

LA68 UPS DUAL SOLUTION GENERATORRADIO PARK BOQ						
ITEM	DESCRIPTION	UNIT	EST QTY	MATERIAL	LABOUR	TOTAL
	The supply, installation, testing, commissioning and a 52 week defects liability period in accordance with this bill of material, Local Supply Authority's by-laws & regulations, National Building Regulations, Regulations of Telkom, SANS 10142-1: 2003 (Code of Practice), Occupational Health and Safety Act, General Conditions of Contract, Local fire regulations and drawings.					
1	<u>Preliminary and General</u>					
1.1	<u>Fixed charge items</u>	Sum	1			0
	Site establishment: Allow for site establishment, storage of plant, materials and equipment including protection thereof.					
1.2	Site disestablishment	Sum	1			0
	Allow for the demolishing and removal of the site camp upon completion of the contract.					
1.3	Commissioning and testing	Sum	1			0
	Supply all test equipment and labour for testing and commissioning of the final installation.					
1.4	Guarantee	Sum	1			
	Allow for a guarantee period of 12 months against defect in equipment, material and workmanship, but wear and tear and normal against defect in equipment, material and maintenance excluded.					
1.5	Performance guarantee of the work	Sum	1			0
1.6	SASRIA Insurance to the value of R 5000 000-00	Sum	1			0
1.7	Public liability / 3rd party to the value of R 20 000 000-00.	Sum	1			0
1.8	AS BUILT DRAWINGS					
	The marking - up of "As Built" drawings and submitting to the engineer at the end of the installation.	Sum	1			0
1.9	Compiling and submitting operating and maintenance manuals	Sum	1			0
1.10	Additional fixed charge items Any additional item(s) that the tenderer may wish to detail and price.	Sum	1			0
	<b>SUB-TOTAL TO BE CARRIED OVER TO SUMMARY PAGE</b>					

2	<b><u>ELECTRICAL INSTALLATION</u></b>					
2.1	<b><u>HT INSTALLATION</u></b>					
2.1.1	Dry Type 1600kVA step down transformer 11000V to 400V.	each	2			R -
2.1.2	95mm <sup>2</sup> x 3 core 11kV cabling for 1600 KVA transformer.	m	400			R -
2.1.3	95mm <sup>2</sup> x 3 core 11kV cabling for 1650 KVA generator.	m	900			R -
2.1.4	95mm <sup>2</sup> BCEW	m	1300			R -
2.1.5	95mm <sup>2</sup> x 3 core 11kV cable termination.	each	6			R -
2.1.6	Supply, install, programme and commission protection relay to replace the existing protection relay including wiring and metal work.	each	2			R -
	PVC / SWA / PVC cable glands complete including conductor & earth termination, lugs, tapes, drilling etc					
	1.5mm <sup>2</sup> x 6 core for temp	m	400			R -
2.1.7	Galvanised steel cable ladders OL76 (2mm thick) secured to concrete walls and soffits, including support brackets, splices, stainless steel nuts and bolts and all accessories as specification.					
a	200mm	m	500			R -
b	100mm	m	400			R -
c	200mm internal bend	No	6			R -
d	200mm external bend	No	10			R -
e	200mm horizontal bend	No	8			R -
f	100mm internal bend	No	26			R -
g	100mm external bend	No	22			R -
h	100mm horizontal bend	No	21			R -

