accepted or rejected by the other party. In the instance of a rejection of the nominated *Adjudicator*, the referring Party refers the appointment deadlock to the Chairman of the Johannesburg Bar Council, who appoints an *Adjudicator* listed in the Panel of Adjudicators below

The Parties appoint the *Adjudicator* under the NEC3 Adjudicator's Contract, April 2013

Name	Location	Contact details (phone & e mail)
Adv. Ghandi Badela	Gauteng	+27 11 282 3700 <a href="mailto:ghandi@badela.co.za">ghandi@badela.co.za</a>
Mr. Errol Tate Pr. Eng.	Durban	+27 11 262 4001 <a href="mailto:Errol.tate@mweb.co.za">Errol.tate@mweb.co.za</a>
Adv. Saleem Ebrahim	Gauteng	+27 11 535-1800 <a href="mailto:salimebrahim@mweb.co.za">salimebrahim@mweb.co.za</a>
Mr. Sebe Msutwana Pr. Eng.	Gauteng	+27 11 442 8555 <a href="mailto:sebe@civilprojects.co.za">sebe@civilprojects.co.za</a>
Mr. Sam Amod	Gauteng	<a href="mailto:sam@samamod.com">sam@samamod.com</a>
Adv. Sias Ryneke SC	Gauteng	083 653 2281 <a href="mailto:ryneke@duma.nokwe.co.za">ryneke@duma.nokwe.co.za</a>
Mr. Emeka Ogbugo (Quantity Surveyor)	Pretoria	+27 12 349 2027 <a href="mailto:emeka@gosiame.co.za">emeka@gosiame.co.za</a>

## Z15.2 Appointment of the Arbitrator

An *Arbitrator* is appointed when a dispute arises from the Panel of Arbitrators below. The referring party nominates an Arbitrator, which nomination is either accepted or rejected by the other party. In the instance of a rejection of the nominated *Arbitrator*, the referring Party refers the appointment deadlock to the Chairman of the Johannesburg Bar Council, who appoints an *Arbitrator* listed in the Panel of *Arbitrators* below

## Panel of Arbitrators

Name	Location	Contact details (phone & e mail)
Adv. Ghandi Badela	Gauteng	+27 11 282 3700 <a href="mailto:ghandi@badela.co.za">ghandi@badela.co.za</a>
Mr. Errol Tate Pr. Eng.	Durban	+27 11 262 4001 <a href="mailto:Errol.tate@mweb.co.za">Errol.tate@mweb.co.za</a>
Adv. Saleem Ebrahim	Gauteng	+27 11 535-1800 <a href="mailto:salimebrahim@mweb.co.za">salimebrahim@mweb.co.za</a>
Mr. Sebe Msutwana Pr. Eng.	Gauteng	+27 11 442 8555 <a href="mailto:sebe@civilprojects.co.za">sebe@civilprojects.co.za</a>
Mr. Sam Amod	Gauteng	<a href="mailto:sam@samamod.com">sam@samamod.com</a>
Adv. Sias Ryneke SC	Gauteng	083 653 2281 <a href="mailto:ryneke@duma.nokwe.co.za">ryneke@duma.nokwe.co.za</a>
Mr. Emeka Ogbugo (Quantity Surveyor)	Pretoria	+27 12 349 2027 <a href="mailto:emeka@gosiame.co.za">emeka@gosiame.co.za</a>

**Z16 Notification of a compensation event**

- Z16.1** Delete “eight weeks” in clause 61.3 and replace with “four weeks”. Delete the words “unless the event arises from the Service Manager or the Supervisor giving an instruction, issuing a certificate, changing an earlier decision or correcting an assumption.

**Z17 BBEE and Tax Clearance Certificates**

- Z17.1** The *Contractor* shall be expected to annually present a compliant BEE Certificate and a Tax clearance Certificate . Failure to do adhere to these requirements shall be considered a material breach of the conditions of this Contract, the sanction for which may be a cancellation of this Contract.

**Z18 Communication**

**Z18.1 Add a new Core Clause** 14.5 and 14.6 to read as follows:

The *Service Manager* requires the written consent of the Employer if an action will result in a change to the design, scope, and Service information that is 5% or more

**Z18.2** The *Service Manager* requires the written consent of the Employer if an action will result in the Completion Date being extended by more than 30 days.

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**Z19 Delegation**

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As stipulated by Section 37(2) of the Occupational Health and Safety Act No. 85 of 1993 as amended the *Contractor* agrees to the following:

**Z19.1** As part of this contract the *Contractor* acknowledge that it (mandatory) is an employer in its own right with duties as prescribed in the Occupational Health and Safety Act No 85 of 1993 as amended and agree to ensure that all work being performed, or Equipment, Plant and Materials being used, are in accordance with the provisions of the said Act, and in particular with regard to the Construction Regulations.

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**PART C1.2b CONTRACT DATA**

**PART TWO – DATA PROVIDED BY THE *SERVICE PROVIDER***

<b>Clause</b>	<b>Statement</b>	<b>Data</b>
10.1	The Contractor is (Name): Address:  Telephone No. Fax No.	
11.2	The <i>working areas</i> are	See C3 'Service Information'
24.1	The <i>Contractor's Key people</i> are:	<b>CV's to be appended to Tender Schedule</b>
	Name:	
	Job:	<b>Maintenance Contracts Manager</b>
	Responsibility:	
	Qualifications:	
	Experience:	
	Name:	
	Job:	<b>Site Agent</b>
	Responsibility:	
	Qualifications:	
	Experience:	
	Name:	
	Job:	
	Responsibility:	
	Qualifications:	
	Experience:	

Name:

Job:

Responsibility:

Qualifications:

Experience:

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11.2 The following matters will be included in the Risk Register

- The availability of similar of compatible equipment and/or material
  - Changing Exchange rates
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**PART C1: AGREEMENTS AND CONTRACT DATA**

**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:**

<b>Name of Organisation:</b>  <b>AIRPORTS COMPANY SOUTH AFRICA Bram Fischer Airport.</b> .
<b>Physical Address:</b> <b>Airport Company South Africa</b> <b>Bram Fischer Airport</b> <b>Thaba Nchu Road</b> <b>Bloemfontein</b> <b>9301</b>

**Hereinafter referred to as "Client"**

<b>Name of organisation:</b>  .
<b>Physical Address:</b>          

**Hereinafter referred to as "the Mandatory/Principal Contractor"**

**MANDATORY'S MAIN SCOPE OF WORK****GENERAL INFORMATION FORMING PART OF THIS AGREEMENT**

1. The Occupational Health & Safety Act comprises of SECTION 1-50 and all un-repealed 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. "Mandatory" 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 Mandatories (CONTRACTORS) 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 Mandatories 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 (contractors) must conclude a similar Written Agreement with them.
7. Be advised that this Agreement places the onus on the Mandatory 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 Mandatory 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 Mandatory undertakes to comply with:

**INSURANCE**

1. The Mandatory 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 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 Mandatory 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 Mandatory 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 OHSAct 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 OHSAct 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 OHSAct 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 duly 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 MANDATARY**

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 OHSAct 85 of 1993 and its regulations are complied with.

Mandatory – WCA/ Federated Employers Mutual No.....

Expiry date .....

\_\_\_\_\_  
**SIGNATURE ON BEHALF OF MANDATARY**  
(Warrant his authority to sign)

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**SIGNATURE ON BEHALF OF THE CLIENT**  
**AIRPORT COMPANY SOUTH AFRICA**

\_\_\_\_\_  
**DATE**

## PART C1: AGREEMENTS AND CONTRACT DATA

### C1.4: ACSA Insurance Schedule

#### Part 1:

Notes to Schedule:

- The provision of insurance by the *Employer* does not limit the obligations, liabilities or responsibilities of the *Contractor* under this contract in any way whatsoever (including but not limited to any requirement for the provision by the *Contractor* of any other insurances).
- Unless specifically otherwise stated, capitalised terms in this schedule (other than *Employer*, *Contractor* and *works* where written in italics) have the meaning assigned to them in the relevant policy of insurance.
- This Insurance Schedule is a generic term sheet generally applicable to the *Employer's* projects. In the circumstances:
  - If this Insurance Schedule reflects the amount of any cover provided by the *Employer* to be higher than the amount required in the Contract Data, the *Employer's* obligation under this Contract is limited to the lower amount; and
  - If this Insurance Schedule provides for any cover which is not stated to be provided by the *Employer* in the Contract Data, the *Employer's* obligation under this Contract is limited to the cover stated in the Contract Data.
- [The terms governing the Employer provided policies of insurance are the terms detailed in the policies themselves. This schedule is merely a summary of the key terms. It is the responsibility of the tenderer to obtain copies of the policies and satisfy itself of the actual terms as required by the tenderer.]

#### Part 2:

#### **ACSA Maintenance Contracts Insurance Clause. Insurance Affected by the Employer.**

Notwithstanding anything elsewhere contained in the Contract and without limiting the obligations liabilities or responsibilities of the Contractor in any way whatsoever (including but not limited to any requirement for the provision by the Contractor of any other insurances) the Employer shall effect and maintain as appropriate in the joint names of the Employer , Contractors and Sub-Contractors, Consultants and Sub-Consultants the following insurances which are subject to the terms, limits, exceptions and conditions of the Policy:

- (a) **PUBLIC LIABILITY Insurance** – which will provide indemnity against the insured parties legal liability in the event of accidental death of or injury to third party persons and/or accidental loss of or damage to third party property arising directly from the execution of the contract with a limit of indemnity of R **100 million** in respect of all claims arising from any one occurrence or series of occurrences consequent on or attributable to one source or original cause. The policy will be subject to a Deductible of **R25 000** for Property Damage claims only but **R250 000** where Loss or Damage involves Aircraft.
  - (i) The Employer shall pay any premium due in connection with the insurance affected by the Employer.
  - (ii) The Contractor shall not include any premium charges for this insurance except to the extent that he may deem necessary in his own interests to effect supplementary insurance to the insurance effected by the Employer. The Employer reserves the right to call for full information regarding insurance costs included by the Contractor.

- (iii) Any further clarification of the scope of cover provided by the Policies arranged by the Employer should be obtained from the Employer.
- (iv) In the event of any occurrence which is likely to or could give rise to a claim under the insurances arranged by the Employer the Contractor shall:
  - (A) in addition to any statutory requirement or other requirements contained in the Contract immediately notify the Employer's Insurance Broker or the Insurers by telephone or telefax giving the circumstances nature and an estimate of the loss or damage or liability
  - (B) complete a Claims Advice Form available from the Insurance Brokers to whom the form must be returned without delay.
  - (C) negotiate the settlement of claims with the Insurers through the Employer's Insurance Brokers and shall when required to do so obtain the Employer's approval of such settlement.

The Employer and Insurers shall have the right to make all and any enquiries to the site of the Works or elsewhere as to the cause and results of any such occurrence and the Contractor shall co-operate in the carrying out of such enquiries.

