

CC_BFP_High	6225	102.6	dBA	960	480	-49804	-3718131	137
CC_AUX_XFMR	6225	92.6	dBA	960	480	-49807	-3718128	136
CC_GSUT	6225	97.6	dBA	960	480	-49809	-3718126	138
CC_St_SO_UHN	6225	104.9	dBA	960	480	-49820	-3718130	182
CC_St_OD_UHN	6225	78.2	dBA	960	480	-49819	-3718131	162
CC_BFP_Low	6226	102.6	dBA	960	480	-49829	-3718162	136
CC_BFP_High	6226	102.6	dBA	960	480	-49831	-3718160	136
CC_AUX_XFMR	6226	92.6	dBA	960	480	-49834	-3718157	135
CC_GSUT	6226	97.6	dBA	960	480	-49836	-3718156	137
CC_St_SO_UHN	6226	104.9	dBA	960	480	-49847	-3718160	182
CC_St_OD_UHN	6226	78.2	dBA	960	480	-49846	-3718160	162
CC_BFP_Low	6227	102.6	dBA	960	480	-49856	-3718191	136
CC_BFP_High	6227	102.6	dBA	960	480	-49859	-3718189	136
CC_AUX_XFMR	6227	92.6	dBA	960	480	-49861	-3718187	135
CC_GSUT	6227	97.6	dBA	960	480	-49863	-3718185	137
CC_St_SO_UHN	6227	104.9	dBA	960	480	-49874	-3718189	182
CC_St_OD_UHN	6227	78.2	dBA	960	480	-49874	-3718189	162
CC_BFP_Low	6228	102.6	dBA	960	480	-49883	-3718221	135
CC_BFP_High	6228	102.6	dBA	960	480	-49886	-3718218	135
CC_AUX_XFMR	6228	92.6	dBA	960	480	-49889	-3718216	134
CC_GSUT	6228	97.6	dBA	960	480	-49891	-3718214	136
CC_St_SO_UHN	6228	104.9	dBA	960	480	-49901	-3718218	181
CC_St_OD_UHN	6228	78.2	dBA	960	480	-49901	-3718218	161
CC_BFP_Low	6229	102.6	dBA	960	480	-50219	-3718581	129
CC_BFP_High	6229	102.6	dBA	960	480	-50222	-3718579	129
CC_AUX_XFMR	6229	92.6	dBA	960	480	-50224	-3718576	128
CC_GSUT	6229	97.6	dBA	960	480	-50226	-3718574	130
CC_St_SO_UHN	6229	104.9	dBA	960	480	-50237	-3718578	175

CC_St_OD_UHN	6229	78.2	dBA	960	480	-50237	-3718579	155
CCCW Coolers	72	112.7	dBA	960	480	-50171	-3718393	133
CCCW Coolers	72	112.7	dBA	960	480	-50292	-3718520	129
Air Cooled Condenser	72	112.7	dBA	960	480	-50229	-3718495	130
Air Cooled Condenser	72	112.7	dBA	960	480	-50193	-3718457	130
CCCW Coolers	73	112.7	dBA	960	480	-49840	-3718039	138
CCCW Coolers	73	112.7	dBA	960	480	-49975	-3718186	136
Air Cooled Condenser	73	112.7	dBA	960	480	-49914	-3718158	136
Air Cooled Condenser	73	112.7	dBA	960	480	-49873	-3718113	137
CCCW Coolers TEST	7a2_test	97.6	dBA	960	480	-50653	-3718409	126
Ac_Tr1	8	100.3	dBA	960	480	-49559	-3718446	135
Ac_Tr2	8	100.3	dBA	960	480	-49544	-3718431	136
Ac_Tr3	8	100.3	dBA	960	480	-49529	-3718416	136
Ac_Tr4	8	100.3	dBA	960	480	-49514	-3718402	136
Ac_Tr1	9	100.3	dBA	960	480	-49394	-3718023	141
Ac_Tr2	9	100.3	dBA	960	480	-49381	-3718009	142
Ac_Tr3	9	100.3	dBA	960	480	-49367	-3717993	142
Ac_Tr4	9	100.3	dBA	960	480	-49354	-3717978	142
11_St_OD_UHN	s11	78.2	dBA	960	480	-50092	-3718489	152
11_St_SL_UHN	s11	97.6	dBA	960	480	-50092	-3718490	142
11_St_SO_UHN	s11	104.9	dBA	960	480	-50093	-3718489	156
11_St_SL_UHN	s12	97.6	dBA	960	480	-50119	-3718519	141
11_St_OD_UHN	s12	78.2	dBA	960	480	-50119	-3718518	151
11_St_SO_UHN	s12	104.9	dBA	960	480	-50120	-3718518	155
11_St_SL_UHN	s21	97.6	dBA	960	480	-50176	-3718581	141
11_St_OD_UHN	s21	78.2	dBA	960	480	-50177	-3718580	151
11_St_SO_UHN	s21	104.9	dBA	960	480	-50177	-3718580	155
11_St_SL_UHN	s22	97.6	dBA	960	480	-50203	-3718610	141

11_GT_Roof	31	97.9	dBA	960	480	n/a	n/a	10.5
11_GT_Roof	32	97.9	dBA	960	480	n/a	n/a	10.5
11_GT_Roof	41	97.9	dBA	960	480	n/a	n/a	10.5
11_GT_Roof	42	97.9	dBA	960	480	n/a	n/a	10.5
11_GT_Roof	43	97.9	dBA	960	480	n/a	n/a	10.5
Description	Source ID	Sound Power	Unit	Daytime Operation	Night-time Operation	Coordinates		
				(min)	(min)	(X)	(Y)	(Z)
11UMB-E Gas Turbine Building East Wall	11	88	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	11	93	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	11	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	11	120	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	12	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	12	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	12	93	dBA	960	480	n/a	n/a	n/a
11UMB-E Gas Turbine Building East Wall	12	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	21	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	21	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building	21	93	dBA	960	480	n/a	n/a	n/a

North Wall								
11UMB-E Gas Turbine Building East Wall	21	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	22	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	22	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	22	93	dBA	960	480	n/a	n/a	n/a
11UMB-E Gas Turbine Building East Wall	22	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	31	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	31	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	31	93	dBA	960	480	n/a	n/a	n/a
11UMB-E Gas Turbine Building East Wall	31	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	32	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	32	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	32	93	dBA	960	480	n/a	n/a	n/a
11UMB-E Gas Turbine Building East Wall	32	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	41	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	41	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	41	93	dBA	960	480	n/a	n/a	n/a

11UMB-E Gas Turbine Building East Wall	41	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	42	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	42	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	42	93	dBA	960	480	n/a	n/a	n/a
11UMB-E Gas Turbine Building East Wall	42	88	dBA	960	480	n/a	n/a	n/a
11UMB-S Gas Turbine Building South Wall	43	115	dBA	960	480	n/a	n/a	n/a
11UMB-W Gas Turbine Building West Wall	43	120	dBA	960	480	n/a	n/a	n/a
11UMB-N Gas Turbine Building North Wall	43	93	dBA	960	480	n/a	n/a	n/a
11UMB-E Gas Turbine Building East Wall	43	88	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6221	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6221	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6222	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6222	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6223	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6223	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6224	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6224	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6225	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6225	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6226	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6226	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6227	98	dBA	960	480	n/a	n/a	n/a

CC_HRSG	6227	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6228	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6228	117	dBA	960	480	n/a	n/a	n/a
CC_CTG_Pkg	6229	98	dBA	960	480	n/a	n/a	n/a
CC_HRSG	6229	117	dBA	960	480	n/a	n/a	n/a
CC_STG_Pkg	72	118	dBA	960	480	n/a	n/a	n/a
CC_STG_Pkg	72	118	dBA	960	480	n/a	n/a	n/a
CC_STG_Pkg	73	118	dBA	960	480	n/a	n/a	n/a
CC_STG_Pkg	73	118	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT1	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT1	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT1	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT1	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT2	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT2	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT3	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT3	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT4	8	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT4	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT2	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT2	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT3	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT3	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT4	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT4	8	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT1	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT1	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT1	9	96	dBA	960	480	n/a	n/a	n/a

Ac_En2_GT1	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT2	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT2	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT3	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT3	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En1_GT4	9	96	dBA	960	480	n/a	n/a	n/a
Ac_En2_GT4	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT2	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT2	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT3	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT3	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT4	9	96	dBA	960	480	n/a	n/a	n/a
Ac_Ex1_GT4	9	96	dBA	960	480	n/a	n/a	n/a