2.2	LT INSTALLATION RADIO PARK PLANT ROOM					
2.2.1	BUSBARS BETWEEN TRANSFOMER AND CHANGE OVER PANELS FEEDER A & B					
a	2350A RWBN + external earth aluminium busbar Including hanging brackets with tin-plated connectors.	m	80			R -
b	2350A bus trunking elbows.	each	4			R -
c	2350A bus trunking panel end feed.	each	2			R -
d	Dry Transformer connection box	each	2			R -
e	Transformer flexibles (set).	each	2			R -
2.2.2	CABLES BETWEEN 1650KVA GEN AND STEP UP TRANSFORMER					
a	185mm <sup>2</sup> x 4-core PVC-SWA cable.	m	200			R -
	95mm BCEW	m	200			R -
2.2.3	Galvanised steel cable ladders OL76 (2mm thick) secured to concrete walls and soffits, including support brackets, splices, stainless steel nuts and bolts and all accessories as specification.					
a	600mm	m	600			R -
b	600mm internal bend	No	12			R -
c	600mm external bend	No	8			R -
d	600mm horizontal bend	No	8			R -
e	300mm	m	300			R -
f	200mm internal bend	No	3			R -
g	200mm external bend	No	4			R -
h	200mm horizontal bend	No	4			R -
i	200mm	m	200			R -
j	200mm internal bend	No	4			R -
l	200mm external bend	No	6			R -
k	200mm horizontal bend	No	8			R -
m	100mm	m	300			R -
n	200mm internal bend	No	4			R -
o	200mm external bend	No	2			R -
p	200mm horizontal bend	No	4			R -
2.2.4	Cables:					
	<b>Feeder A</b>					
2.2.4.1	Rates to include for supply, delivery and installation, but excluding trenching, terminations, joints and cable supports for PVC/SWA 600/1000V copper cables laid in trenches, installed in sleeves, fixed on surface and laid on trays:					
a	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between 1000KVA gen and change over panel 4x in parallel)	m	800			R -
b	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between Change over panel and UPS input panel 4x in parallel)	m	200			R -
c	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between Change over panel and UPS output panel 4x in parallel)	m	200			R -
d	185mm <sup>2</sup> x 4-core PVC-SWA cable.(between UPS and UPS input 2xparallel per unit)	m	160			R -
e	185mm <sup>2</sup> x 4-core PVC-SWA cable.(between UPS and UPS output 2x in parallel per unit )	m	160			R -
f	185mm <sup>2</sup> x 4-core PVC-SWA cable.(between UPS output and existing UPS DB 2x in parallel per unit )	m	200			R -

	<b>Feeder B</b>					
2.2.4.2	Rates to include for supply, delivery and installation, but excluding trenching, terminations, joints and cable supports for PVC/SWA 600/1000V copper cables laid in trenches, installed in sleeves, fixed on surface and laid on trays:					
a	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between 1000KVA gen and change over panel 4x in parallel)	m	800			R -
b	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between Change over panel and UPS input panel 4x in parallel)	m	200			R -
c	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between Change over panel and UPS output panel 4x in parallel)	m	200			R -
d	150mm <sup>2</sup> x 4-core PVC-SWA cable.(between UPS and UPS input 2xparallel per unit)	m	160			R -
e	150mm <sup>2</sup> x 4-core PVC-SWA cable.(between UPS and UPS output 2x in parallel per unit )	m	160			R -
	<b>BUS COUPLER BETWEEN FEEDER A&amp;B</b>					
2.2.4.3	Rates to include for supply, delivery and installation, but excluding trenching, terminations, joints and cable supports for PVC/SWA 600/1000V copper cables laid in trenches, installed in sleeves, fixed on surface and laid on trays:					
a	185mm <sup>2</sup> x 4-core PVC-SWA cable.(Between feeder A & B 4x in parallel)	m	400			R -
2.2.5	<b>Cable Terminations:</b>					
2.2.5.1	For PVC-SWA cables including armour glands, shrouds, lugs and connections:					
a	185mm <sup>2</sup> x 4-core copper.	each	80			R -
b	150mm <sup>2</sup> x 4-core copper.	each	26			R -
c	120mm <sup>2</sup> x 4-core copper.	each	16			R -
2.2.6	<b>Earthing:</b>					
2.2.6.1	Bare copper earth conductors installed with cables and drawn into conduits with PVC conductors as specified in the Specification, including terminations:					
a	95mm <sup>2</sup> .	m	3680			R -
b	70mm <sup>2</sup> .	m	1000			R -
2.2.7	<b>Panels including COC:</b>					
a	UPS A&B INPUT & OUTPUT PANEL	each	1			R -
b	FEEDER A SYNCHRONISING PANEL	each	1			R -
c	FEEDER B SYNCHRONISING PANEL	each	1			R -
d	HVAC SCHEMATIC LAYOUT PANEL	each	1			R -
e	MV SYNCHRONISING PANEL	each	1			R -
f	UPS K1 DB ( dwg: ST15058 Sheet 1 of 33)	each	2			R -
g	IBM ROOM1 DB ( dwg: ST15058 Sheet 2 of 33)	each	1			R -
h	IBM ROOM2 DB ( dwg: ST15058 Sheet 3 of 33)	each	2			R -
i	SECURITY K1 UPS DB ( dwg: ST15058 Sheet 4 of 33)	each	1			R -
j	SA FM UPS DB ( dwg: ST15058 Sheet 5 of 33)	each	1			R -
k	MCR UPS DB ( dwg: ST15058 Sheet 6 of 33)	each	2			R -
l	CHANNEL AFRICA UPS DB ( dwg: ST15058 Sheet 7 of 33)	each	1			R -

