

ANNEXURE A

SCOPE OF WORKS

ANNUAL OBSTACLE SURVEY

FOR NINE AIRPORTS:

O.R. TAMBO INTERNATIONAL AIRPORT, CAPE TOWN INTERNATIONAL AIRPORT, KING SHAKA INTERNATIONAL AIRPORT, BRAM FISCHER INTERNATIONAL AIRPORT, UPINGTON INTERNATIONAL AIRPORT, CHIEF DAVID STUURMAN INTERNATIONAL AIRPORT, KING PHALO AIRPORT, GEORGE AIRPORT AND KIMBERLEY AIRPORT

OWNED AND MANAGED

BY

AIRPORTS COMPANY SOUTH AFRICA

Airports Company South Africa invites aeronautical and topographic survey specialists to provide the following services:

1. A survey of all runway entities, navigational aids, instrument landing system components, taxiways holding points, obstacles that may penetrate 2% slope and other Annex 14 (to the convention of International Civil Aviation Organisation (ICAO) – Vol. 1 Aerodrome Design and Operations) safety surfaces.
2. To conduct an ICAO obstacle survey and evaluation for the maintenance of all flight procedures at the nine (9) ACSA airports
3. To survey in accordance with

ICAO Doc 8168 OPS 6/11 Volume II as amended

ICAO Doc 9674 AN/946 World Geodetic System – 1984 (WGS 84) Manual 9674 as amended

4. To report to the nominated airport representative for the in brief prior to conducting the survey and to share the preliminary findings of the survey at the out brief and indicate the findings during a walk about with the nominated airport representative.

5. To submit preliminary report to ACSA within 7 (seven) working days after the date of the survey performed at any airport (as scheduled in Appendix G), a report in the format as detailed in Appendix B, Appendix C, Appendix D, Appendix E, Appendix F and Appendix G, Appendix H, Appendix I, Appendix J, Appendix K, Appendix L, Appendix M in both hard copy and electronic format.
6. To submit final report to ACSA within 30 (thirty) days after the date of the survey performed at any airport (as scheduled in Appendix G), a report in the format as detailed in Appendix B, Appendix C, Appendix D, Appendix E, Appendix F and Appendix G, Appendix H, Appendix I, Appendix J, Appendix K, Appendix L, Appendix M in both hard copy and electronic format
7. Appendix J shall be to scale and in AutoCAD format and in 3 dimensions.
- 8.. All obstacles i.e. trees, structures etc. that penetrate the obstacle free surfaces must be identified(including dimensions) and showed to the airport representative upon completion of the survey for corrective action where applicable.
9. Wherein obstacles cause immediate danger to the flight community, these must be identified immediately to the airport representatives for correction.
10. The successful bidder shall, during the term of the Agreement and at its own expense, effect and keep current policies of insurance as follows:
 - a) Professional indemnity cover for a limit of twice the contract value
 - b) Aviation liability insurance for an indemnity limit of
 - Fifteen thousand US dollars (USD 15 000) for damage to aircraft
 - Five thousand US dollars (USD 5 000) for damage to propertyACSA must be named as the additional insured in all the policies listed above

The successful bidder shall submit proof of insurance at the commencement of the contract, and thereafter annually at the renewal of the policies, for the duration of the agreement.
11. The successful bidder will be required to have the following qualified key personnel from the effective date of the contract, that is:
 - Quality Assurance Specialist/Manager
 - Qualified Registered Geomatics Surveyor

- Contract Manager

The key personnel listed above are three individuals who cannot fulfil dual role with a minimum NQF Level 6 qualification or equivalent.

APPENDIX A

1. FIXED SCOPE OF WORKS- EXCLUDING VIARABLE SCOPE

1.1. The cost below is fixed scope Obstacle Survey for the five (5) year period, is detailed in the table below.

1.2. The costs for the five (5) year period must include annual escalation.

The table below must be priced by the bidder and must include but not limited to the following:

- Site establishment
- All travelling costs
- Permit fees
- Waiting time to get access to the airside
- Post processing of data
- Obstacle Survey and Evaluation
- ICAO Annex 14 Obstacle Surfaces Evaluation
- Parking fee at airport
- Scope of work implementation

	AIRPORT	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1	O R Tambo International					
2	Cape Town International					
3	King Shaka International					
4	Bram Fischer International Airport					
5	Upington International Airport					
6	Chief Dawid Stuurman International					
7	King Phalo					
8	Kimberley					
9	George					
	TOTAL (EXCLUDING VAT)					
	VAT (15%)					
	SUB TOTAL (INCLUDING VAT)					
	Total					

2. VARIABLE SCOPE OF WORKS

Note: This part of the scope of works will be allocated at the sole discretion of ACSA and does not form part of the guaranteed / fixed scope of the contract. ACSA will from time to time need to verify specific elements of surveyor data and can then allocate the work when required at ACSA's discretion.