APPENDIX C

Calculated Noise Levels at Discrete Receptors

Table C-1a. Calculated Noise Levels at Discrete Receptors

Receptors	Scenarios							
	OC		CC		CC-INT		CC-SUB	
	Day	Night	Day	Night	Day	Night	Day	Night
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)
MP1	51.9	52.3	56	56.4	53.3	53.7	51.8	52.2
MP2	41.8	42.4	42.7	43.2	42	42.5	41.8	42.3
MP3	59.3	59.6	67.9	68.2	62.9	63.1	59.3	59.6
R1 nw	60.8	61	73.4	73.5	66.8	66.9	60.7	60.9
R2 nw	61.6	61.9	74	74.1	67.4	67.5	61.4	61.6
R3 nw	56.5	56.9	62.7	63.1	59.1	59.4	56.4	56.7
R4 ne	52.8	53.3	57.5	58	54.6	55	52.6	53
R5 se	53.5	53.8	57.5	58	54.9	55.2	53.6	54
R6 se	56.6	56.9	61.4	61.8	58.1	58.4	56.5	56.8
R7 se	56.3	56.6	60.2	60.6	57.6	57.9	56.4	56.7
R8 sw	59.3	59.5	62.9	63.3	60.3	60.6	59.4	59.6
R9 sw	62.1	62.2	70.5	70.8	66	66.1	62.2	62.4

Receptors	Scenarios							
	OC+A		CC+INT+A		CC+SUB+A		Acacia	
	Day	Night	Day	Night	Day	Night	Day	Night
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)
MP1	54.5	55.0	55.3	55.8	54.5	54.9	51.1	51.6
MP2	42.0	42.6	42.2	42.7	42.0	42.5	28.2	28.7
MP3	59.4	59.7	62.9	63.1	59.4	59.7	40.1	40.6
R1 nw	60.8	61.0	66.8	66.9	60.7	60.9	39	39.6
R2 nw	61.7	62.0	67.4	67.5	61.5	61.7	43.5	44.1
R3 nw	57.2	57.6	59.5	59.8	57.1	57.5	49	49.5
R4 ne	55.3	55.8	56.4	56.9	55.2	55.7	51.8	52.3
R5 se	55.4	55.8	56.4	56.7	55.5	55.9	50.9	51.4
R6 se	57.0	57.3	58.4	58.7	56.9	57.2	46.2	46.7
R7 se	56.3	56.6	57.6	57.9	56.4	56.7	36.3	36.8
R8 sw	59.3	59.5	60.3	60.6	59.4	59.6	33.1	33.7
R9 sw	62.1	62.2	66.0	66.1	62.2	62.4	37.8	38.4