- (v) The Contractor will be liable for the amount of the Deductible (First Amount Payable in respect of any claim made by or against the Contractor or Sub-Contractors under the insurances effected by the Employer.  
Where more than one Contractor is involved in the same claim the Deductible will be borne in pro-rata amounts by each Contractor in proportion to the extent of each Contractor's admitted claim.
- (vi) Any amount which becomes payable to the Contractor or any of his Sub-Contractors as a result of a claim under the Contract Works Insurance shall if required by the Employer be paid net of the Deductible to the Employer who shall pay the Contractor from the proceeds of such payment upon rectification repair or reinstatement of the loss or damage but this provision shall not in any way affect the Contractor's obligations liabilities or responsibilities in terms of the Contract.

In respect of any amount which becomes payable as a result of a claim under any Public Liability Insurance the Contractor or his Sub-Contractors shall be required to pay the amount of the Deductible to the Insurer to facilitate settlement of such claim.

#### **Insurance Affected by the Contractor.**

Without in any way detracting from any requirements contained elsewhere in this contract the Contractor and Sub-Contractors shall where applicable, provide as a minimum the following:

- (a) INSURANCE OF CONTRACTORS EQUIPMENT (including tools offices and other temporary structures and contents) and other things (except those intended for incorporation into the Works) brought onto the Site for a sum sufficient to provide for their replacement.
- (b) Insurance in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 as may be amended or in terms of

any similar Workers Compensation and Unemployment Insurance enactment's in the Suppliers' or Sub Supplier's operational, manufacturing or assembly locations.

- (c) Motor Vehicle Liability Insurance comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability indemnity.
- (d) Public Liability Insurance for an amount sufficient to cover the Contractors obligations in terms of the Deductible of **R25 000** or **R250 000** as stated above.
  - (i) The insurances to be provided by the Contractor and his Sub-Contractors shall:
    - (A) be affected with Insurers and on terms approved by the Employer.
    - (B) be maintained in force for whatever period the perils to be insured by the Contractor are at risk (including any defects liability period during which the Contractor is responsible for the care of the Works)
    - (C) submit to the Employer the relevant Policy or Policies of Insurance or evidence acceptable to the Employer that such insurances have been affected.
  - (ii) In the event that the Contractor or his Sub-Contractor receives any notice of cancellation or restrictive modification to the insurance provided to them they shall immediately notify the Employer in writing of such cancellation or restriction and shall advise what action the Contractor or his Sub-Contractor will take to remedy such action.

If the Contractor fails to effect and keep in force the insurances referred to then the Employer may effect and keep in force any such insurances and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount paid by the Employer from any monies due or which may become due to the Contractor or recover same as a debt from the Contractor.

### **Sub-Contractors**

The Contractor shall:

- (a) ensure that all potential and appointed Sub-Contractors are aware of the whole contents of this clause, and
- (b) enforce the compliance by Sub-Contractors with this clause where applicable."

**PART C1: AGREEMENTS AND CONTRACT DATA****C1.5: 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 works for ACSA. ACSA shall audit contractor activities, products and services on an ad hoc basis to ensure compliance to 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	<p>No solid or liquid material may be permitted to contaminate or potentially contaminate storm water, soil or groundwater resources.</p> <p>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.</p> <p>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.</p> <p>No leaking equipment or vehicles shall be permitted on the airport.</p>
Air Pollution	<p>Dust: Dust resulting from work activities that could cause a nuisance to employees or the public shall be kept to a minimum.</p> <p>Odours and emissions: All practical measures shall be taken to reduce unpleasant odours and emissions generated from work related activities.</p> <p>Fires: No open fires shall be permitted on site.</p>
Noise Pollution	<p>All reasonable measures shall be taken to minimize noise generated on site as a result of work operations.</p> <p>The Contractor shall comply with the applicable regulations with regard to noise.</p>
Waste Management	<p>Waste shall be separated as general or hazardous waste.</p> <p>General and hazardous waste shall be disposed of appropriately at a permitted landfill site should recycling or re-use of waste not be feasible.</p> <p>Under no circumstances shall solid or liquid waste be dumped, buried or burnt.</p> <p>Contractors shall maintain a tidy, litter free environment at all times in their work area.</p> <p>Contractors must keep on file:</p> <p>The name of the contracting waste company</p>

	<p>Waste disposal site used</p> <p>Monthly reports on quantities – separated into general, hazardous and recycled</p> <p>Maintained file of all Waste Manifest Documents and Certificates of Safe Disposal</p> <p>Copy of waste permit for disposal site</p> <p>This information must be available during audits and inspections.</p>
<p>Handling &amp; Storage of Hazardous Chemical Substances (HCS)</p>	<p>All HCS shall be clearly labeled, stored and handled in accordance to Materials Safety Data Sheets.</p> <p>Materials Safety Data Sheets shall be stored with all HCS.</p> <p>All spillages of HCS must be cleaned-up immediately and disposed of as hazardous waste. (HCS spillages must be reported to ACSA immediately).</p> <p>All contractors shall be adequately informed with regards to the handling and storage of hazardous substances.</p> <p>Contractors shall comply with all relevant national, regional and local legislation with regard to the transport, storage, use and disposal of hazardous substances.</p>
<p>Water and Energy Consumption</p>	<p>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.</p>
<p>Training &amp; Awareness</p>	<p>The conditions outlined in this permit shall be communicated to all contractors and their employees prior to commencing works at the airport.</p>

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 is also advised that the imposition of penalties does not replace any legal proceedings, the Council, authorities, land owners 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 as a result of 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)

## **PART C2: PRICING DATA**

### **C2.1 Pricing Assumptions**

The intended pricing strategy to be followed in this tender is according to the Price List (including the activity schedule).

The Contract Data, Service information, drawings and any other documents relevant to this tender must be read in conjunction with the Activity Schedule.

The *Contractor* must plan the work in this contract as a set of activities. These should be the same activities as he shows on his programme (Plan for the service).

This schedule covers the items that will be measurable. A lump sum price for each activity shall be entered and no other items will be measured. Costs not covered by the items may be included in the most appropriate items listed. The *Contractor* has the liberty to insert items, quantities and rates of his own choosing in the said schedule as a separate line item.

The pricing schedule as completed by the *Contractor* shall be VAT exclusive prices and shall cover, "inter alia" all general risks, liabilities, obligations, profit, expenses, costs, bonuses, all allowances such as shift and standby allowances, sick-leave, other leave, brackets, fixings, incidentals, consumables etc. that will be required to successfully complete this contract as set forth or as implied in the documents on which this contract is based.

The *Contractor* is to take note that payment is made for each activity only when it is complete. "Complete" as it is used in this schedule means the complete system or unit as specified in the particular document.

Unless a separate rate for the supply and for the installation of any item is specifically called for, the supply and installation costs of any item shall be fully included in the price.

The description of each item shall, unless otherwise stated herein, be held to include making, conveying and delivering, unloading, storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates, plant, temporary works, return of packaging, establishment charges, profit and all other obligations arising out of the contractual conditions.

The quantities and rates included for day work shall form part of the tender price, but Contractors shall note that this item must be regarded as provisional and will only be payable to the *Contractor* if and when a written order to this effect has been issued.

"Foreign" shall mean the CIF (Cost, Insurance and Freight) value.

No alterations to the original text shall be allowed. If any alterations are made, it shall be ignored and the original wording will apply.

Variations in the scope and extent of the work shall be allowed to meet the *Service Manager's* requirements and shall be measured and priced at the rates entered in the Activity Schedule, where appropriate, and shall form an addition to or deduction from the total of the Accepted Contract Amount. Any items or variations for which rates have not been included in the Activity Schedule shall be agreed and priced as non-scheduled items (Part 2 below).

All provisional sums and contingency amounts shall be expended as directed by the *Employer* and any balance remaining shall be deducted from the contract sum.

All items described as "provisional" shall be measured as executed and paid for according to prices in the activity schedule and any amounts not spent shall be deducted from the contract price. No work for which "provisional" items are provided shall, commence without a written instruction from the *Employer*. No commitment to expending any portion of the contingency amounts and /or provisional sums are made or implied by the *Employer*.

The *Contractor* shall not be entitled to any claim in instances where provisional sums are partially or in total removed from the contract.

The main cost drivers for this contract are the required labour, maintenance intervals as set out by the IEC standards for Solar Plants and Manufacturers OEM recommendation. Spare part costs for major maintenance service will also form part of the cost drivers.

## C2.2 The Price List

The total 5 year period is broken up as follows

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<b>Escalation</b>		CPI	CPI	CPI	CPI	
<b>Total Value</b>						
<b>Quarterly Expenses</b>						

### Part 1: Activity Schedule

Item no.	Activity Description	Frequency	Quantity (per year)	Amount (per single item)	Total (per year)
1	All required Quarterly Scheduled maintenance & Inspections as defined in Part C3 (Employer Service Information), including all contract management and reporting.	As indicated			
2	Other 1				
3	Other 2				
	Sub-total A (per year) excluding VAT				R

\* Travelling time charges or allowances will not be paid separately and where applicable must be included in the rates above.

\* A Parking access card will be applied for and issued in order to facilitate access through the entrance and exit booms. This card is payable in cash at the start of each calendar month – at the Parking Office. This card shall only be utilised for the purpose of performing duties under this SLA. Any abuse of the use of this card for personal use shall be penalised at R500.00 per occurrence.

It is important to note that not all amounts above are payable in any one month. Since this is an activity schedule only the activities performed and completed shall be claimed for at invoice date and paid for accordingly.

#### Labour rates and Mark-up

Any work not included under Part 1 above shall be deemed additional work or non-scheduled items and will be charged at the following rates:

#### Labour

Item	Description	Normal hours (Including Saturdays)	After hours (R/hour)	Sunday (R/hour)

		(R/hour)		
1	Labourers			
2	Semi-skilled			
3	Skilled			
4	Site Manager			
5	Engineer / Technologist			

All rates to exclude VAT. Subject to mutual agreement between the *Employer* and the *Contractor*, the number of staff allocated to the contract may be increased/decreased to cater for special needs that may arise from time to time. Labour rates shall include all personnel insurance, holidays with pay, incentive bonuses. No labour shall be charged for travel or travelling. Labour time shall be calculated for the time spent on site only.

Part 2: Additional Work / Non-Scheduled Items

Description	Quantity per Individual		Total / year
The Contractor must provide descriptions of the employees involved on this contract based on his submitted Resource Proposal.			
Labourers			
Semi-skilled			
Skilled			
Engineer / Technologist			
Labour subtotal B (per year) Excluding VAT		R	

Call out rates must include all required travelling and the first hour on site.