m	RSG FM UPS DB ( dwg: ST15058 Sheet 8 of 33)	each	1			R	-
n	GROUND FLOOR PLANT ROOM UPS DB ( dwg: ST15058 Sheet 9 of 33)	each	1			R	-
o	5 FM UPS DB ( dwg: ST15058 Sheet 10 of 33)	each	2			R	-
p	METRO FM UPS DB ( dwg: ST15058 Sheet 11 of 33)	each	2			R	-
q	RADIO 2000 GROUND FLOOR UPS DB ( dwg: ST15058 Sheet 12 of 33)	each	2			R	-
r	T6 UPS DB ( dwg: ST15058 Sheet 13 of 33)	each	1			R	-
s	A1 C RISER UPS DB ( dwg: ST15058 Sheet 14 of 33)	each	1			R	-
t	LESEDI FM UPS DB ( dwg: ST15058 Sheet 15 of 33)	each	2			R	-
u	UMHLOBO UPS DB ( dwg: ST15058 Sheet 16 of 33)	each	2			R	-
v	RADIO 2000 A UPS DB ( dwg: ST15058 Sheet 17 of 33)	each	1			R	-
w	RADIO 2000 B FM UPS DB ( dwg: ST15058 Sheet 18 of 33)	each	1			R	-
x	UKHOZI A UPS DB ( dwg: ST15058 Sheet 19 of 33)	each	2			R	-
y	UKHOZI B UPS DB ( dwg: ST15058 Sheet 20 of 33)	each	1			R	-
z	MOTSWEDING UPS DB ( dwg: ST15058 Sheet 21 of 33)	each	1			R	-
aa	LOTUS FM UPS DB ( dwg: ST15058 Sheet 22 of 33)	each	1			R	-
ab	6TH FLOOR RISER ACCESS CONTROL UPS DB ( dwg: ST15058 Sheet 23 of 33)	each	1			R	-
ac	22ND FLOOR RISER ACCESS CONTROL UPS DB ( dwg: ST15058 Sheet 24 of 33)	each	1			R	-
2.2.8	Supply and install Rack PDU						
	HPE G2 Basic 3.6kVA/IEC C20 Detachable 16A/100-240V Outlets (12) C13/1U Horizontal WW PDU	each	60			R	-
2.2.9	Supply and install Automatic Transfer Switch (Power)						
	Rack ATS, 230V, 10A, C14 in, (12) C13 out complete with bracket kit, rear rails, rack ATS	each	60			R	-
2.2.10	Supply and install the following CEE –form						
	16A 3-pin Onesto (OS113) Industrial plug .	each	200			R	-
	16A 3 pin Onesto (OS113) Industrial wall mounted socket with 20mm entry.	each	200			R	-
2.2.11	Cables:						
	120mm <sup>2</sup> x 4-core PVC-SWA cable	m	260			R	-
	95mm <sup>2</sup> x 4-core PVC-SWA cable.	m	100			R	-
	70mm <sup>2</sup> x 4-core PVC-SWA cable.	m	660			R	-
	50mm <sup>2</sup> x 4-core PVC-SWA cable.	m	700			R	-
	35mm <sup>2</sup> x 4-core PVC-SWA cable.	m	600			R	-
	25mm <sup>2</sup> x 4-core PVC-SWA cable.	m	1200			R	-
	16mm <sup>2</sup> x 4-core PVC-SWA cable.	m	470			R	-
	16mm <sup>2</sup> x 2-core PVC-SWA cable.	m	0			R	-
	10mm <sup>2</sup> x 4-core PVC-SWA cable.	m	210			R	-
	10mm <sup>2</sup> x 3-core PVC-SWA cable.	m	0			R	-
	6mm <sup>2</sup> x 4-core PVC-SWA cable.	m	120			R	-
	4mm <sup>2</sup> x 4-core PVC-SWA cable.	m	0			R	-
	2.5mm <sup>2</sup> x 4-core PVC-SWA cable.	m	0			R	-