APPENDIX D

Graphical Results from Noise Modelling

1. Existing Situation: Open Cycle Gas Turbine units (9 units, i.e. 4 existing and 5 in construction phase)

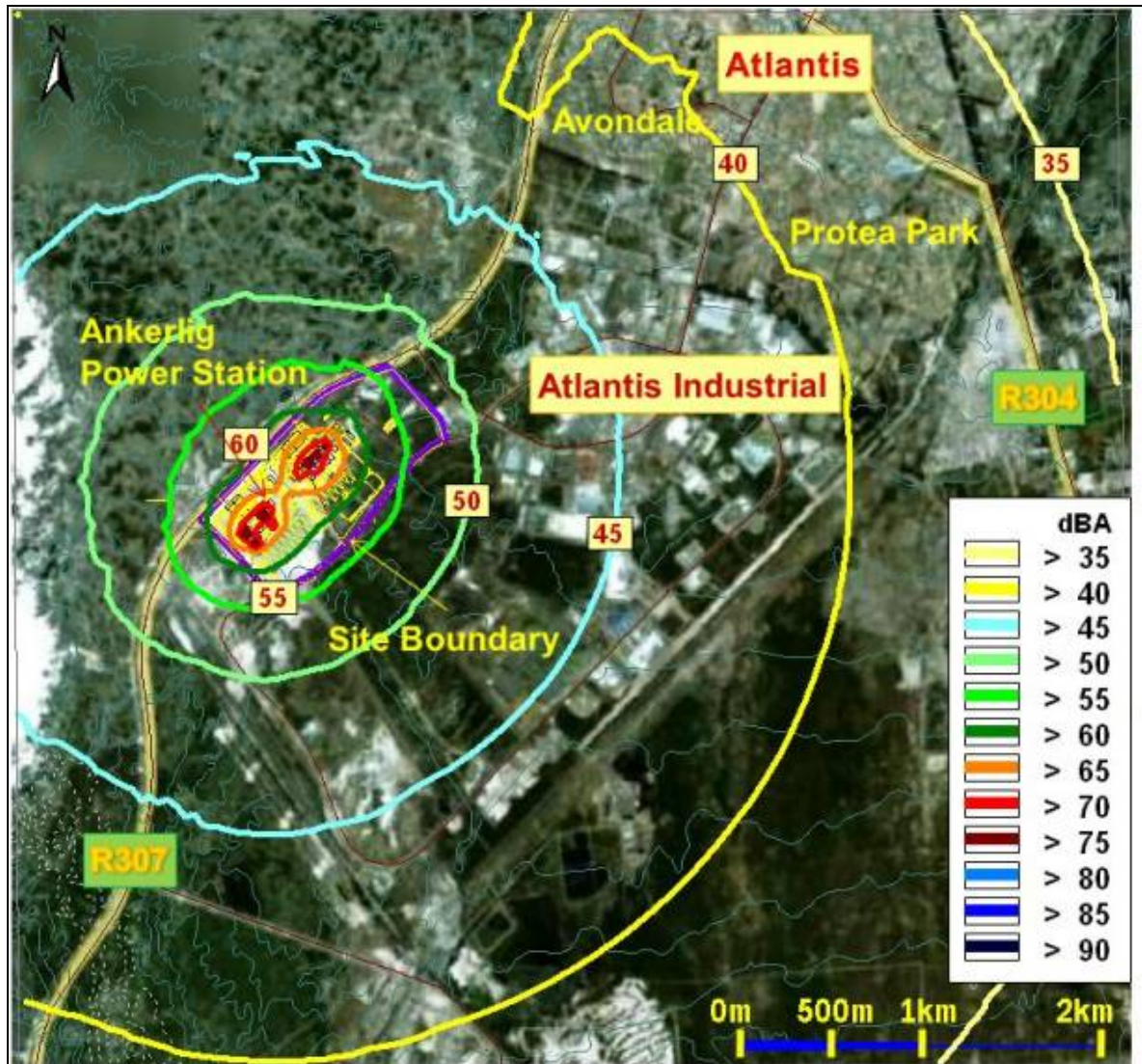


Figure D-1-a. Scenario 1: Day-time Noise Levels

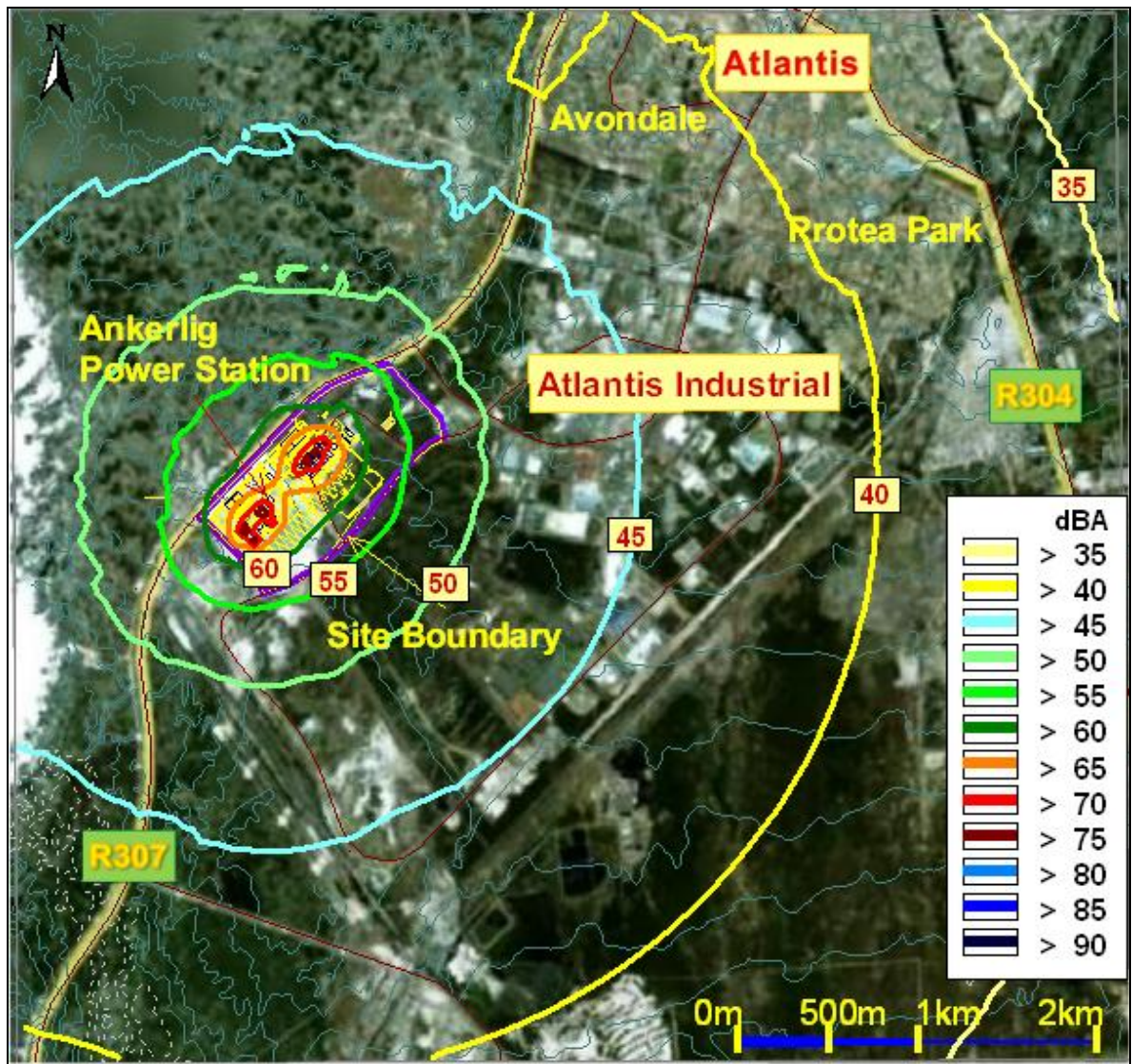


Figure D-1-b. Scenario 1: Night-time Noise Levels