Note: Call outs are not chargeable during hours of Scheduled maintenance, where the *Contractor* is already on site

Mark-up for spare parts(third party procured items/services)

Cost	Mark-up
R 0 – R 2 000	%
R2001-R10 000	%

R 10 001-R50 0000	%
Over R R50 0000	%

Cost shall be net cost (excluding VAT) of parts delivered to site with all discounts deducted. Original Tax Invoices from the service providers to be submitted with the *Contractor's* invoice.

10% of the construction value shall be allowed for in the spares cost inserted as a line item in the bill of quantities. All verified invoices will be paid including the mark-up percentages stipulated

The contractor must provide as part of the maintenance manual, a list of spare parts.

Contract value

The guide below must be used in estimating the contract value. This amount must be reported as the Contract Value in the corresponding schedules. Tenderers are reminded that this amount is for illustrative purposes only and that ACSA will not be under any obligation to expend the full or any portion of this amount. Monthly contract expenditure will be strictly calculated according to the Activity Schedule as provided above.

Solar Maintenance first year maintenance expenditure

Description	Total (excluding VAT)
Part 1: Preventative maintenance      Sub-Total A	
Part 2: Additional Work                  Sub-Total B	
Spares cost                                  Sub-Total C	
	SUM (A+B+C)
(Estimated contract value)	

Solar Maintenance Expenditure for five years

Description	Total (excluding VAT)
Year 1	
Year 2 (year 1 plus CPI escalation)	
year 3 (year 2 plus CPI escalation)	
year 4 (year 3 plus CPI escalation)	
year 5 (year 4 plus CPI escalation)	
5-years estimated contract value      *Final Total	

**\*this Final Total amount must be carried over to Part C2.3 Bill of Quantities Schedule D of the main Contract**

Contract values will be increased/decreased according to the CPI. 6% CPI price escalation per annum should be used for illustrative and comparison purposes.

## PART C3: EMPLOYER'S SERVICE INFORMATION

### Description of the *service*

#### Executive overview

The objective is to operate and maintain the serviceability of the Solar plant as guided by the OHS act and applicable standards and codes of practice for PV plants, at Bram Fischer Airport in a sustainable manner within operating and maintenance (O&M) cost parameters, while ensuring compliance to general safety, aviation legislation, BS, IEC (62446, 60364-6), NRS & SANS. The contractor shall be responsible for the maintenance and performance of the plant as well as the training of ACSA staff to take over the responsibility after the O&M stage. The footprint of the *Affected Property* is detailed in Part C4 (Site Information).

#### Employer's requirements for the service

The *Contractor* will be fully responsible for meeting all requirements in this document regarding the Works.

For each piece of equipment, all work will be carried out to standards as required by the Aviation regulation and safety standards as well as any applicable governing law and/or regulations. Where standards differ from those required by this document the more stringent requirement shall apply. The *Contractor* will be fully responsible for obtaining (and keeping up to date with) said requirements.

The *Contractor's* main objective is to ensure that all equipment is effectively maintained and operating within all the relevant safety and quality compliances in order to ensure reliability of electrical supply needed for airport operations. It is essential that preventative maintenance is administered at the appropriate intervals to achieve this objective.

Compared to most other power generating technologies, PV plants have low maintenance and servicing requirements. However, proper maintenance of the PV plant is essential to optimise energy yield and maximise the life of the system.

The Scheduled Maintenance activities are detailed in paragraph Part C3 (Employer Service Information) Clause 5.10.

#### Interpretation and terminology

The following abbreviations are used in this Service Information:

Abbreviation	Meaning given to the abbreviation
ACSA	Airport Company South Africa
AC	Alternating Current, is an electric current in which the flow of electric charge periodically reverses direction
BS	British Standards

CMMS	Computerised Maintenance Management System (Oracle EAM software platform)
DC	Direct Current, the flow of electric charge is only in one direction
ICAO	International Civil Aviation Organization
IEC	International Electro Technical Commission
LV	Low Voltage = < 1 000V
MV	Medium Voltage Ranging from 1 000V to 11 000V
ME	Maintenance Engineering Department
OEM	Original Equipment Manufacturer
O&M	Operation and Maintenance - of the Solar Plant
ORHVS	Operational Regulations for High Voltage Systems
PM	Preventative & Predictive Maintenance Work Orders
Plant or PV Plant	Embedded photovoltaic solar power plant
PV	Photovoltaic
SANS	South African National Standards
SCADA	Supervisory control and data acquisition, is a system for remote monitoring and control that operates with coded signals over communication channels.
SOP	Standard Operating Procedure
OHS act	Occupational Health and Safety act.
FABL	Bram Fischer International Airport
WO	Corrective & Dispatched Work Orders
ARFF	Aircraft Rescue and Fire Fighting

## Management strategy and start up.

### The Contractor’s plan for the service

Prior to the activation of this contract, the contractor must submit his plan (contractor's plan for the intended services) for approval by the employer, which should provide a matrix detailing the following:

- All the various infrastructures (PV Panels, Cables, Inverters, MV Circuitry, LV circuitry, etcetera) must be referenced against the three-year time-axis to indicate when exactly each service activity (daily, weekly, monthly, 6 monthly, 12 monthly) will be performed.

The plan must also aim to schedule the activities with reference to the contractor's available manpower with the airport's operational hours. The importance is to find the balance between when to maintain the infrastructure without impeding too much on the electricity generating ability of the plant. Preferably all maintenance must be performed during night hours.

- The airport’s operational hours are detailed as follows:
  - Monday to Thursday    06H00 to    20H00
  - Friday                    06H00 to    20H00
  - Saturday                09H00 to    16H00
  - Sunday                   09H00 to    20H00

The airport’s operational hours are published in the AIP for FABL and can change based on operational requirements from time to time.

The submitted **Contractor’s Plan** will form part of **Annex A** to Part C5 (Annexes) and shall be referenced against the OEM recommendations of the newly installed PV Plant as well as the submission which was made for operation and maintenance, with the tender award.

Together with the submitted plan, the *Contractor* shall provide a Schedule of equipment and tool, which will be used on this contract. The list will form part of the tender return schedules. The equipment will be judged in conjunction with the *Contractor’s Plan* for the service to understand whether or not the bidder has fully understood his obligations and whether he is able to do the work

The submitted **Contractor’s Schedule of equipment and tools** will be attached as **Annex B** to Part C5 (Annexes).

## Management meetings

Contract performance meetings will be set up from time to time between the Contractor and the Employer's Service Manager. The scheduling of these meetings will be at the discretion of Bram Fischer International Airport as and when required. The meetings will be conducted formally where contract KPI's will be discussed. The Contractor needs to ensure the availability of the representative with a delegated authority to attend these meetings. The meeting minutes will be recorded and distributed to the contractor electronically for record keeping and actioning of the agreed activities.

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

Title and purpose	Approximate time interval	& Location	Attendance by:
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Overall contract progress and feedback, Risk register and compensation events	Quarterly on the last day Thursday of the 3rd month at 10H00	Bram Fischer International Airport – ACSA Offices	<i>Employer and Contractor and others as and when required</i>
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Meetings of a specialist nature may be convened as specified elsewhere in this Service Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the *service*. Records of these meetings shall be submitted to the *Service Manager* by the person convening the meeting within five days of the meeting.

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

## Contractor's management, supervision and key people

The *Contractor* shall submit an organogram (as part of the Returnable Schedules) showing his people and their lines of authority / communication. This is specifically essential if the contractor is a Joint Venture. The submitted *Contractor's Organogram* will be attached as *Annex C* to Part C5 (Annexes).

In addition, the *Contractor* shall submit a Resource Proposal for approval which will indicate the intended personnel which will be allocated to perform duties under this contract. This Resource Proposal must be submitted as part of the Returnable Schedules. The submitted *Contractor's Resource Proposal* will be attached as *Annex D* to Part C5 (Annexes). This will, as a minimum, include all persons from the Contract Manager level to the Semi-skilled labourers. For the full duration of this contract, none of these persons will be replaced by a person of lesser ability or qualification. In the event of a person being replaced the *Contractor* must inform the *Service Manager* prior to the replacement and also submit an amended Resource Proposal accordingly.

All instructions and authorisations on this contract will come from the client's Service Manager or his defined representative.

Whilst the contractor (all staff and sub-contractors) is active within the contract's physical boundaries and time-frames, all their representatives will adhere to the following:

1. Wear a clearly marked (company name and type of services, i.e., electrical contractor) reflector jacket or vest.
2. Comply with all ACSA safety and Environment procedures.
3. Comply with all ACSA AVSEC and ARFF procedures
4. Behave in a professional and lawful conduct
5. Be courteous to all ACSA customers and stakeholders

## Documentation control

These contract deliverables will interact extensively with ACSA's CMMS system, which will produce scheduled PM and WO (documentation) that must be completed within the agreed timeframes. The work orders will have unique reference numbers. All additional specific / specialized inspection and maintenance sheets must be attached to the appropriate work order and submitted to the ACSA CMMS coordinator.

Quarterly progress reports should be submitted timeously by no later than the 5<sup>th</sup> day of the following month, where reference must be made of all completed PM's and WO's. The quarterly report must have

the following minimum information & sections defined in **Annex E to Part C5 (Annexes) - SLA Quarterly Service Report Template**.

When invoicing, the *Contractor* shall ensure that all required reports for the corresponding quarter are attached to the quarterly invoice. This will include quarterly reports on:

1. system availability (averaged per week)
2. system performance testing
3. maintenance work (including % of scheduled maintenance work completed)
4. daily checks performed
5. maintenance plan for the next quarter
6. the latest spares inventory
7. Asset register up to date including equipment data
8. Outstanding maintenance issues

The contractor shall keep copies of all reports for at least five (5) years from the issue date. All reports shall be in a format as agreed with the Service Manager from time to time.

## Invoicing and payment

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

The *Contractor* shall address the tax invoice to Finance Department and include on each invoice the following information:

Name and address of the *Contractor* and the *Service Manager*;  
 The contract number, Blanket Purchase Order Number and title;  
*Contractor's* VAT registration number;  
 The *Employer's* VAT registration number 4930138393;  
 Description of service provided for each item invoiced based on the Price List;  
 Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;  
 (add other as required)

## Insurance provided by the Employer and Service Provider

Refer to the section C1.4 above under PART C1: AGREEMENT AND CONTRACT DATA

## Training workshops and technology transfer

The Solar plant technology is new to Bram Fischer airport and requires specialised maintenance procedures and monitoring equipment for efficient operations and analysis. The *Contractor* is therefore expected to improve the efficiency of the associating assets and equipment on a regular basis. This will ultimately impose amendments to current ME procedures and drawings - even to the extent that new supplement procedures and drawings are developed.

With the above in mind, the *Contractor* shall as part of the service present such efficiencies; new technologies & new procedures, in a manner which can be used as training workshops to the ACSA electrical team. The format of the presentations may be in the form of SOP, Power Point Presentation, Movie Clip, etcetera. It is expected that the contract host these training workshops every 6 months and may book the utilisation of the ACSA boardroom facilities through the Service Manager.