2.1 The rates for the variable/Ad-Hoc obstacle survey for the five (5) year period, bidders are required to complete the table below.

Item	Activity	Unit Measure	Year 1	Year 2	Year 3	Year 4	Year 5
1	Labour Rate for Surveyor (During normal hours)	Hourly Rate					
2	Labour Rate for Surveyor (Outside normal hours)	Hourly Rate					
3	Call out Fee	Per Call Out					
4	Hotel Accommodation (3 Star or Equivalent)	Per Night					
5	Domestic Air Travel (Economy class)	Per Return Ticket					
6	Car Travel Rate Per Kilometre	Per Kilometre					

APPENDIX B**SURVEY REPORT (TABLE OF CONTENTS)**

ON THE WGS-84 AND OBSTACLE SURVEY CONDUCTED AT:

AIRPORT

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APPENDIX C

EXAMPLE OF CO-ORDINATE LIST
ON THE WGS-84 AND OBSTACLE SURVEY CONDUCTED AT:

-----**Airport**

Image Contr ol Page #	Station Name	Description	WGS 84 Latitude (deg min sec)			WGS 84 Longitude (deg min sec)			Orthometric Height (meters)	Orthometric Height (feet)
		Appendix E								
		FABL2003								
		Secondary Airport Control Station (Adopted FABL-2002)								
	BL1	16mm stud with aluminium ID collar set in concrete.	29	05	43.10026	S	26	18	17.99137	E 1345.632 4414.794
	BL2	16mm stud with aluminium ID collar set in concrete of culvert headwall.	29	05	47.44413	S	26	17	54.93595	E 1348.860 4425.385
	BLV0196	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	06	01.79948	S	26	18	02.36478	E 1345.900 4415.674
	FABL0196	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	06	22.46713	S	26	18	02.57507	E 1344.854 4412.242
	FABL296	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	06	22.05302	S	26	18	14.21910	E 1342.416 4404.243
	FABL0396	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	05	42.95483	S	26	18	30.41869	E 1343.639 4408.256
	FABL496	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	05	32.80135	S	26	18	32.37680	E 1342.237 4403.656
	FABL0596	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	04	50.96826	S	26	18	15.02715	E 1345.294 4413.685
	FABL696	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	04	51.39385	S	26	18	03.15713	E 1347.160 4419.807
	FABL0796	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	05	16.77757	S	26	17	04.19123	E 1358.802 4458.003
	FABL896	20mm iron pipe set in concrete with ID tag. Note height to top of concrete.	29	05	26.69932	S	26	17	02.02915	E 1358.298 4456.349
		Obstacles								
1	LP1	Top of light pole in front of Terminal Buildings	29	05	44.27982	S	26	17	54.51320	E 1374.765 4510.375
1	LP2	Top of light pole in front of Terminal Buildings	29	05	42.37821	S	26	17	52.77506	E 1374.851 4510.657
2	LP3	Top of light pole in front of Terminal Buildings	29	05	41.32398	S	26	17	50.60683	E 1374.701 4510.165
2	LP4	Top of light pole at SAAF base.	29	05	55.21268	S	26	18	19.15946	E 1369.860 4494.282
2	LP5	Top of light pole at SAAF base.	29	06	00.71143	S	26	18	18.52234	E 1370.234 4495.509
		Checks								
	BL1S		29	05	43.09914	S	26	18	17.99208	E 1345.599 4414.686
	BLV0196S		29	06	01.79993	S	26	18	02.36501	E 1345.901 4415.677
	FABL0196S		29	06	22.46585	S	26	18	02.57446	E 1344.824 4412.143
	FABL0296S		29	06	22.05204	S	26	18	14.21875	E 1342.452 4404.361
	FABL0396S		29	05	42.95348	S	26	18	30.41881	E 1343.652 4408.298
	FABL0496S		29	05	32.80140	S	26	18	32.37721	E 1342.245 4403.682
	FABL0596S		29	04	50.96805	S	26	18	15.02784	E 1345.279 4413.636
	FABL0696S		29	04	51.39293	S	26	18	03.15612	E 1347.137 4419.732
	FABL0796S		29	05	16.77727	S	26	17	04.19306	E 1358.890 4458.292
	FABL896S		29	05	26.69871	S	26	17	02.02908	E 1358.294 4456.336