2. Scenario 2: Combined Cycle Gas Turbine units(9 units)

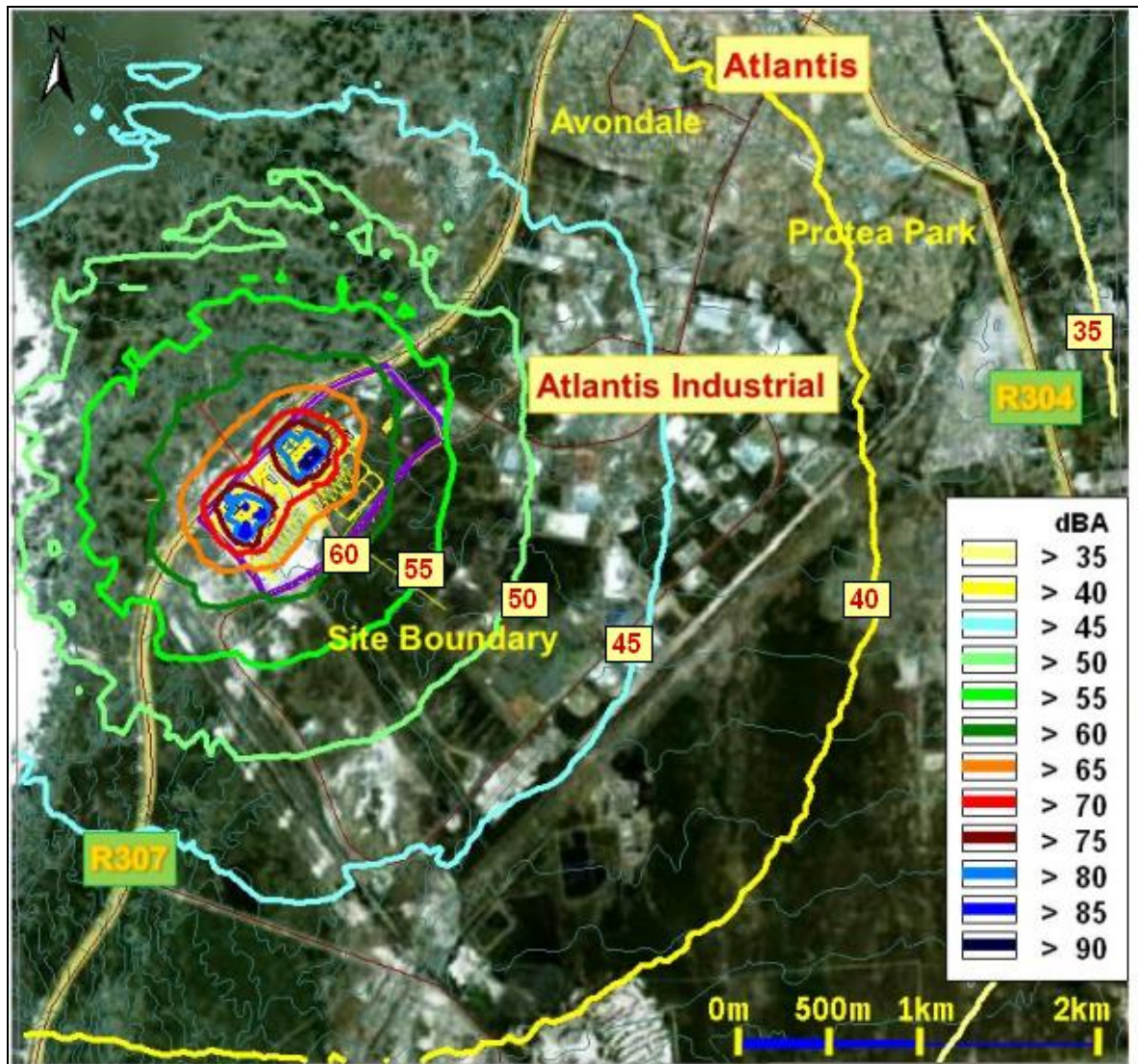


Figure D-2-a. Scenario 2: Day-time Noise Levels

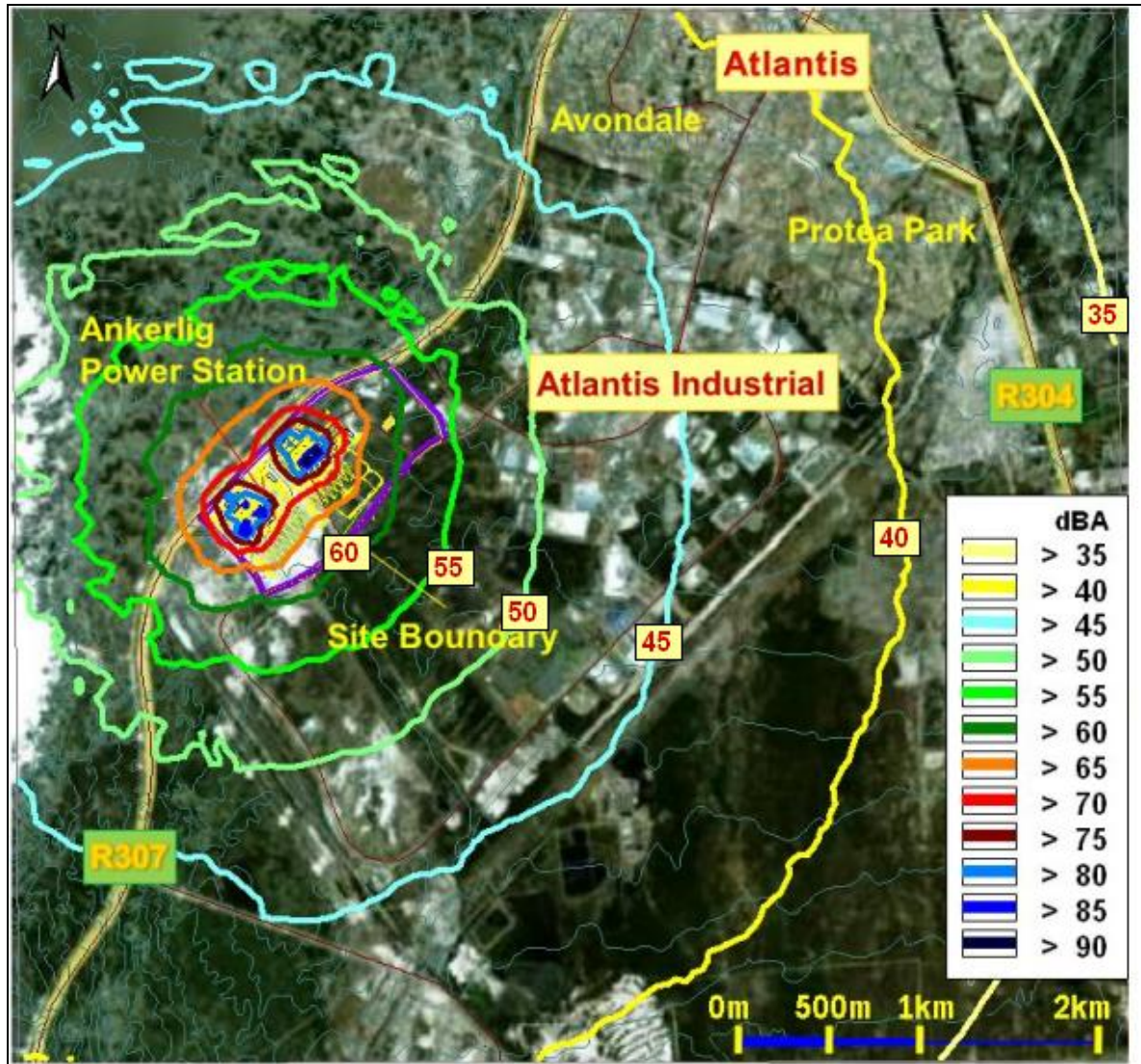


Figure D-2-b. Scenario 2: Night-time Noise Levels

3. Scenario 3: Combined Cycle Gas Turbine units + Intermediate Mitigation Measures