Training workshops shall target practical competencies with reference to preventative- and breakdown maintenance activities, of all the electrical team members. The contractor shall create and develop a "Training File" which must be handed over at the end of every 6 months with the following information:

- Topic of Training

- Operational and Technical Manuals with drawings, of specific equipment involved
- Attendance Register of attendees
- Movie clips of physical activities performed to demonstrate competence of attendees.
- Pictures where applicable
- Etcetera

## Design and supply of Equipment

The *Service Manager* will require viewing and a demonstration on all equipment the *Contractor* for usage as per the scope of work. Reason being that the *Service Manager* will want to satisfy him/herself that the equipment is of good quality, sustainable and appropriate for the works. However, all maintenance, repairs and liability remains with the *Contractor* as equipment belongs to him/her.

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

The *Contractor* shall hand-over any equipment and tools which was procured during the service period and claimed for to be paid by the *Employer*.

## Information and Other Things

During the duration of the contract, the *Contractor* will acquire extensive intellectual property about the associated assets, equipment and procedures. Any such intellectual property must be handed over to ACSA at the end of the Service period. These will include, but is not limited to, the following:

1. Reports
2. Memorandums
3. Drawings
4. Operating manuals
5. Service history books
6. Pictures
7. Movie Clips
8. Audio Clips
9. Spread sheets / Data bases
10. Meeting minutes
11. Communiqués
12. Files
13. Warranties

## Management of work done by Task Order

Not Applicable

## Health and safety, the environment and quality assurance Health and safety risk management

The *Contractor* shall comply with the health and safety requirements contained in section C1.3 above under PART C1: AGREEMENT AND CONTRACT DATA

The *Contractor* shall be fully responsible for compliance to the Occupational Health and Safety Act for all its employees on site, equipment and installations relating to this contract. The *Contractor* is expected to sign the undertaking in this regard.

It shall be the *Contractor's* responsibility to ensure that all relevant labour, safety legislation and applicable compliance are adhered to in this contract. Regulations as set out in the safety induction shall be obeyed at all times.

The *Contractor's* employees on site shall obey all health and safety rules, procedures and practices. In particular, NO SMOKING signs and the prohibition of the carrying of smoking materials in designated areas shall always be obeyed. A copy of the Safety Rules booklet is available on request from the ACSA Safety Department.

All the applicable requirements of the Occupational Health and Safety Act (1993) and Regulations and any amendments thereto, shall be met. Where the OHS Act prescribes certification of competency of persons performing certain tasks, proof of such certification shall be provided to the *Service Manager*.

The *Contractor's* Workmen's Compensation fees must be up to date. A copy of the *Contractor's* WCA registration shall be produced on request.

The following areas in the company are declared as "HOT WORKS PERMIT" areas:

- All airside areas
- All areas accessible to the public
- All enclosed areas
- The terminal building

Any process in the above mentioned areas involving open flames, sparks, or heat shall be authorised by the issue of a permit to work - obtainable from the ACSA Safety department. Any work done under the protection of a permit to work shall be in strict compliance with every prescription regarding the permit.

Safety equipment shall be used where applicable (e.g. safety, goggles, boots, harness, etc.) The *Contractor*, at his/her own expense shall provide such equipment, for his/her employees. The *Contractor* shall apply the necessary discipline and control to ensure compliance by his workers.

All contractors must ensure that his/her employees are familiar with the existing emergency procedures, emergency assembly points and must co-operate in any drills or exercises, which might be held. Emergency / fire equipment and extinguishers shall not be obstructed at any time

No person shall perform an unsafe / unhygienic act or operation whilst on Company premises.

No unsafe/dangerous equipment or tools may be brought onto or used on Company premises. The Company reserves the right to inspect all equipment/tools at any time and to prevent/prohibit their use, without any penalty to the Company and without affecting the terms of the Contract in any way.

The *Employer* reserves the right to act in any way to ensure the safety/security of any persons, equipment or goods on its premises and will not be liable for any costs or loss evoked by the action. This includes the right to search all vehicles and persons entering, leaving or on the premises and to inspect any parcel, package, handbag and pockets. Persons who are not willing to permit such searches may not bring any such items or vehicles onto the premises.

The *Contractor* shall maintain good housekeeping standards in the area where he is working for the duration of the contract.

At no time must the *Contractor* interfere with, or put at risk, the functionality of any Sprinklers and/or fire prevention system. Care must also be taken so as to prevent fire hazards.

The *Contractor* is required to issue all staff with standard uniforms. This shall as a minimum include: safety shoes, overalls (clearly marked with *Contractor's* company logo) and numbered reflective jackets (as per Airport requirements). All costs relating to uniforms shall be for the *Contractor's* account.

Cell phones and two-way radios

- Use of cell phones on airside is not permitted unless the user is in possession of an appropriate Airport permit for the device. Cell phone permit issuing authority lies with the ACSA Security department.

## Environmental constraints and management

The Contractor will keep noise and dust levels to a minimum. At no time shall his/her work result in nuisance, interference or danger to the public or any other person working at the Airport.

At no time shall the Contractor:

1. allow any pollutive or toxic substance to be released into the air or storm water systems
2. interfere with, or put at risk, the functionality of any system or service
3. cause a fire or safety hazard

Bram Fischer Airport has an ISO 14000 accreditation. This will need to be maintained at all times by ensuring that Environmental legislation are followed and adhered too.

The Contractor shall comply with the environmental criteria and constraints stated in section C1.5 above under PART C1: AGREEMENT AND CONTRACT DATA

## Quality assurance requirements

Emphasis must be on improving system reliability and on ensuring that rostered maintenance work is indeed performed as and when required.

The *Contractor* shall ensure that works are carried out as per the Airport Company South Africa procedures and OHS act. Inspections prior and post work are to be carried out to ensure site cleanliness and serviceability. Adherence to safety and good housekeeping must be maintained at all times. The facility handover process will be carried at the end of each service.

All work must be executed in accordance with prevailing industry norms and standards relating to quality. In this regard, the *Contractor* will be expected to draft quality plans for the *Service Manager* from time to time. Emphasis must be on improving Landscaping conditions and on ensuring that rostered maintenance work is indeed performed as and when required

Apart from the compliance to the defined ACSA M&E Procedures, a measure of ensuring quality of work will be adherence to the following (where applicable):

1. The Occupational Health and Safety (Act 85 of 1993)
2. Environmental Conservation Act (Act 50 of 2003)
3. Civil Aviation Act (Act 13 of 2009)
4. Municipal bylaws and regulations
5. Standards and specification of ACSA
6. Standards and specifications of the supply authority
7. Applicable standards and codes of practices,
  - a. SANS 10142-1&2

- b. IEC 61730-2 Photovoltaic (PV) module safety qualification – Part 2: Requirements for Testing.
- c. IEC 62716 Photovoltaic (PV) modules – Ammonia corrosion testing
- d. IEC 62446,
- e. IEC 60364-6
- f. ORHVS
- g. OEM Manuals and Operating Procedures
- h. BS
- i. NRS

## Procurement

This type of contract caters for a priced contract with price list as described under Option A of the NEC 3 Term Service contract.

Additionally, the *Contractor* will respect OEM warranties to ACSA at all times when procuring spare parts, products or 3rd party services. It will be the *Contractor's* sole responsibility to ensure that OEM warranty requirements are adhered to at all times.

Where Contractors use or quote on spare parts of a lower quality than recommended by the OEM, or parts not recommended by the OEM, this shall be clearly indicated to the *Service Manager* on the quotation. This also implies that the *Contractor* will have to build relationships with the various key OEM's.

The Contractor must adhere to all airport requirements when procuring equipment or spares.

No casual labour (i.e. "off the street" labour) may be employed by the *Contractor* unless pre-arranged with ACSA. Whenever this is required, the *Contractor* shall come to a suitable arrangement with ACSA regarding sourcing and screening of such individuals

No undefined (Price List) expenditure will be allowed to claim for by the *Contractor*. Where the need arises for such items - it must be clearly motivated for and approved by the *Service Manager*.

The *Contractor* is obliged to deliver or provide all necessary material and equipment to execute the works (e.g. measuring instruments and tools) and small items (e.g. lubricants and cleaning agents).

## People

### Minimum requirements of people employed

The *Contractor* is to provide the service with their own staff or by qualified subcontractors when agreed to by the *Service Manager*.

It is noted that the *Employer* do not list the formal qualifications and experience required under this contract. It will always remain the *Contractor's* responsibility to ensure that staff are suitably qualified and experienced for duties expected of them.

The *Employer* reserves the right to verify all qualifications and experience of personnel employed under this contract. Furthermore, ACSA reserves the right to order that personnel that are not adequately qualified, experienced or suited for this contract are removed from the site

The *Contractor* will be responsible for providing staff which are sufficiently skilled and qualified for successful execution of the works.

The *Contractor* shall ensure that all maintenance staff are issued with uniforms that will comply with a minimum requirement as agreed with the *Service Manager* from time to time. Current airport requirements are: safety shoes and a uniquely numbered reflective jacket (for easy identification).

All individuals that will be required to have access onto the airport's airside need to undergo the following training:

1. Airside Induction Training (AIT)
2. Airside Vehicle Operator Procedures (AVOP) (Category 2)
3. Airport SMS Induction (briefing)

All individuals that will be required to have access into the airport's electrical restricted areas need to undergo the following training:

1. ORHVS (Module 1-4 as a minimum)
2. First Aid Training
3. Fire Extinguisher Training

For all staff and senior personnel dedicated to this contract, the following must be submitted in detail:

- Full Names of staff to be involved with this contract.
- Proof of qualifications and work experience where applicable
- Staff must be in permanent employ of the company.
- Competent in category of work that he or she is required to perform.

## BBBEE and preferencing scheme

In order to qualify for B-BBEE recognition, ACSA will only accept B-BBEE certificates from SANAS accredited verification agencies and IRBA approved auditors as proof of B-BBEE status.

## Subcontracting

### Preferred subcontractors

No part of this Contract may be subcontracted unless with written approval from the *Service Manager*. The *Service Manager* shall be under no obligation to grant such approval. Should any part of this contract be subcontracted the *Contractor* will be responsible for all Works (or failure to affect the Works) as if it was done so by the *Contractor*. Considerations for subcontracting will be entertained when specialist services need to be obtained from a particular supplier or group of suppliers in order to comply with operational standards.

Specialist service providers that may be sub-contracted are defined below:

1. OEM of critical PV & MV equipment
2. Transformer manufacturer
3. MV Protection Specialist Services
4. Power Factor Correction Specialist

## Plant and Materials Specifications

The *Contractor* shall use only tools and test equipment relevant to the operation, repair and maintenance of the PV plant installation, including associated MV and LV infrastructure. All test equipment used shall be calibrated as per regulation to ensure accurate measurement results at all times. Proof of calibration certificates needs to be issued on request by the *Service Manager*. All tools used shall be safe and in good working conditions. All electrical tools shall be properly insulated to alleviate electrocution risk. All tools used needs to be inspected and recorded in the tool inspection sheet. The *Service Manager* reserves the right to have access to the maintenance records of the *Contractor's* plant and equipment, when requested.