APPENDIX D

CO-ORDINATE LIST GENERIC (EXAMPLE)

ON THE WGS-84 AND OBSTACLE SURVEY CONDUCTED AT:

_____ AIRPORT

	FAJS Johannesburg International									
	Degree Square 2628									
Point Name	WGS-84 Lat.	WGS-84 Long.	Height	Description	1997	1998	2002	2003	2004	Comments
Primary Airport Control Station										
T748	S261006.92393	E0281034.99438	1801.900	National Trigonometrical Beacon (Values as at 1997).	J5001PA					
T793	S260916.46709	E0281522.78828	1708.500	National Trigonometrical Beacon (Values as at 1997).	J5003PA					
T869	S261050.17365	E0281506.57508	1687.400	National Trigonometrical Beacon (Values as at 1997).	J5003PA					
Secondary Airport Control Stations										
FAJS01/97	S260956.37634	E0281457.58807	1678.601	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5001SA					
FAJS 02/97	S260956.98032	E0281452.03089	1680.005	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5002SA					
FAJS 03/97	S260954.60073	E0281450.59070	1679.362	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5003SA					
FAJS 04/97	S260955.11192	E0281452.61295	1679.693	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5004SA					
FAJS 05/97	S260803.66499	E0281522.65667	1673.218	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5005SA					
FAJS 06/97	S260805.98672	E0281531.87084	1673.081	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5006SA					
FAJS 07/97	S260802.81711	E0281527.37988	1674.673	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5007SA					
FAJS 08/97	S260804.70953	E0281526.79514	1674.636	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5008SA					
FAJS 09/97	S260757.34668	E0281529.07554	1674.863	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5009SA					
FAJS 10/97	S260815.97692	E0281527.79411	1675.982	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5010SA					
FAJS 11/97	S260925.07741	E0281351.86073	1695.348	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5011SA					
FAJS 12/97	S260920.97623	E0281353.17837	1697.342	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5012SA					
FAJS 13/97	S260833.84593	E0281403.23149	1691.004	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5013SA					
FAJS 14/97	S260615.51372	E0281452.42213	1675.389	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5014SA					
FAJS 15/97	S260614.89161	E0281450.74577	1675.965	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5015SA					
FAJS 16/97	S260945.43771	E0281500.10101	1680.946	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5016SA					
FAJS 17/97	S261003.91956	E0281447.82832	1681.193	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5017SA					
FAJS 18/97	S261004.77746	E0281449.61629	1681.740	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5018SA					
FAJS 19/97	S260850.28155	E0281408.18746	1695.500	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5019SA					
FAJS 20/97	S260850.94893	E0281402.43791	1695.877	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5020SA					
FAJS 21/97	S260847.68522	E0281357.89131	1695.637	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5021SA					
FAJS 22/97	S260628.07160	E0281452.12543	1673.803	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5022SA					
FAJS 23/97	S260624.93111	E0281447.63929	1676.477	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J4023SA					
FAJS 24/97	S260626.79169	E0281447.05864	1676.706	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5024SA					