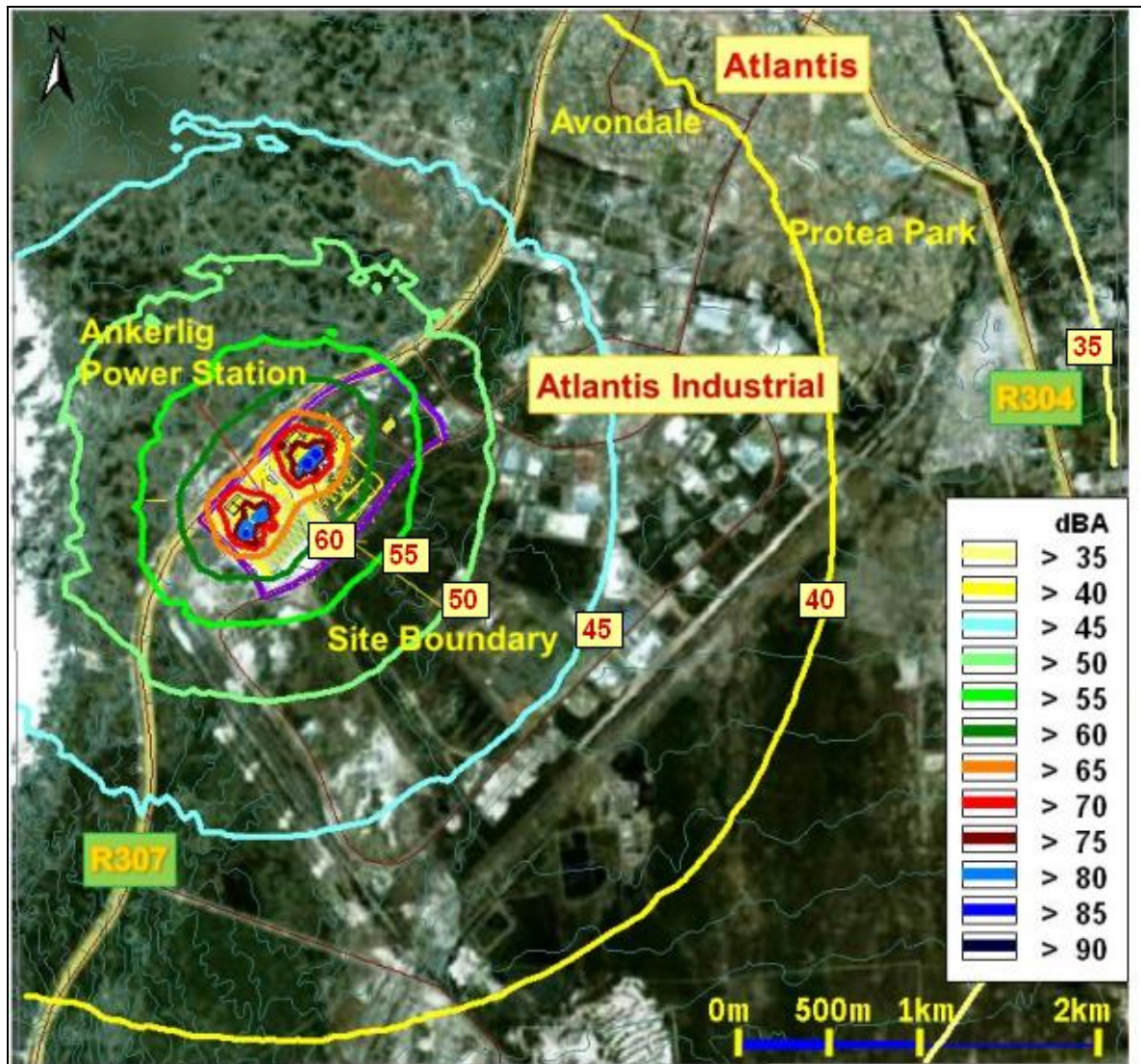


Figure D-3-a. Scenario 3: Daytime Noise Levels

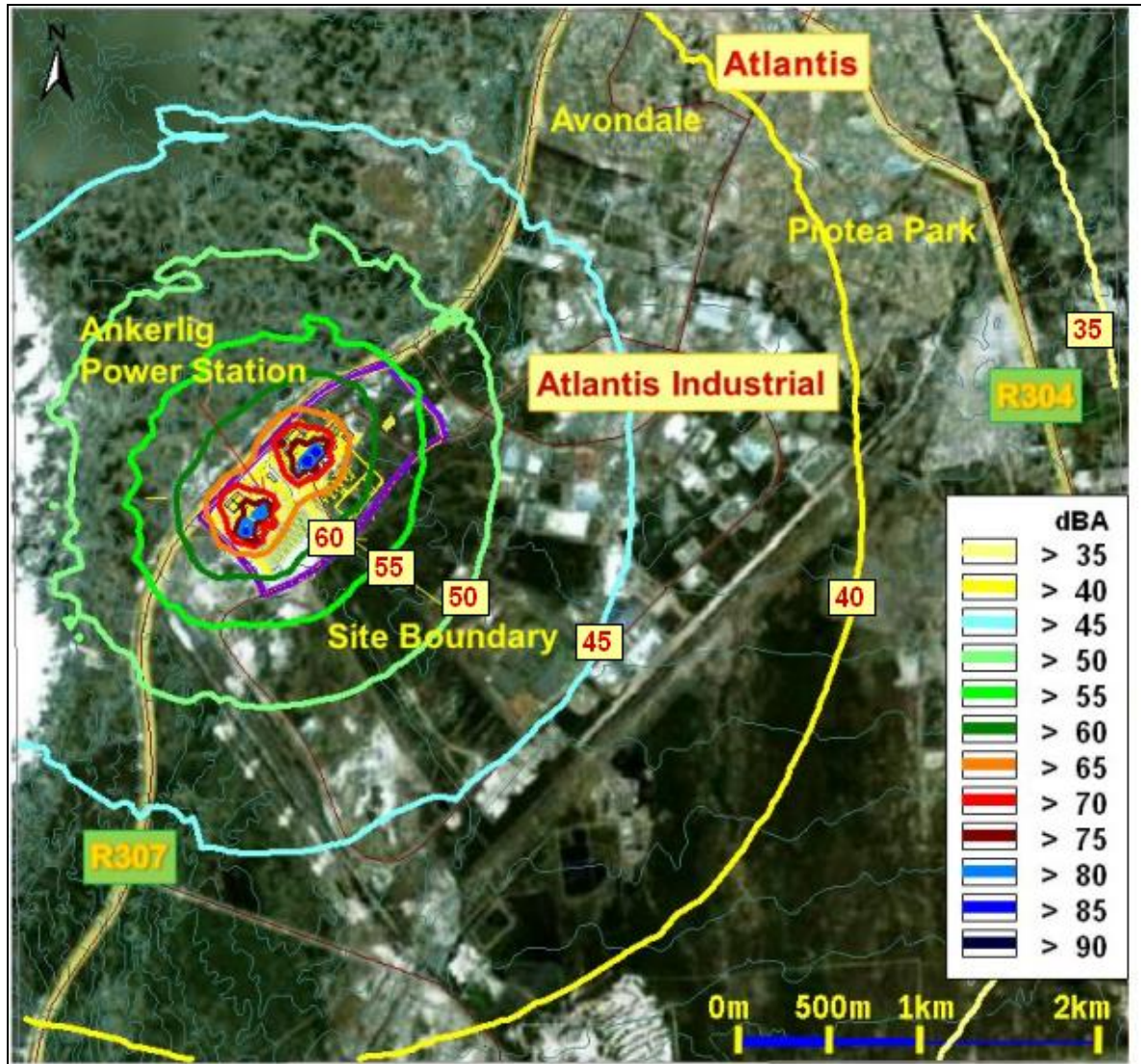


Figure D-3-b. Scenario 3: Night-time Noise Levels

4. Scenario 4: Combined Cycle Gas Turbine units + Substantial Mitigation Measures

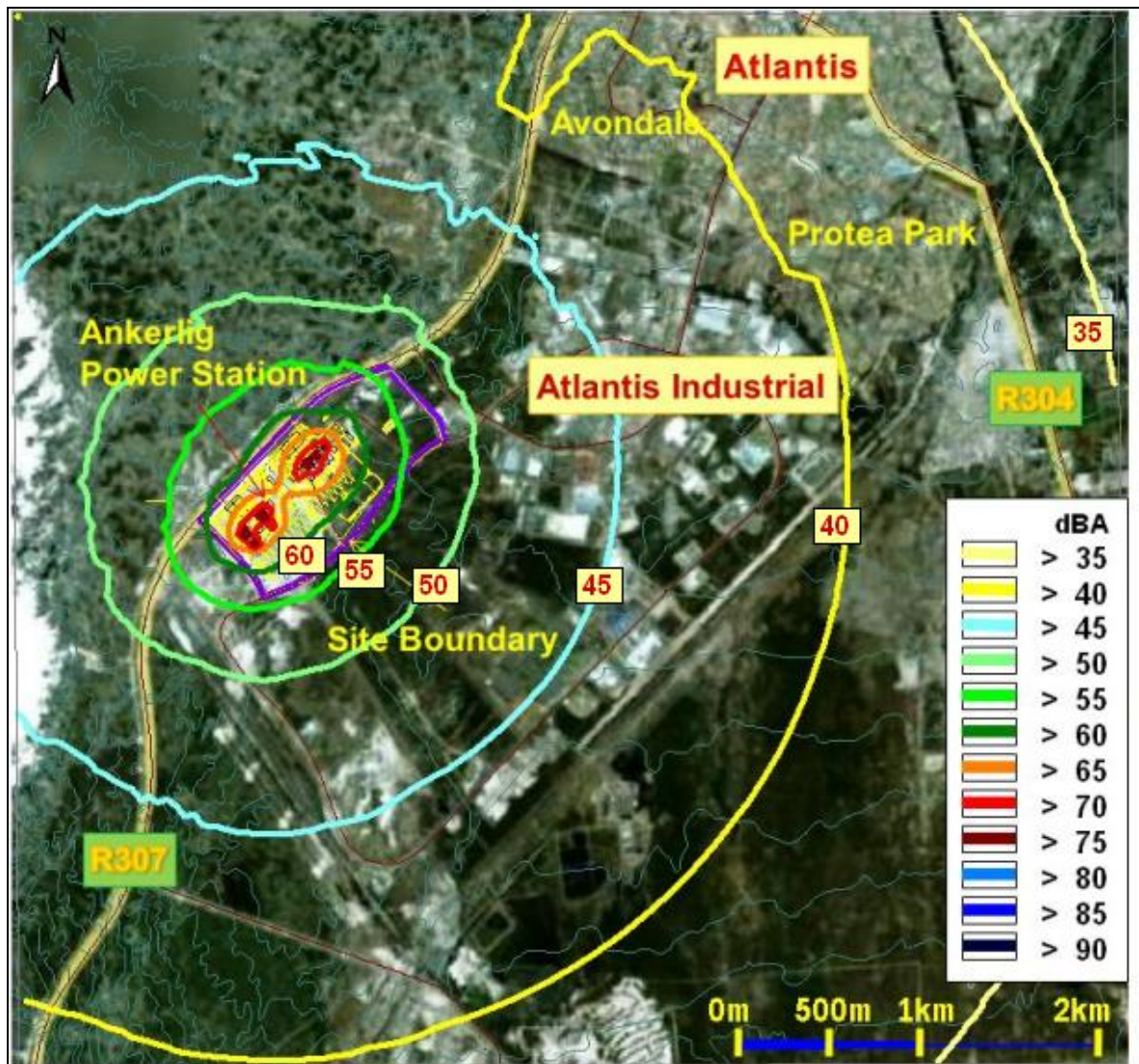


Figure D-4-a. Scenario 4: Day-time Noise Levels