Only materials with acceptable quality must be used as part of the services. Where an industry norm certification (SABS, expiry date, etc.) cannot be determined, then the *Service Manager* must be afforded the opportunity to inspect and authorise the items prior to it being delivered onto ACSA premises.

## Correction of defects

The *Contractor* shall report any defects (equipment & material) experienced whilst performing the services. Any defective plant / equipment (unserviceable) or material (unacceptable quality) shall be removed immediately from ACSA's premises. The *Contractor* shall ensure that replacement (backup / leased / new) equipment and material is sourced immediately in order to comply to the contractual conditions of the services.

All defects and non-conformances must be corrected immediately. Constraints that can prevent this must be communicated to the *Service Manager* (or his delegated person) is listed below:

1. Airport operations that will be interrupted with a direct effect of revenue income. Hence the work must be scheduled for after operational hours.
2. Lack of spares or expertise. Hence the work will be scheduled to be completed after the procurement of the required spares or specialist services.

Should the identified defect have a negative influence on the safety of persons or critical equipment - then the *Contractor* must inform the *Service Manager* (or his delegated person) to activate ACSA's relevant internal emergency procedures in an effort to mitigate the risk as fast as practicably possible.

Any breakdown impacting on operations shall be attended-to until restored to good reliable condition. This implies that no breakdown may be left unattended or incomplete for the next day or shift.

The *Employer* will hold the *Contractor* liable for any costs incurred by any party as a result of negligence or unreasonable poor performance by the Contractor including excessive time taken to effect repairs.

## Contractor's procurement of Plant and Materials

The *Contractor* shall ensure the that all plant and materials are procured from legitimate businesses with valid Tax clearance certificates. All associated invoices must be submitted with the monthly reports.

All applicable warranties from suppliers to be made out in favour of the *Employer* and not just to the *Contractor*. The *Contractor* will provide (and regularly update) a schedule of the *Contractor's* vendor data to the *Employer* for use outside of this contractual agreement.

The *Contractor* must provide original quotations (from the third party service providers / suppliers) for formal approval by the *Service Manager* prior to the procurement of these third-party items.

Required spares and services that falls outside of the Price List, must be submitted in the form of a Scope document to the ACSA electrical team - in order for it to be procured by way of the ACSA internal procurement policies and procedures.

## Tests and inspections before delivery

The *Contractor* is to provide proof manufacturer certificate for spares procured during this contract. The certificate should contain the factory tests conducted and relevant statutory approval (accreditation) for the spare part purchase.

### Guarantees / Warranties

It will be the *Contractor's* sole responsibility to ensure that OEM warranty requirements are adhered to at all times.

The required minimum warranties as per Part C3.6, Item 18 is also applicable to this contract.

## Working on the Affected Property

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

Where applicable, the *Contractor* shall be required to adhere to the Airport site entry requirements i.e. when maintaining the PV plant associated infrastructure located at the electrical complex on airside - they will have the required permits and adhere to the airside regulations.

#### Permits

The *Contractor* shall not be compensated for costs relating to ACSA required permits, nor for labour/time spent in obtaining it. An allowance must be made in the Activity Schedule in this regard.

The *Contractor* must ensure that he/she is, at all times, familiar with ACSA's safety and security requirements relating to permits in order for no work to be delayed as a result thereof. This will include the permit application process.

Note that (within reason) the *Contractor* will have no claim against ACSA in the event that a permit request is refused.

The following table is not all inclusive, but is provided for illustration purposes:

Permit	Required by/for	Department
AVOP – Airside Vehicle Operator permit	All drivers of vehicles on airside	ACSA Safety
Airside Vehicle Permit	All vehicles that enter airside	ACSA Safety
Personal permit	All persons employed on the airport	ACSA Security
Cell phone permit	All persons taking cell phones to airside	ACSA Security

Lap top permit	All persons taking lap top computers to airside	ACSA Security
Camera permit	All persons taking cameras or camera equipment to airside	ACSA Security
Hot Works Permit	All welding and/metal cutting work	ACSA Safety

Proof of having attended the airside induction training course is required for all personal permit applications. Persons applying for an AVOP must provide proof of having attended an AVOP course. Fees are levied for these courses. Fees are further levied for all permit renewals and refresher courses - where applicable.

## People restrictions, hours of work, conduct and records

The *Contractor* will be required to complete a register for all the duties performed on the Airport. The *Contractor* shall be required to sign the Work Order issued for services rendered. This service will be conducted outside of the Airport's operational hours or afterhours.

### Cell phones and two-way radios

Use of cell phones on airside is not permitted unless the user is in possession of an appropriate Airport permit for the device. Cell phone permit issuing authority lies with the ACSA Security department.

The *Contractor* will not be allowed to use two-way radios at the Airport unless these radios are of the type, model and frequency range as approved by the ACSA IT department

The *Contractor* must keep detailed records of all people (including subcontractors) working on the affected property.

The working hours of the contractor must not influence the generation capacity of the PV plant. Therefore, the work needs to be scheduled accordingly, during airport operational hours if no effect and after operational hours when it will effect plant operations.

The *Contractor's* conduct must be at all times of a professional nature with effective courtesy and integrity.

## Environmental controls, fauna & flora

All general environmental concerns and requirements is referred to the ACSA environmental policy defined in Section C1.5 above under PART C1: AGREEMENT AND CONTRACT DATA.

## Cooperating with and obtaining acceptance of Others

The *Contractor* will generally work in close relation to the ACSA electrical team. However, cognisance should be made to respect the operations and be courteous to the other departments (ARFF, AVSEC, Operations) on the airport.

The *Contractor* will liaise and accept notified (and adhoc) engagements with statutory authorities and inspection / audit teams (agencies).

The *Contractor* need to understand that the Airport may have more than one activities happening at the Airport and therefore shall be required to share the areas where they will be performing a service.

## Records of Contractor's Equipment

The contractor is to keep record of equipment used on site. The record sheet should contain all the equipment relevant information i.e. The record will be checked by Aviation Security during both entry and exit to the Airside.

At the start of the contract period, the contractor will submit a detailed list (make, model, serial number etc.) of equipment and tools that will be taken and used on ACSA premises - for approval by the *Service Manager*. This list must be approved regularly as and when amendments to it, occur.

As part of the monthly report the contractor need to indicate in writing when extraordinary equipment (outside of the original equipment list referred to above) will / have been brought onto (or removed from) ACSA premises. If need be a special permission slip for this must be formulated to be signed by the *Service Manager* for this purpose.

The various approved lists must be at all times made available to the AVSEC department (including their contracted service provider) on request.

## Site services and facilities

### Provided by the Employer

The *Employer* will provide the contractor with access to the PV plant and the maintenance complex as and when required.

The *Contractor* and his/her staff will utilise the ablution facilities in the maintenance complex. No ablution facilities may be used in the terminal building.

The *Employer* will provide space for the *Contractor* to erect a site office and/or yard in the maintenance complex, should they wish to do so.

### Provided by the Contractor

The contractor will provide necessary tools, equipment, Protective Clothing and all consumables required to conduct the service.

In the event of a site office/ yard, access control will be agreed between the *Service Manager* and the *Contractor* accordingly. Also in this event, the *Contractor* must make provision for ablution facilities as part of the site office establishment. Any site office / yard establishment requirements will be for the *Contractor's* own cost. The site office / yard must be de-commissioned at the end of the service period and the surface must be rehabilitated to its surrounding area accordingly.

## Control of noise, dust, water and waste

The *Contractor* shall be required to keep the noise and dust at low levels and as well as conserve the scarce resources such as energy & water. Waste shall be disposed at the registered waste sites according to the Municipal By-Laws.

## Hook ups to existing works

In the event that the *Contractor* wish to establish a site camp and/or yard, the required services (electrical; sewer; water) will be billed for on a monthly basis.

## Tests and inspections

### Description of tests and inspections

The contractor shall ensure that all required tests and inspections are performed in order to comply and produce documented results to the **optimum energy yield** and the **performance ratio** of the PV plant which can be found in **Annex E** to Part C5 (Annexes).

The Contractor will complete regular inspections which will monitor the actual conditions of the *Affected Property*, based on the relevant design.

All the additional inspections will be developed by the *Contractor* and Approved by the *Service Manager*. Amongst others still to be developed, the following inspections will be completed:

1. 3-Monthly PM's
2. 6-Monthly PM's
3. Yearly PM's
4. Other

## Planned Solar Plant Maintenance

Solar Plant Maintenance Activities			
No	Activity	Details	Frequency
1	Module Cleaning	Module cleaning is a simple but important task. It can produce significant and immediate benefits in terms of energy yield. The frequency of module cleaning will depend on site conditions (for example, prevalence of dust or rain) and the time of year. The site at Bram Fischer Airport is covered with grass, have low dust and regular rain occurs and will thus require minimum cleaning.	6 Monthly
		Module cleaning must consider environmental & human factors (like, autumn fall debris, soiling from roads & agricultural activities).	
		Weather patterns must be established to identify required cleaning during rainy and non-rainy periods.	
		Rain harvesting systems installed at the Bram Fischer Airport maintenance complex shall be used to provide the water requirements for the cleaning activity. The contractor shall utilise a water trailer with mobile bump accordingly.	
		Cleaning shall be scheduled as necessary, specifically when the PV plant efficiency falls below expectation.	
		Optimum frequency of cleaning can be determined by assessing the cost and benefits of conducting the procedure. The benefit of cleaning shall be seen in an improved performance ratio due to lower soiling loss and an increase in electricity generation.	
2	Module Connection Integrity	Checking module connection integrity is important for PV systems, as faults within each string of modules may be difficult to detect.	3 Monthly
		Check connections between modules within each string periodically.	
		Measure the string current and string impedance	
		String connection integrity shall additionally be monitored with the installed string level monitoring system	
3	Junction / String Combiner Box	Check all Junction / String combiner boxes for water ingress, dirt & dust accumulation to prevent corrosion and or short circuits inside the boxes.	3 Monthly
		Check the integrity of all the connections in the boxes. Loose connections will affect the overall PV plant performance.	
		Check the integrity of all the Circuit Breakers and Fuses in the boxes. Loose connections will affect the overall PV plant performance.	
4	Hot Spots	Thermography scan shall be performed across the entire PV plant to detect potential faults.	Annually
		Thermography shall be conducted by a trained specialist using a thermo graphic / infrared camera. A detailed report with pictures of all string connections, junction boxes, inverters, MV infrastructure & LV infrastructure shall be compiled accordingly.	
		The report will identify weak and loose connections plus hot spots, which need to be corrected immediately.	