FAJS 25/97	S260625.49475	E0281441.94509	1676.119	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5025SA					
FAJS 26/97	S260853.99296	E0281525.32868	1682.708	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5026SA					
FAJS 27/97	S260855.66821	E0281523.43862	1684.088	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5027SA					
FAJS 28/97	S260857.32630	E0281521.56362	1683.380	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5028SA					
FAJS 29/97	S260738.09685	E0281534.83002	1660.816	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5029SA					
FAJS 30/97	S260437.09705	E0281630.99902	1629.740	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5030SA					
FAJS 31/97	S260242.08567	E0281554.08519	1583.614	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5031SA					
FAJS 32/97	S261024.50021	E0281443.51109	1662.983	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5032SA					
FAJS 33/97	S261316.52910	E0281350.21802	1618.037	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5033SA					
FAJS 34/97	S261317.46952	E0281349.56754	1618.480	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5034SA					
FAJS 35/97	S261237.21226	E0281254.10137	1614.926	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5035SA					
FAJS 36/97	S261236.73800	E0281254.54212	1615.591	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5036SA					
FAJS 37/97	S260848.98988	E0281403.04527	1695.106	20mm iron pipe in concrete with ID tag. Height to top of concrete.	J5037SA					
FIRE	S260818.77726	E0281500.26789	1698.935	16mmstud with aluminium collar set in concrete roof of fire tower.					J5038S	
Working Points										
MAG N	S260814.86347	E0281458.04121	1670.377	Bolt with aluminium ID tag set in concrete kerbstone.						
Runway Entities										
THR-RW21L	S260806.63883	E0281526.19773	1674.610	No Mark	J5001RE					
TDP-RWY21R	S260638.17767	E0281443.53801	1677.570	No Mark	J5002RE					
THR-RWY21R	S260628.76109	E0281446.45305	1676.710	No Mark	J5003RE					
TDP-RWY03R	S260944.86531	E0281455.79250	1681.660	No Mark	J5004RE					
THR-RWY03R	S260953.17710	E0281453.21595	1679.510	No Mark	J5005RE					
THR-RWY03L	S260847.11143	E0281403.62487	1694.230	No Mark	J5006RE					
THR-RWY33	S260852.97564	E0281520.51718	1685.390	No Mark	J5007RE					
THR-RWY15	S260747.19152	E0281409.14344	1684.300	No Mark	J5008RE					
TDP-RWY21L	S260815.06170	E0281523.59122	1676.770	No Mark	J5009RE					
TDP-RWY33	S260847.51302	E0281514.60649	1684.830	No Mark	J5010RE					
THR-RWY15	S260751.55049	E0281413.87412	1682.920	No Mark	J5011RE					
TDP-RWY03L	S260835.54122	E0281407.21196	1691.230	No Mark	J5012RE					
Navigation Aids										
JA	S260437.37999	E0281630.91797	1629.740	NDB-JA	J5001NA					
JB	S260242.00403	E0281554.09177	1583.614	NDB	J5002NA					
JN	S261317.40044	E0281349.57602	1618.480	NDB	J5003NA					
JS300	S260925.626	E0281351.697	1700.667	VOR/DME Top centre of antenna array.			J5004NA			Re-surveyed
JS600	S260859.48738	E281328.66212		Centre of dome antenna cover of L-band radar.			J5005NA			
Instrument Landing System (ILS)										
JS200	S260615.05913	E0281450.69293	1675.732	Centre of antenna array at base of localizer.			J5006LS			Re-surveyed
JS201	S261004.50937	E0281449.70638	1681.754	Centre of antenna array at base of localizer.			J5007LS			Re-surveyed
JS202	S260757.65201	E0281528.97776	1674.925	Centre of antenna array at base of localizer.			J5008LS			Re-surveyed
JS203	S260816.04834	E0281527.77094	1676.079	Centre of antenna array at base of Glide Path.			J5009LS			Re-surveyed