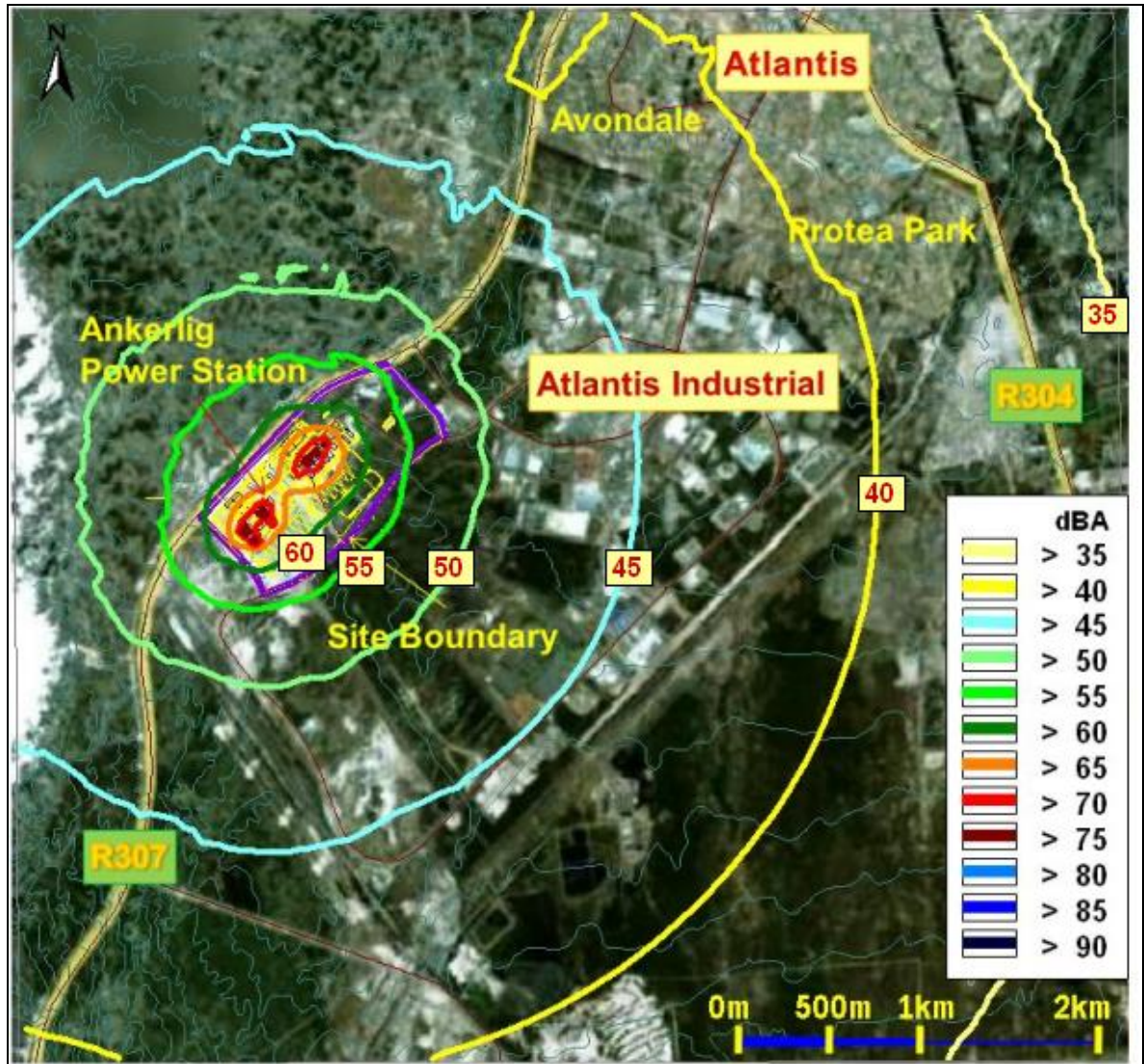


Figure D-4-b. Scenario 4: Night-time Noise Levels

5. Scenario 5: Open Cycle Gas Turbine units (9 units) + Acacia units

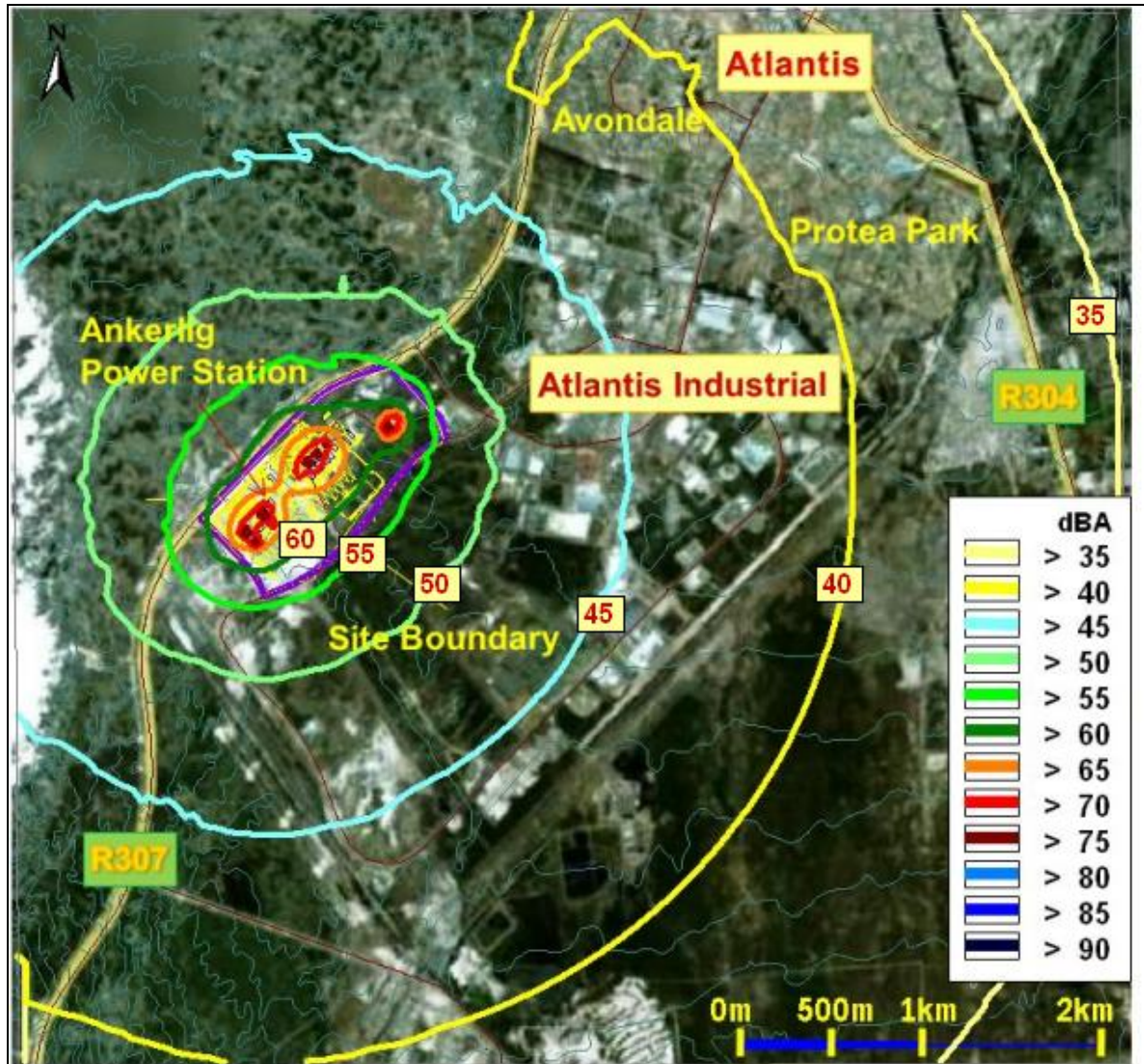


Figure D-5-a. Scenario 5: Day-time Noise Levels

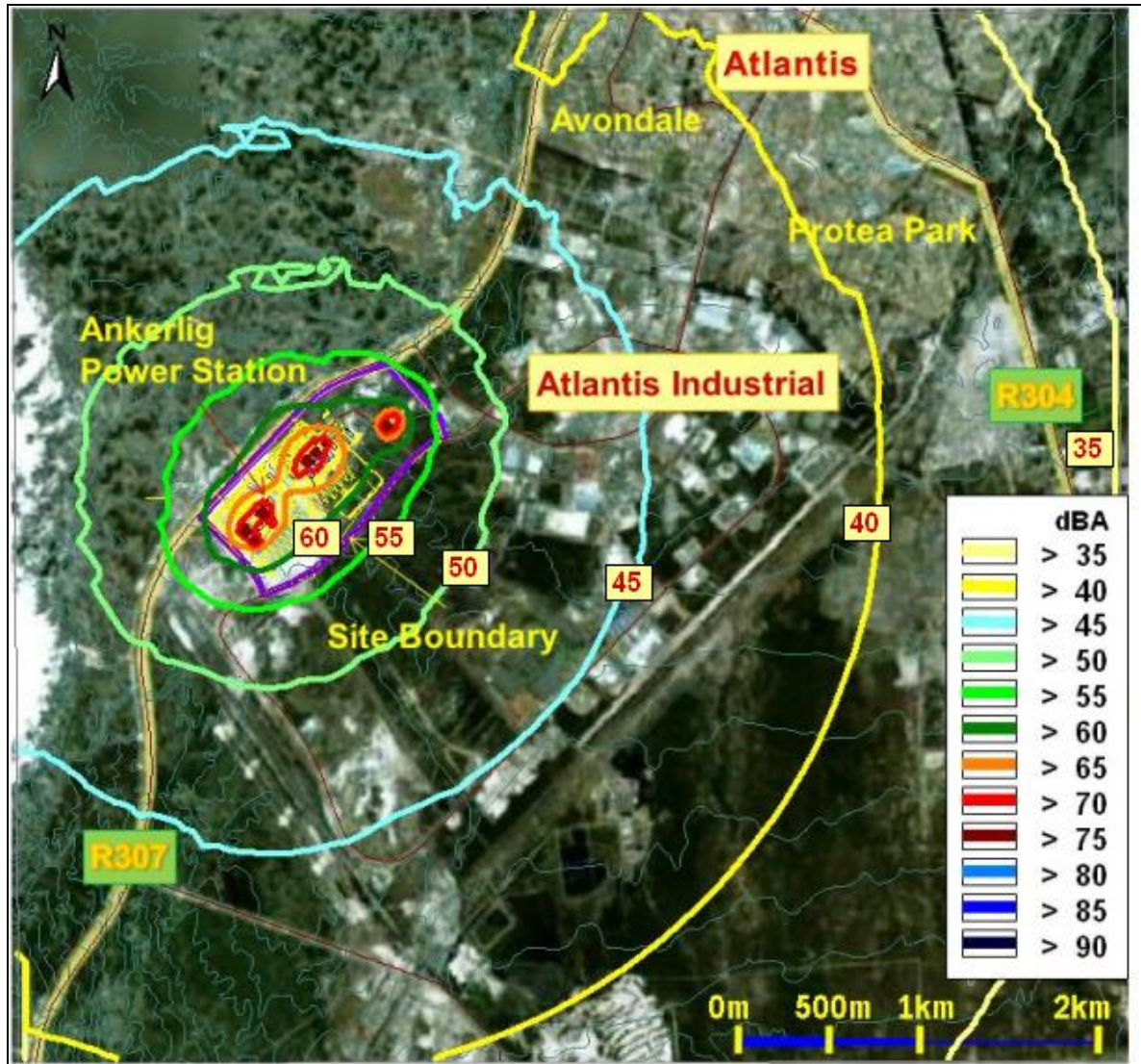


Figure D-5-b. Scenario 5: Night-time Noise Levels