2.2.12	SABS approved surfix cable ( Norsk) laid on ceiling tiles, drawn into conduit chased into walls or installed in wiring channel					
	2,5mm² x 3-core.	m	6000			R -
2.2.13	Cable Terminations:					
	For PVC-SWA cables including armour glands, shrouds, lugs and connections:					
	120mm² x 4-core PVC-SWA cable	m	6			R -
	95mm² x 4-core PVC-SWA cable.	m	10			R -
	70mm² x 4-core PVC-SWA cable.	m	10			R -
	50mm² x 4-core PVC-SWA cable.	m	8			R -
	35mm² x 4-core PVC-SWA cable.	m	4			R -
	25mm² x 4-core PVC-SWA cable.	m	22			R -
	16mm² x 4-core PVC-SWA cable.	m	8			R -
	16mm² x 2-core PVC-SWA cable.	m	18			R -
	10mm² x 4-core PVC-SWA cable.	m	15			R -
	10mm² x 3-core PVC-SWA cable.	m	2			R -
	6mm² x 4-core PVC-SWA cable.	m	4			R -
2.2.14	Cable Trays:					
	Approved galvanised wire mesh cable trays suspended from concrete slabs by means of threaded rods or similar approved method, including offsets as per drawings:					
	200 wide.	m	1200			R -
	100 wide.	m	1800			R -
	<b>SUB-TOTAL TO BE CARRIED OVER TO SUMMARY PAGE</b>					
3	<b>SECTION 3 : PC AMOUNTS, TESTING &amp; COMMISSIONING</b>					
	PC amount					
3.1	Allow a provisional sum of R600 000 for electrical installation in studios and other critical broadcasting areas.	Sum	1		R 600 000.00	R 600 000.00
	Attendance and profit on provisional amount	%				
3.2	Temporary installation during shutdown	sum	1		R 300 000.00	R 300 000.00
	Attendance and profit on provisional amount .....%	sum	1			
	<b>SUB-TOTAL TO BE CARRIED OVER TO SUMMARY PAGE</b>					