APPENDIX E

SURVEY MARK INFORMATION (EXAMPLE)

Geodetic Datum: **WGS - 84**
zone: **WG 27**

WGS-84

Page 2

LIGHT POLES AT SAAF BASE "OBSTRUCTION"



APPENDIX F
FIELD BOOK / CALCULATION PAGES

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APPENDIX G

TGO ADDITIONAL REPORTS

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APPENDIX H

GPS DATA

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APPENDIX I
COMPLETE TGO FILE

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APPENDIX J

INDEX PLAN

ON THE WGS-84 AND OBSTACLE SURVEY CONDUCTED AT:

AIRPORT

RUNWAY 03L

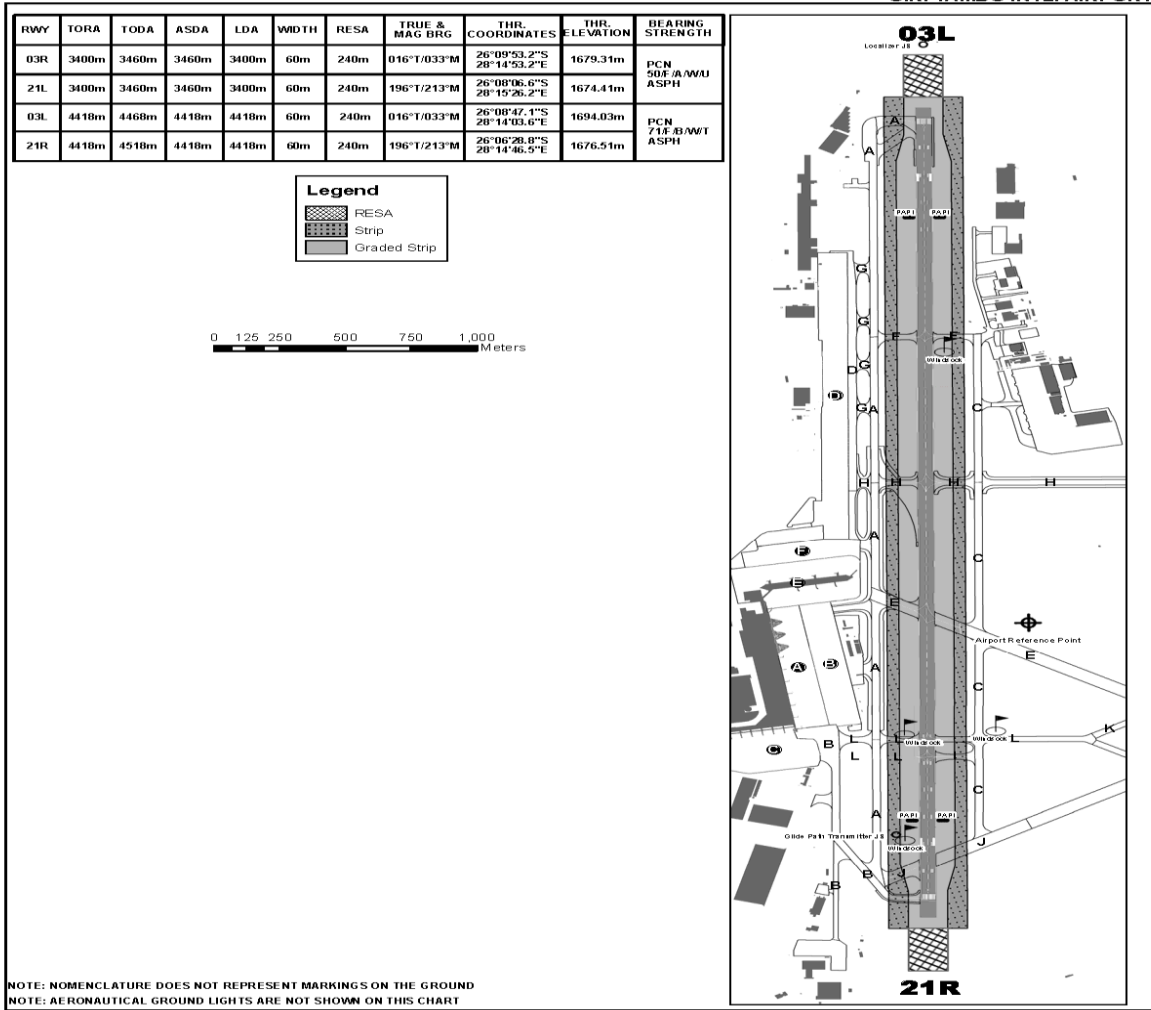
1 JUNE 2008

RUNWAY CHARACTERISTICS

ARP 26°08' 01.3" S
28°14' 32.3" E
ELEV. 1679.133 m

TWR 118.1
GND 121.9

JOHANNESBURG, SOUTH AFRICA

O.R. TAMBO INTL. AIRPORT

APPENDIX K**ANNEX 14 OBSTACLE ASSESSMENT**

ON THE WGS-84 AND OBSTACLE SURVEY CONDUCTED AT:

_____ AIRPORT

Obstacle Number	Obstacle Elevation	ICAO Surface	Elevation	Result	Penetrate
Example	 m	Conical	 M	Below or Above	 m

APPENDIX L

CERTIFICATION FROM FLIGHT PROCEDURE SPECIALIST

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APPENDIX M

SACAA AUDIT SCHEDULE

AIRPORT	SACAA AUDIT
O R TAMBO	MAY
CAPE TOWN	JULY
KING SHAKA	SEPTEMBER
PORT ELIZABETH	NOVEMBER
EAST LONDON	NOVEMBER
GEORGE	NOVEMBER
BRAM FISCHER	JUNE
KIMBERLEY	JUNE
UPINGTON	OCTOBER