6. Scenario 6: Combined Cycle Gas Turbine units+ Acacia units+ Intermediate Mitigation Measures

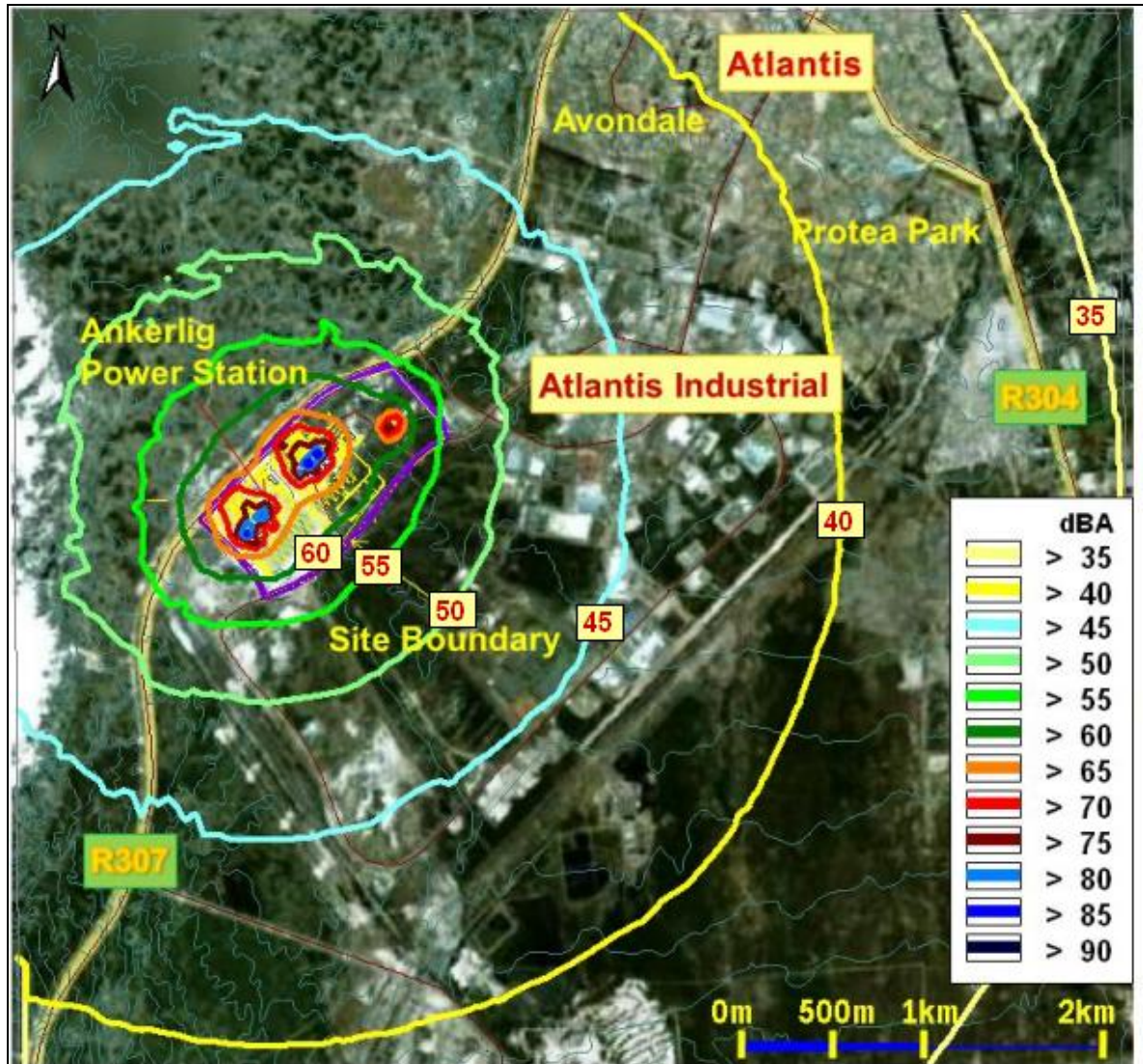


Figure D-6-a. Scenario 6: Day-time Noise Levels

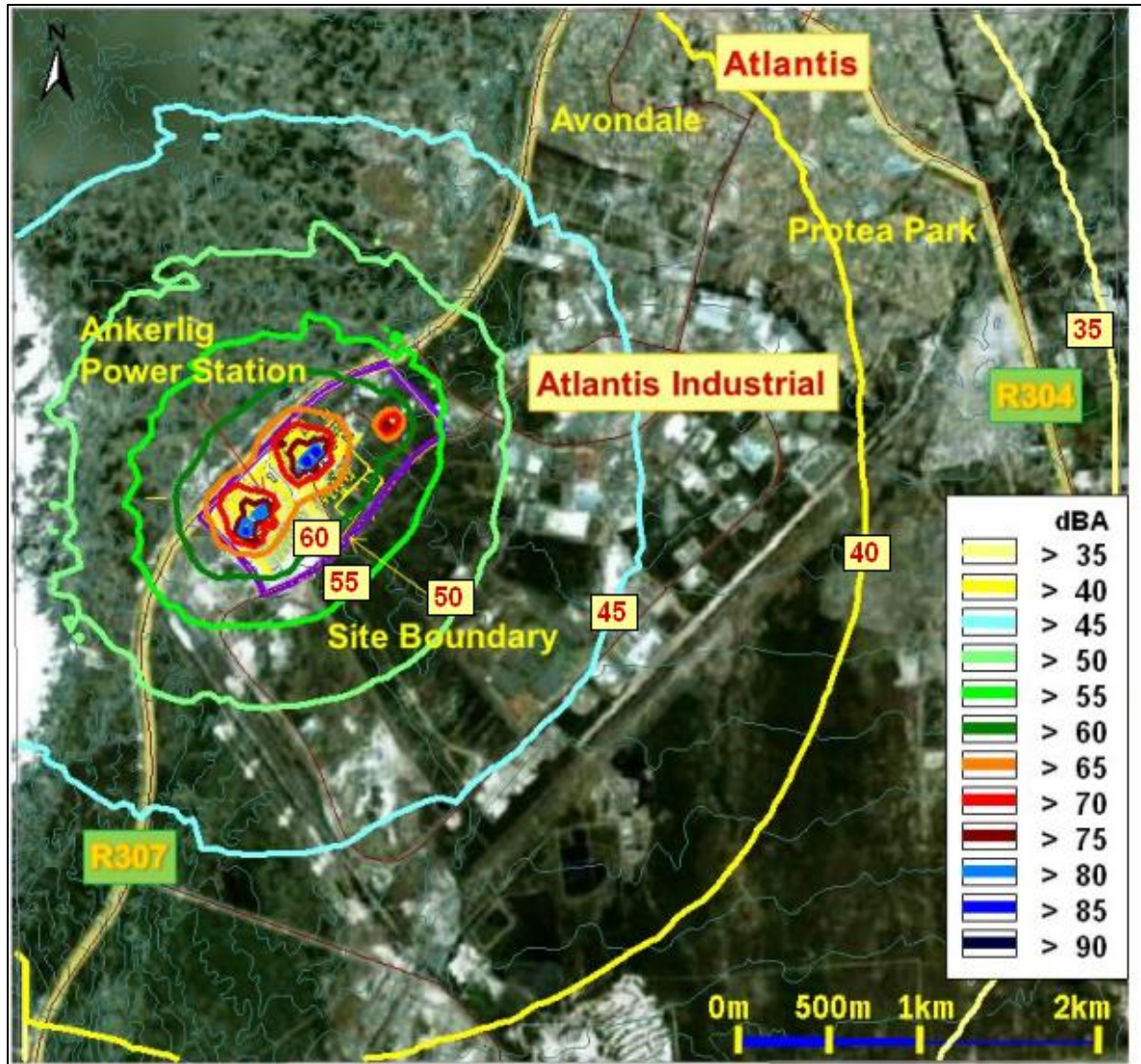


Figure D-6-b. Scenario 6: Night-time Noise Levels

7. Scenario 7: Combined Cycle Gas Turbine units + Acacia diesel units+ Substantial Mitigation Measures