Solar Plant Maintenance Activities			
No	Activity	Details	Frequency
5	Inverter Servicing	Inverter faults are the most common cause of system downtime in PV plants and shall be mitigated by stringent scheduled maintenance of inverters.	As per OEM Requirements
		The basis of the inverter servicing requirements shall be obtained from the specific equipment manufacturer. The local operational conditions and performance of the PV plant will influence the improved inverter servicing specifications.	
		Minimum servicing specifications will include Visual inspections; Cleaning / Replacing of cooling fans; Removal of dust from electronic components; tightening of any loose connections; Additional analysis and diagnostics recommended by the manufacturer.	
6	Structural Integrity	Check periodically the module mounting assembly, cable conduits & related structures for mechanical integrity and signs of corrosion.	3 Monthly
		Inspect support structure foundations for evidence of erosion from <i>inter alia</i> water run-off	
7	Balance of Plant	Service all other PV plant auxiliary and ancillary systems which include monitoring and security systems; auxiliary power supplies; communication systems; etcetera.	3 Monthly
		Inspect and verify signal strength and continuation of connection of the communication systems within the PV plant as well as to all other external systems.	
8	Vegetation Control	Vegetation control and ground keeping are important scheduled tasks for the solar PV plant, as vegetation over-growth (i.e. long grass, trees or shrubs) can shade the modules - which will reduce the generation capacity of the module. Vegetation inspections and maintenance need to be conducted Monthly.	3 Monthly
		Ground keeping activities need to be performed to reduce the risk of soiling onto the modules by way of leaves, pollen or dust.	
9	Earthing	Check earthing continuity and measure the earth resistance at the various plant sections	Yearly
10	MV cabling	Check all terminations for tracking and clean as required, confirm clearances and ensure all connection is tight	Yearly
11	LV cabling	Check and clean terminations and confirm tightness	Yearly
12	Electric Fence	Check and repair and defects on the system	3 Monthly
11	General	Generate Monthly reports on system performance	
		Periodic verification and test methodologies shall be prepared according to requirements defined in IEC 62446, IEC60364-6 and according to the current best commissioning practice.	
		Continual performance monitoring and error reporting of the system on a daily basis	
		Replacing of spare parts as and when required	
		Management of equipment warranties, interfacing with equipment provider and managing logistics in replacing equipment	
		All equipment covered by the preventative maintenance scope is subject to corrective maintenance for wear-an-tear and breakage under normal conditions	

Solar Plant Maintenance Activities			
No	Activity	Details	Frequency
10	Unscheduled Maintenance	Unscheduled Maintenance is carried out in response to failures which shall be responded to on-site within 2 hours of when the call is logged. Where possible the fault can be rectified remotely.	Continuously
		Diagnostics of the breakdown should be verbally given to ACSA within the first hour of arriving on-site.	
		Documented detailed diagnostics must be given to ACSA by latest close of business the following day.	
		Repair time of the plant shall be within 48 hours as a worst case scenario. Only under special conditions and on agreement with ACSA can the defect be isolated and repaired beyond the 1-day time frame.	
		Tightening of cable connections that have loosened, as required	
		Repairs of MV and LV, AC as well as DC cable failures	
		Replacing blown fuses	
		Resetting tripped circuit breakers	
		Repairing lighting damage	
		Repairing equipment damaged by intruders or during module cleaning	
		Rectifying SCADA faults	
		Repairing mounting structure faults	
Rectifying tracking system faults			
11	Performance Monitoring, Evaluation & Optimisation	To optimise system performance, there is a need to ensure that the plant components function efficiently throughout the lifetime of the plant. Continuous monitoring of PV systems is essential to maximise the availability and yield of the system. The SCADA system is able to monitor the real-time efficiency and continuously compare it with the theoretical efficiency to assess if the system is operating optimally. This information shall be used by the contractor to establish the general condition of the system and schedule urgent repair or maintenance activities such as cleaning.	Continuously
12	Training	Host training workshops to enable ACSA to take the responsibilities of the new technology plant at the end of the 3-year term (should ACSA wish to do so).	3 Monthly

Solar Plant Maintenance Activities				
No	Activity	Details	Frequency	
13	Inventory	Availability of spares facilitate rapid response and PV plant serviceability. Hence a suitably stocked spares inventory is required.		Continuously
		When spares are utilised, the contractor shall replenish the stock levels as soon as possible.		
		Consultation with manufacturers to detail the spare parts inventory, based upon estimated component lifetimes and failure rates shall be done.		
		Adequate supplies of the following components shall be held - as a minimum	Quant.	
		Mounting structure pieces		
		Junction combiner boxes		
		Fuses		
		Circuit breakers		
		DC cabling components		
		AC cabling components		
		Communication equipment		
		Modules		
Spare Inverters				

## ACSA minimum technical requirements for solar plants

The following relevant requirements is applicable to the contract:

### **Economic Aspects**

A1: Economic Feasibility of the plant must be justified at least halfway through its useable lifespan.

A2: Levelized cost of energy (LCOE) must be competitive with the current Independent Power Producer buy back tariff and must be less than electricity purchased from the National Electricity Grid unless energy access and or security is the main concern. Electricity Tariff increases must be assumed based on past tariff rate increases and cost escalations shall be as per the respect countries Economic Indicator's with respect to Goods, services and labour.

A3: Performance Ratio of the Plant must be optimized to a minimum of 0.8.

A4: Plant location must be agreed upon within various ACSA departments, including but not limited to Airport Planning, Maintenance Engineering, Chief Engineers, Airport Management.

### **Supplier Criteria**

B1: The Solar Photovoltaic Panel supplier must be bankable and offer an insurance backed warranty on all Photovoltaic panels. It is recommended that bankability be check with the Bloomberg New Energy Finance Markets.

B2: The Solar Photovoltaic Panel supplier must ensure that the installer is adequately trained on installation of the panels to protect warranties and guarantees of the product.

B3: Mounting Structures are recommended be procured from South African Manufacturer.

### **Design Flexibility**

C1: The control and integration software in the Photovoltaic Plant shall be of an open source.

C2: The design of the Photovoltaic Plant must consider future expansion.

C3: The design of the Photovoltaic Plant shall be of modular type allowing easy maintenance and repair.

C4: The design of the Photovoltaic Plant shall allow ease for additions of power storage and integration of back-up power supply.

C5: The design of the Photovoltaic Plant should make provision for the installation of monitoring equipment for importing/exporting of power in compliance with NRS 048/9.

C6: The Solar PV design stringing shall consider down-time and risks with respect to the loads being fed.

C7: Design must allow for ease of maintenance such as washing of PV panels, rainwater harvesting should be considered at design stage for the purposes of washing of panels.

C8: Design must consider maintenance of the performance ratio during times of corrective maintenance.

C9: Prioritizing controller shall be included to ensure that solar PV plant can generate electricity for the site in the absence of electricity from the national electricity grid.

C10: A monitoring system to improve the reliability and productivity of the plant shall be installed in accordance with IEC 61724 Ed 1.0 Photovoltaic System performance monitoring – Guidelines for measurement, data exchange and analysis. The monitoring system shall include the plant performance

to optimize the energy output, detecting abnormal losses and be used for planning the preventive maintenance actions.

C11: The installation shall ensure that Solar PV yield is being used first before Electricity from the National Electricity Grid is used for the site.

### **Photovoltaic Panel**

D1: The semiconductor material to be selected for Photovoltaic Plants shall have a minimum cell efficiency of 20.3% with a minimum lifespan of 25 years.

D2: Solar PV panels that do not incorporate integrated bypass diodes causing adverse effects when it comes to shading, particularly thin film technology shall not be used.

D3: Factory Acceptance Electroluminescence tests must be submitted with all panels purchased. Variations of +5W are allowed in PV panel output wattage, panels must be clearly stated.

D4: The Photovoltaic Panels chosen shall be compliant and certified to the following IEC standards:

- (a) IEC 61215-2:2016 Terrestrial Photovoltaic Modules – Design Qualification and type approval
- (b) IEC 60068 -1: 2017 Environmental Testing
- (c) IEC 61730-1:2016 Photovoltaic Module Safety qualification – Requirements for construction
- (d) IEC 61730 -2:2016 Requirements for testing
- (e) IEC 61701-2:2011 Salt Mist Corrosion Testing of Photovoltaic Modules
- (f) IEC 60891:2009 Procedures for temperature and irradiance corrections to measured I-V characteristics
- (g) IEC 60904-1:2006 Measurement of photovoltaic current-voltage characteristics
- (h) IEC 60904-3:2016 Measurement and Principles
- (i) IEC 60904-5:2011 Determination of Equivalent cell temperature (ECT)
- (j) IEC 60904-8: Measurement of spectral responsivity of multi-junction photovoltaic (PV) devices (where applicable)
- (k) IEC 61853: Performance Testing and Energy Rating

D5: The equipment should be able to operate at NOCT of  $45^{\circ}\text{C} \pm 3^{\circ}\text{C}$  and operating temperature of between  $-10^{\circ}\text{C}$  and  $80^{\circ}\text{C}$  at maximum operating system voltage of 1000V DC.

D6: The following information should be made available in writing from the Solar PV module manufacturer:

- (a) Confirmation of surface texturing applied to the panel to reduce reflection and surface reflection parameters of the panel.
- (b) Confirmation of the application of Silicon Nitride or other treatments to optimize optical properties
- (c) Confirmation of Edge Isolation done and the series and shunt resistances
- (d) Confirmation of the treatment of lightly diffused phosphorous emitters to reduce recombination losses and avoid the existence of a dead layer at the cell surface
- (e) Confirmation that design minimizes metal contact areas to reduce resistance and heavy doping beneath the contact areas to reduce recombination
- (f) Confirmation of rear and front surface passivation
- (g) Confirm recyclability of the panel

D7: A glare study/confirmation of no effects of glare on aircraft pilots shall be completed.

D8: The junction boxes must be at least IP67 rated.

### **Installation**

E1: Transportation and handling shall be as per manufacturer's recommendation and in absence of this, the panels shall be transported in a vertical arrangement. Freight forwarding documentation shall be included in the handover documentation and shall be checked prior to installation of the Solar Photovoltaic plant.

E2: The installation of Photovoltaic panels shall consider the ground or installation surface conditions, shading, direction of solar irradiation for optimum capture of solar energy.

E3: All ground installations shall be preceded by an environmental impact study.

E4: Soil resistivity tests should be undertaken for ground mounted installations.

E6: Fixed or tracking arrays shall be decided based on feasibility.

E7: A lightning risk assessment shall be done.

E8: Evaluation/study of shadows falling from aircraft landing and taking off and from fixed structures to ensure that performance ratio of plant is not affected.