4	GENERATORS					
4.1	Primary Offer Feeder A- Generator Set – 1000kVA (Prime Rated) with remote radiators as per the specification including 900L diesel day tank with fuel level indicator. The fuel level to start pump at 50% and stop pump at 90%. At 100% the fuel alarm should be send and a second stop activated. at 30% low level fuel alarm should also be send. The set shall include remote radiator, piping between radiator and gen, pump, valves, cabling and etc.. Radiator to be located one floor above the generator room.	each	2		R	-
4.2	Control cables between generator/controller/changer over panel	Sum	1		R	-
4.3	Sound attenuator rated for 65DB at 7m for Feeder A generators ( Inlet & outlet)	Sum	1		R	-
4.4	Generator room ventilation	Sum	1		R	-
4.5	Stainless steel fuel line from bulk tank to tank and return line in case the day tank is overflow. The price shall include joining into the existing fuel tank, joins, fixing material, opening through walls e.c.t	m	150		R	-
4.6	Primary Offer Feeder B- Generator Set – 1000kVA (Prime Rated) with remote radiators as per the specification including 900L diesel day base tank with fuel level indicator. The fuel level to start pump and 50% and stop pump at 90%. At 100% the fuel alarm should be send and a second stop activated. at 30% low level fuel alarm should also be send. The set shall include remote radiator, piping between radiator and gen, pump, valves, cabling and etc.. Radiator to be located two floor above the generator room.	each	2		R	-
4.7	Control cables between generator/controller/changer over panel	Sum	1		R	-
4.8	Stainless steel fuel line from bulk tank to tank and return line in case the day tank is overflowing. The price shall include joining into the existing fuel tank, joins, fixing material, opening through walls e.c.t	m	60		R	-
4.9	Generator room ventilation	Sum	1		R	-
4.10	Supply and install exhaust system including lagging and cladding, use non-corrosive material.	each	4		R	-
4.11	Primary Offer - Containerised Diesel Generator 1650 kVA (Prime Rated) Set including 900L base tank with fuel level indicator. The fuel level to start pump and 50% and stop pump at 90%. At 100% the fuel alarm should be send and a second stop activated. at 30% low level fuel alarm should also be send. The base tank shall have a double skinned wall to have 110% overfill capacity.	Sum	1		R	-
4.12	Supply and install exhaust system including lagging and cladding, use non-corrosive material.	Sum	1		R	-
4.13	Installation of diesel lines from bulk tank to 1650KVA generator including pump, solenoid valve and cabling	m	400		R	-
4.14	Control cables	Sum	1		R	-
4.15	Step up/down Dry Type 1600kVA transformer 400V to 11000V installed in a weather proof container for out door installation. Allowance must be made to supply auxiliary from this transformer during normal operation.	Sum	1		R	-
4.16	Remote monitoring system for 5 generators, note the different location of the generators.	Sum	1		R	-

4.15	BMS integration for 5 generators ( SABC BMS maintained by Atbro, liaise with Atbro for the integration on 011 794 7900 or email: terry@atbro.co.za)	Sum	1			R -
4.16	Delivery, rigging and installation of the new generators.	each	5			R -
4.17	Trenching for LV cabling	m	120			R -
4.18	Trenching for MV cabling	m	120			R -
4.19	Earth mat 2x20KG 70mm <sup>2</sup> stranded earth copper. Joins must ensure electrical continuity through soldering, exoweld or weldsoldering	Sum	1			R -
4.20	Decommissioning existing generators and removal from site	each	2			R -
4.21	110mm sleeves with slow bend	m	150			R -
4.22	50mm sleeves with slow bend	m	100			R -
4.23	Manhole 1mx1mx1m deep with heavy duty manhole cover	each	3			0
4.24	1.6mm <sup>2</sup> galvanized draw wire	m	200			0
4.25	Rigging of the generators and temporary support of the slab during rigging. Please note the route restrictions.	Sum	1			0
	<b>SUB-TOTAL TO BE CARRIED OVER TO SUMMARY PAGE</b>					



PROVISIONAL BILL OF QUANTITIES				
SUMMARY PAGE				
	DESCRIPTION:			
1	Preliminary and General		R	-
2	Electrical Installation		R	-
3	PC Amount, Testing and Commissioning		R	-
4	Generators		R	-
	Sub Total:		R	-
5	Contingency amount (10%):This amount will be under the control of SABC and may be deducted after approval only.		R	-
	<b>TOTAL (Carry over to Form of Tender)</b>		<b>R</b>	<b>-</b>