E9: Mounting Structure must comply with the following Standards:

- (a) SANS 10160 Part 2 – Self Weight and Imposed Loads
- (b) SANS 10160 Part 3 – Wind actions

### **Electrical**

F1: The following protection shall be required for the Photovoltaic plant installation:

- (a) IEC 60364-4-41: 2017 Protection for Safety, protection against electric shock
- (b) IEC 60364-4-43:2008 Protection against overcurrent
- (c) IEC 60364-4-44:2007 Voltage disturbances
- (d) The minimum insulation resistance shall be 20MΩ when measured at 500V DC
- (e) IEC 60364-7-712:2017 Requirements for special installations or locations – Solar photovoltaic (PV) Power Supply Systems
- (f) IEC 61730-2:2016 Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
- (g) IEC 61439-1:2011 Low-voltage switchgear and control-gear assemblies
- (h) IEC 60529 Ingress Protection Code
- (i) IEC 60099-6:2002 Protection against transients and overvoltage

F2: All Photovoltaic Systems shall utilize 400V-11KV step up transformers, star-delta vector configuration.

F3: For security of supply all installations shall be grid tied with priority given to the Solar Photovoltaic Plant supply.

F4: The inverter system voltage shall be designed for 1000V DC and input voltage shall be 400-800V and output voltage 400V.

F5: The inverters shall be a string inverter.

F6: The operating voltage ( $V_m \times$  number of modules in series at all temperatures at the installation location) shall fall within the inverters MPPT voltage range.

F7: The total  $I_{sc}$  current for strings in parallel shall be lower than the maximum input current for the inverter.

F8: Panel stringing must consider the panel output wattage from Factory Acceptance Electroluminescence (EL) Tests.

F9: Inverter shall include a protection for anti-islanding (in accordance with NRS 097-2-1 "Inverter type test certificate & test report).

F10: Inverters must come with the following protection functions:

- (a) DC reverse polarity protection;
- (b) reverse current protection;
- (c) ESS switch disconnecter;
- (d) AC short circuit protection;
- (e) Ground fault monitoring;
- (f) galvanically isolated;
- (g) all-pole sensitive fault;
- (h) current monitoring unit;
- (i) DC overvoltage protector type II;
- (j) string failure detection;
- (l) Protection class 1;
- (m) overvoltage category III

F11: All inverters must be IP66 rated.

F12: All inverters shall be programmed such that Solar Photovoltaic Energy is used first before Grid Power.

F13: The photovoltaic plant may be designed to accommodate battery storage.

F14: Orientation of the module strings and array strings will be based on the anticipation of shading to ensure optimum output.

F15: The cabling shall be such that it avoids enveloping the panel with transient currents.

F16: Remotely controlled breakers should be employed at substations.

F17: A meter that is AMR compatible shall be installed to accurately determine output of plant being used for the site.

F18: Verification and documentation of fault current must be done.

F19: Verify Electrical Ring network protection settings, the final protection settings are to be included in handover documentation, out of sync settings must be corrected.

F20: The inverter shall comply with the following standards:

- (a) IEC 60364-7-712 (requirements for DC switch)
- (b) IEC 62109 Safety Requirements
- (c) IEC 62116 performance of islanding prevention

F21: Inverters must be protected from the weather conditions.

F22: The combined cable losses should not exceed 3%, i.e. the AC and DC cable losses combined.

F23: Cables used in outdoor environment shall be UV resistant.

F24: Cables should have a Class II rating for insulation

F25: Cables must be rated for temperatures from -40 degrees C to +90 degrees C

F26: Cables shall comply with SANS 1507

F27: Cables must be installed in conduits and hooded cable trays. The cable return path should ensure that induction loops are avoided.

F28: Cables shall be terminated with MC4 connectors.

F29: All connectors shall be UV resistant, ozone protected, being temperature rated equal to or better than -40 degrees C to +90 degrees C, having an IP class of at least 65. They must be equipped with a locking system to avoid disconnection of the parts. Male and female connectors will be of the same make.

F30: The lightning protection must be designed in compliance with SAN 10313 and IEC 62305.

F31: Earthing shall comply with 10142 Parts 1 (LV) and 2 (MV), SANS 10292 and SANS 10199.

F32: Surge protection devices must be installed at string box, combiner box, inverter (AC and DC side) and at transformer level.

### **Maintenance**

G1: Only competent personnel trained in the maintenance and operation of the photovoltaic system shall be allowed to perform maintenance on the plant. This includes working near or on live equipment and live chamber. At least two people shall work on maintenance at any point in time. All isolation procedures shall be in accordance with the high-voltage regulation (ORHVS) operating regulations of high voltage system.

G2: No cleaning shall occur before sunset and after sunrise.

G3: For all installations, critical spares (up to 10%) shall be procured and stored on site.

G4: Connectivity shall be in accordance with ORLVS.

G5: All maintenance shall be in accordance with OEM recommendations.

G6: Where feasible, alternative water sources should be implemented for the washing of the PV panels.

G7: The project shall purchase a portable I-V tracer, Infrared camera and signal transmission device for verification of availability and reliability of the photovoltaic plant.

G8: Maintenance shall be done to maintain the warranty and guarantee of all plant equipment and the performance ratio to above 0.8.

G9: All spares and replaced components shall be of equal quality or exceed the original quality subject to its compatibility with the Solar Photovoltaic Plant.

G10: Full report shall be done in the event of the failure of a Photovoltaic Panel or other system component before the guarantee and or warranty period, to establish the root cause and put in place preventative maintenance measures.

G11: Should the performance ratio of the plant fall below 0.8, a full investigation and report shall be produced to ACSA by the installation contractor during the defects liability period and the maintenance contractor during the respective maintenance period and any warranty or guarantee claim shall be handled respectively by these contractors.

G12: The contractor shall carry out all operations and maintenance in the defects liability period to achieve the energy production and the following is a minimum:

- (a) Regular Operation
- (b) Scheduled Maintenance
- (c) Preventative Maintenance as per manufacturer manuals and best practice
- (d) Daily plant performance and functional monitoring
- (e) Administrative and financial services
- (f) Management of alarms and events
- (g) Predictive maintenance as per manufacturer manuals and best practice
- (h) Corrective maintenance
- (i) Quarterly performance and O&M reporting (including O&M logbook)
- (j) Spare Parts Management
- (k) Management of the insurance policies

G13: Upon handover, all spares in possession of the Employer shall be as according to the quantities agreed in the contract, any spares used during defects liability or during Maintenance must be replaced and kept as per the handover agreement, including after the maintenance contracted period is concluded.

G14: Calibration of all equipment must be done upon handover of plant from the maintenance period, defects liability period, intermediate acceptance period or whenever, there is a handover from one party to another for whatever reason.

#### **Operational Parameters and Plant output**

H1: For electrical energy contributed to the grid, a Memorandum of Understanding shall be drawn up with the respective municipality based on the local utility bylaws.

H2: The quality of electrical supply from the Photovoltaic plant shall comply with the NRS 048 part 2 and part 4.

H3: Power quality monitoring equipment shall be installed on the Photovoltaic plant before connection to the grid.

H4: Power quality incident logging shall be stored and backed up on the server. Critical alarms shall be relayed immediately to the plant's responsible person. Other alarms shall be relayed to the Infrastructure Monitoring and Control team.

H5: Monitoring of solar module and photovoltaic plant performance shall be in line with IEC 61724-2:2016.

H6: The expected linear or stepped power output warranty period of the solar modules shall be at least over 25 years.

H7: Any performance ratio deviation outside 0.8 shall be investigated in the context of the warranty.

H8: Any deviation in the performance of the plant from the linear performance warranty shall be investigated by the manufacturer.

H9: Should the Photovoltaic Plant be generating electricity into the Electricity Utility Grid, this must be granted approval from the relevant regulatory bodies, NERSA prior to plant installation.

H10: The plant shall have separate metering for import and export and must be compliant with SANS 474/NRS057.

H11: A weather monitoring station shall be installed on the plant that allows for plant Performance Ratio calculations according to IEC 61724 Photovoltaic system performance monitoring – Guidelines for measurement, data exchange and analysis.

H12: A monitoring system must be installed to monitor data that must be used for optimizing energy output, detecting abnormal losses and planning the preventative maintenance actions.

H13: The monitoring system must be able to record meteorological data, electrical parameters and status of the PV plant components.

H14: Continuous monitoring is required.

H15: The minimum data to be monitored are as follows:

- (a) DC current and voltage at combiner box level
- (b) Inverters behaviour
- (c) DC current and voltage input
- (d) Output active and reactive power
- (e) Phase voltage and current
- (f) Energy Output
- (g) Alarms and faults
- (h) Meteorological data – Module temperature on 1% of the plants modules, ambient temperature, irradiation, wind speed
- (i) Energy output at the meters (import and export, plant yield)
- (j) Status of the equipment (protection devices, inverters)
- (k) Any other information which will be required by the laws and norms in respect of this installation

### **Guarantees, Warranties and Insurances Underwriting**

I1: Performance warranty of the solar PV panels shall be a minimum of 25 years and a total of 20% linear degradation as a maximum over 25 years. Solar Panels warranty of 25 years must be insurance backed, with full details of claim procedure and insurance backing submitted. Plant registration with the supplier is the responsibility of the installation party appointed by ACSA.

I2: Stepped warranties must be investigated to ensure that LCOE is not negatively affected.

I3: Upon installation, registration documentation of the photovoltaic plant installed must be submitted.

I4: Verification certificate that certifies that commissioning was conducted per the standards and requirements of the warranty.

I5: The Monitoring system must be designed and implemented in such a way to have a lifetime of 25 years.

I6: The mounting structure shall have at least 10 years' warranty, but shall be designed for a minimum lifetime of 25 years. Corrosion prevention must start at the design stage considering site and soil specific parameters.

I7: Inverters must have at least a 5-year warranty, with clearly defined claiming procedure.

I8: The conditions which void warranties for all equipment and installations must be clearly stated, preserved and communicated to ACSA and all handling parties.

### **Environmental Impacts**

J1: Disposal method of the plant and its equipment at end of lifespan shall be decided based on the outcomes of a feasibility study, environmental impact study and the objectives of the business.

J2: The installation contractor shall be liable for any environmental impacts arising from the plant installation and defects liability period.

J3: The maintenance contractor shall be liable for any environmental impacts arising from the plant maintenance activities during the maintenance period.

## Testing, Commissioning and Handover

K1: Commissioning shall be done per the following standards:

- (a) IEC 62446: Grid Connected Photovoltaic System
- (b) IEC 60364-6
- (c) IEC 62337

K2: The following shall be submitted upon handover:

- (a) Approved as-built drawings and design report signed by Professional Engineer
- (b) Operating and Maintenance documentation
- (c) Equipment datasheets
- (d) Calibration certificates of all equipment
- (e) Verification Certificate that certifies commissioning was conducted per the standard IEC 62446 Grid Connected Photovoltaic Systems
- (f) I-V curves;
- (g) PV panel Electroluminescence (EL) tests;
- (h) Signal Transmission Device data;
- (i) Testing and Commissioning Data including but not limited to details of PV array, results of polarity, insulation, grounding, voltage and current tests;
- (j) Test Certificates that certifies compliance with relevant codes and standards listed for the Photovoltaic plant components and systems,
- (k) Factory Acceptance Tests
- (l) Open circuit voltage
- (m) Short circuit current
- (n) Continuity of grounding system
- (o) Integrity of electrical insulation on power circuits
- (p) Operating voltage
- (q) Operating current
- (r) Verification of fault current and electrical ring network protection settings
- (s) Whole system performance (performance ratio which is actual output to predicted output)

K3: Competent representatives from both the client and the contractor shall be present for FAT (where feasible).

K4: Performance Ratio must be calculated according to the CEI EN 61724 (CEI 82-15). Inverter availability must be established and exceed 0.85 as calculated below:

The following equations will be used to calculate the inverter availability and the plant annual availability:

$$\text{Inverter Availability (\%)} = \frac{\sum OT + \sum T_{nAC}}{TOT} * 100$$

Where:

TOT Total Theoretical Operating Time. [Min]. It accounts the Total amount of time in which an inverter i exceeds the minimum irradiation threshold of 30 W/m<sup>2</sup>

OT Operating time. [Min]

TnAC [Min] Time of non-availability with causes not Attributable to the Contractor. During these periods, all inverters are considered as available. In this case, the operator must provide satisfactory evidence.

The Operating Time is calculated as the time when each inverter was considered as available. The criteria is that there is voltage in output terminals of the connection box and the ratio of the actual production  $P_{i,ind}$  divided by the average Production PAV of all inverters exceeds 0.85.

This criteria is applied with the granularity of 15 min periods. For such period of computation:

if  $P_{i,ind}/PAV > 0.85$ , the inverter  $i$  is considered as available,

if  $P_{i,ind}/PAV < 0.85$ , the inverter  $i$  is considered as not available,

$P_{i,ind}$  actual production of the inverter  $i$  in fifteen minutes period

PAV average production of all inverters in fifteen minute periods.

K5: The following tests must be performed as a minimum (not limited)

- (a) Mechanical completion test to ensure that all parts of the facility has been physically checked completed and installed correctly and according to the As-built documents. Once the mechanical completion of the installation is achieved, the contractor will proceed to energize the facility and carry out the Tests for completion to ensure each component of the plant is working properly and in accordance to the national and local grid codes. It is the responsibility of the contractor to deliver a Grid Code Compliant Plant.
- (b) Provisional Acceptance Tests (Phase 1 of IEC 62446) shall be performed to confirm the Performance Ratio of the entire facility and quality of design, construction and correct operation and must be supervised by an Independent Technical Advisor.
- (c) Intermediate Acceptance Tests (Phase 2 of IEC 62446) shall be performed where the Performance and Availability Verification is executed for a period of 1 year. A visual inspection and thermal analysis (using thermal camera) is made on the plant to check for possible defects.
- (d) Final Acceptance Tests (Phase 3 of IEC 62446) shall be performed for two years after the provisional acceptance tests. All remarks made during the Provisional Acceptance Tests are verified as complete and a final Performance and Availability Verification in this two-year period.

K6: Minimum requirements for taking over are as follows:

- (a) All works as per the contract are complete
- (b) Tests on Completion have been passed and approved by the Employer
- (c) Final O&M Manuals for the works have been issued to the employer
- (d) List of open points has been agreed and signed by the employer and contractor
- (e) Provisional and Final Acceptance Tests have been successful in meeting the minimum guaranteed performance and availability over the periods of analysis.

## Security

L1: The security installation shall comply with Occupational Health and Safety Act requirements.

L2: Security as a minimum should adopt an electric boundary fence, CCTV camera, PIDS, Flood lighting (including occupancy sensing) and an electronic identification system if feasible.

### **Procurement Tender Requirements and Recommendations**

M1: The procurement tender requirements shall be compiled to ensure that Life Cycle Cost (capital, maintenance and operational cost) is minimized, delivery time is minimized at best quality within feasibility, while reducing and managing risk to ACSA.

M2: The evaluation criteria shall seek to answer the following three questions:

- (a) Is the bidder's team and company qualified to do the works? Evaluate.
- (b) Is the Solar Photovoltaic Panel technology proposed acceptable?
- (c) Can the bidder apply their mind to perform the works? Evaluate.

M3: Bidders shall be considered only if proposals include installation and maintenance responses.

M4: A valid reference shall be defined in the Tender document as a recommendation by a Client on the Client's letterhead.

M5: Recommendation for Procurement Evaluation Criteria are attached.

### **SACAA and ICAO requirements**

N1: Any PV installation within the aerodrome vicinity shall be of an anti-glare nature and simulation with the "Solar Glare Hazard Analysis Tool" must be done in partnership and agreement with SACAA requirements.

N2: In cases where the height exceeds the maximum height in the roof mounted installation, obstruction lights shall be installed CAR 139.01.30

N3: Prior approval and consultation with all relevant stakeholders shall be acquired for solar PV installations within the airport environment.

N4: The Solar PV installation shall not infringe any airports operations, safety, security or operational license requirements as dictated by ICAO and SACAA regulations.

### **Knowledge Management, Skills Transfer and Learnings**

O1: The consultant shall ensure that the Site Agent maintains a daily log of all events, occurrences and progress for the duration of the installation until commissioning of the Solar Photovoltaic installation.

O2: The consultant shall ensure that the project manager and design engineer compiles a list of learnings from the design and installation of the facility which is to be attached to the close out report to be included in the handover documentation.

O3: The maintenance contractor shall compile a list of learnings from the maintenance of the Solar Photovoltaic Plant which can be viewed from time to time and must be submitted annually to the ACSA person managing the maintenance contract.

O4: The installation contractor shall submit to ACSA a comprehensive report on the supply market for Solar Photovoltaic Panels, Solar Cells, Inverters, Transformers, Software and Sensors, Mounting Structures, and all other equipment and tools utilized for the Installation.

O5: The consultant shall ensure that knowledge on all aspects of the plant design, supply process, installation and commissioning and project management is transferred to at least two ACSA personnel.

O6: The Maintenance Site Manager shall ensure that knowledge transfer is done through regular technical updates and if need be practical demonstration sessions as chosen by the ACSA person managing the maintenance contract.

O7: During the twelve-month defects liability period, performance ratio must be maintained at above 0.8 and all activities and steps taken to ensure this performance ratio must be documented and submitted as a report to ACSA.

O8: The maintenance contractor shall be key in facilitating any research done by a research student from a university or tertiary institution.

O9: The following shall be communicated as a minimum as per the learning and skills transfer:

- (a) Basic concepts on Solar PV panel technology
- (b) Theoretical introduction to commissioning and test programmes
- (c) Practical introduction to correct use of maintenance manuals
- (d) Basic trouble shooting and fault finding
- (e) Safety Procedures for operating and maintaining the plant
- (f) Theory and practice of electrical power system. Operational activity that is permissible by the Employer's personnel during the warranty period
- (g) Safety Methods for equipment isolation during maintenance
- (h) Description of the electrical system including details of LV and data cable routes
- (i) Identification of protection relays and equipment
- (j) Review of protection relay settings
- (k) Description interface with any existing substation equipment and with the utility grid
- (l) Replacement of minor parts (e.g. fuses)
- (m) Safety access, operations and maintenance procedures where special procedures are required which would not be familiar to experienced, qualified/registered personnel
- (n) Monitoring and interpret a performance report.

### **Project Programme**

P1: A baseline programme shall be provided by the Contractor for the Works, the contractor shall update this programme twice weekly to reflect actual progress against baseline programme

P2: The programme shall include all principal activities, milestones and activity dependencies required for successful delivery of the project provided in a MS Project GANTT Chart format

P3: The programme shall include the following operational phases (not limited):

- (a) Engineering phase
- (b) Material procurement phase
- (c) Construction phase
- (d) Site preparation works
- (e) Civil works
- (f) Mechanical works
- (g) Electrical works (split up into DC and AC)
- (h) Grid connection works
- (i) Monitoring works
- (j) Testing phase
- (k) Commissioning
- (l) Defects liability period (12-month guarantee phase)
- (m) Handover of project
- (n) Maintenance period

## PART C4: SITE INFORMATION

### 1 Site data

Note that the following site data is for tender purposes only. It is the responsibility of the Contractor to verify the data for design purposes.

It is the Contractor's responsibility to acquaint himself with the site conditions as well as the nature and strata of material on site. No additional claims will be entertained over and above the tender rates as submitted by the Contractor due to the lack of knowledge by the Contractor about the site conditions.

All the material and equipment being supplied in terms of this Contract shall be suitable for continuous operation at the total specified output or capacity under the following conditions:

<b>Project location and characteristics</b>	<b>Unit</b>	<b>Value</b>
Provisional site area	ha	22
Provisional Solar plant area	ha	0.9939 (179.4m x 55.4m)
Elevation (Site)	m	61
Latitude (Site)	°	33°59' 14.01"S
Longitude (Site)	°	25°36' 51.46"E

<b>Applicable site conditions</b>	<b>Unit</b>	<b>Value</b>
Record high (January)	°C	39.3
Record low (August)	°C	-9.7
Average high	°C	24.4
Daily mean	°C	15.6
Average low	°C	7.5
Corrosion conditions	-	Moderate
Pollution conditions	-	Moderate
Average relative humidity	%	57
Mean sunshine hours (year)	hrs.	3312.3
Yearly average precipitation	mm	559
Prevailing wind direction	-	NNW - NNE
1:50 Year quantiles of annual maximum gusts	m/s	35-40
1:50 Year quantiles of annual maximum hourly mean wind speeds	m/s	15-20
Distance from sea	km	430

Air dust maximum (not existent, low, medium, high, extremely high)	-	low
Soil average thermal resistivity		Refer to Volume 4
Lightning stroke density	/km <sup>2</sup> /year	4-5
Earthquake category		N/A
Noise general work area	dB (A)	Up to 100 at ramming machine
Noise increase at fence	dB (A)	100

Electrical network status	Value
Maximum design short circuit current at 11kV point of supply of the ground mounted system	10 kA
Maximum design short circuit current at 400V point of supply of the roof mounted system	25 kA
System nominal voltage	11 / 0.400 / 0.230 kV
System highest voltage	12 / 0.45 / 0.26 kV
Contractual voltage	11 / 0.42 / 0.242 kV
Frequency + possible variation	50 Hz ± 1%
Neutral grounding system	Solid
Settings of upstream protection relays	To be confirmed

## 2 Site location

Note that the site is outside the airside of the airport:



## **PART C5: ANNEXES**

(To be attached by Contractor to this page)

1. Annex A: Contractor's Plan
2. Annex B: Contractor's Schedule of equipment and tools
3. Annex C: Contractor's Organogram
4. Annex D: Monthly Service Report Templet
5. Annex E: Optimum energy yield and the performance ratio  
Refer to the guarantee values in Part T2 Form C15 Technical Schedules, Forms 12, 13 & 15