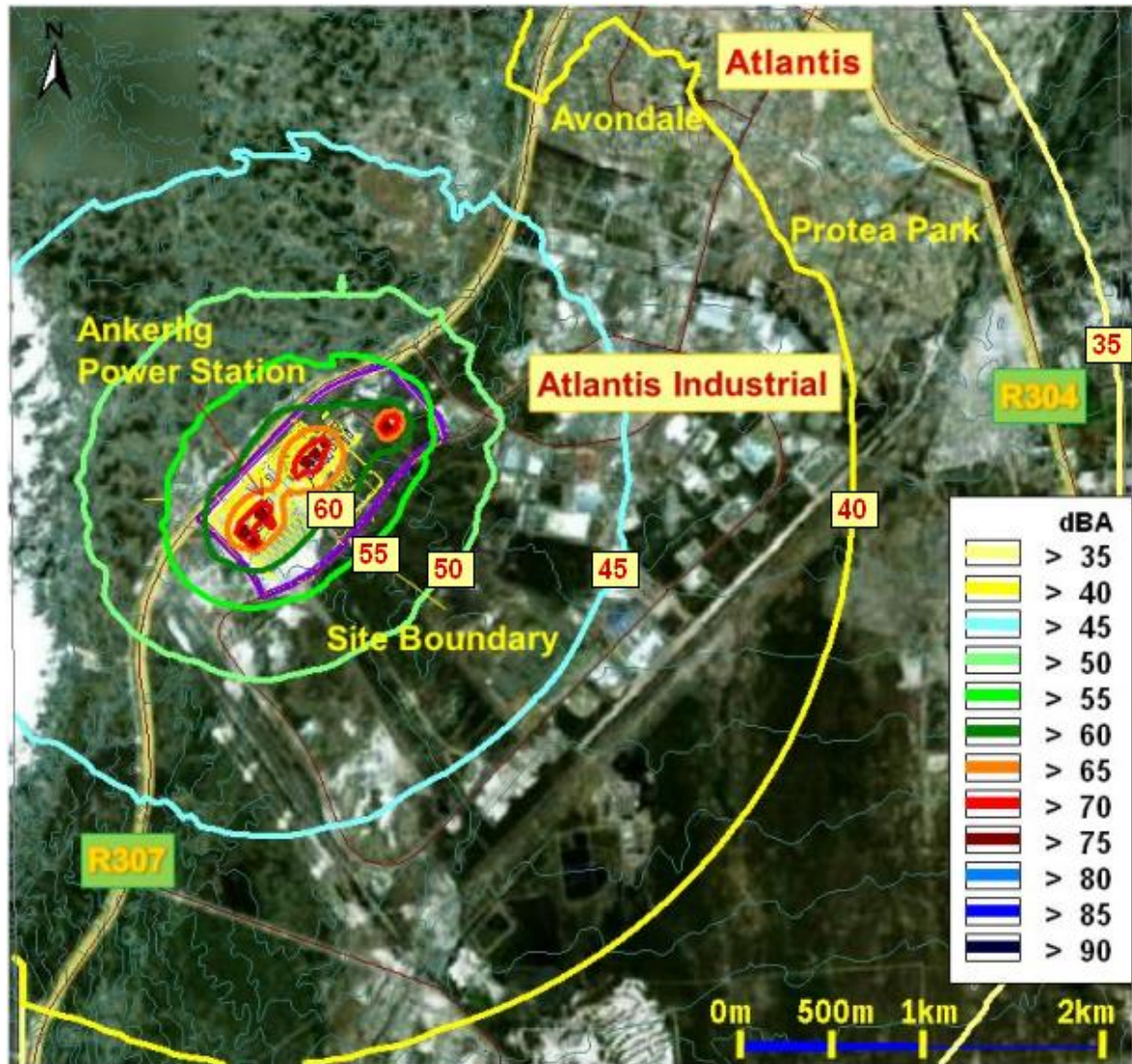


Figure D-7-a. Scenario 7: Day-time Noise Levels

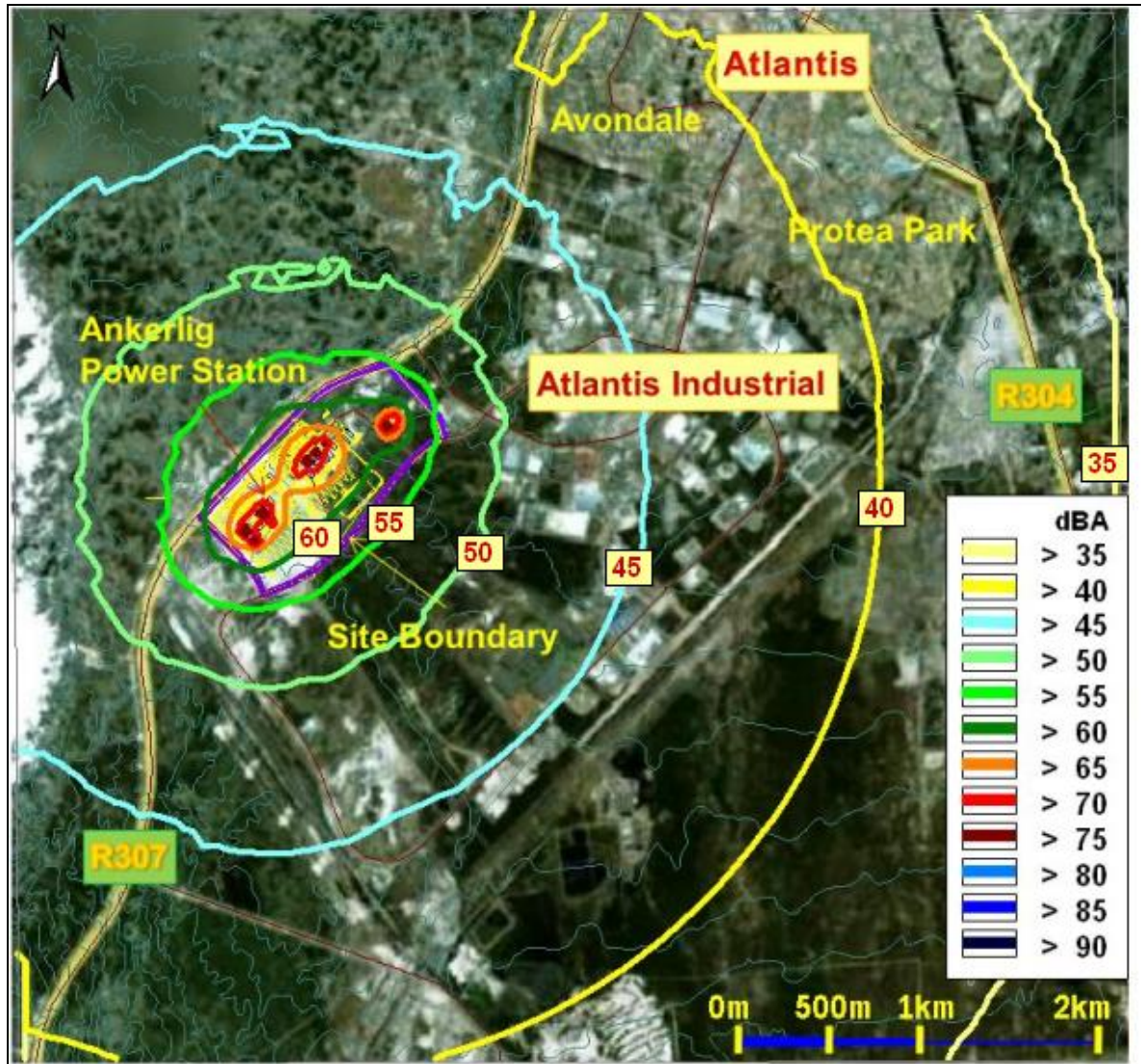


Figure D-7-b. Scenario 7: Night-time Noise Levels

8. Scenario 8: Acacia units only

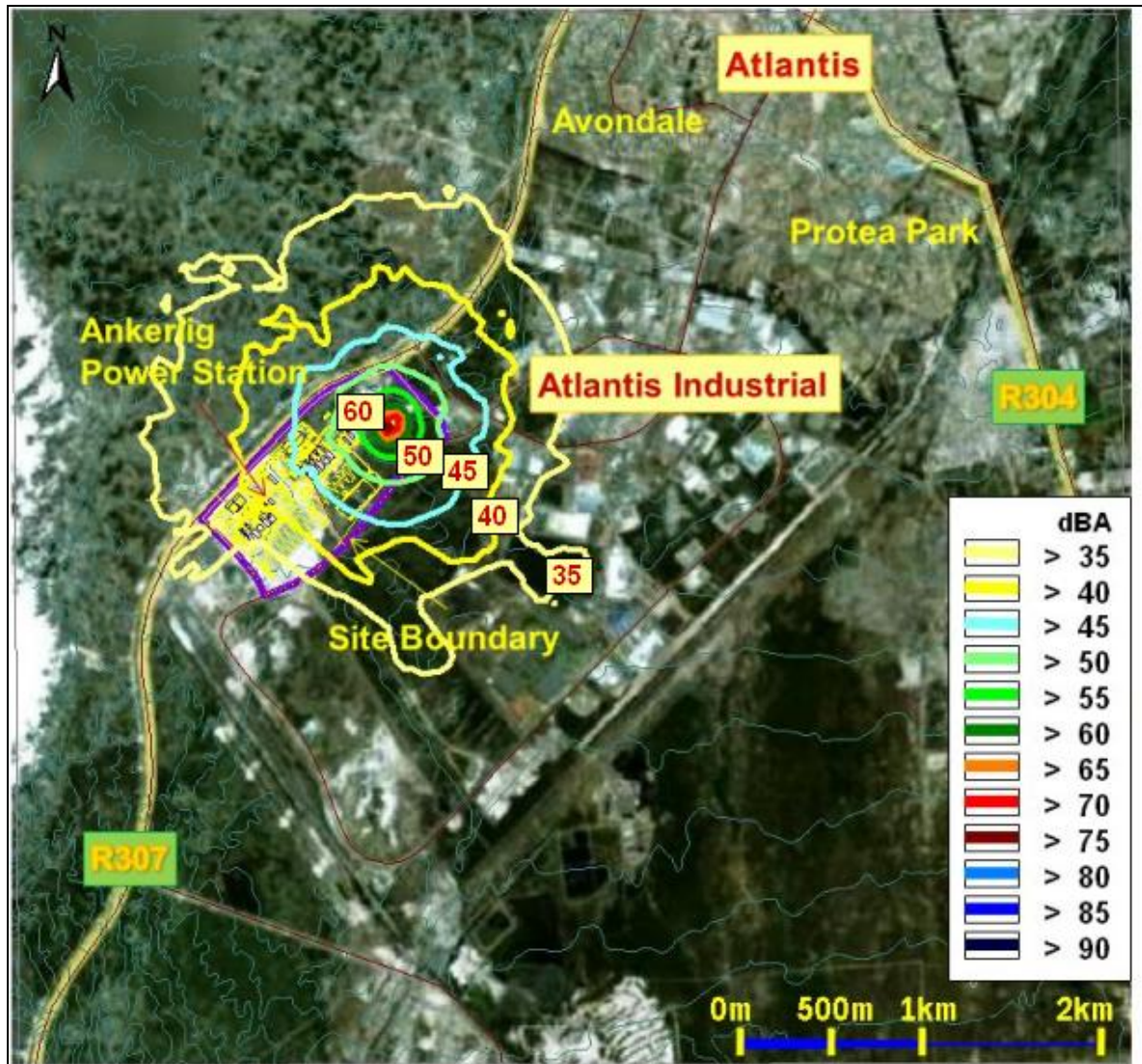


Figure D-8-a. Scenario 8: Day-time Noise Levels

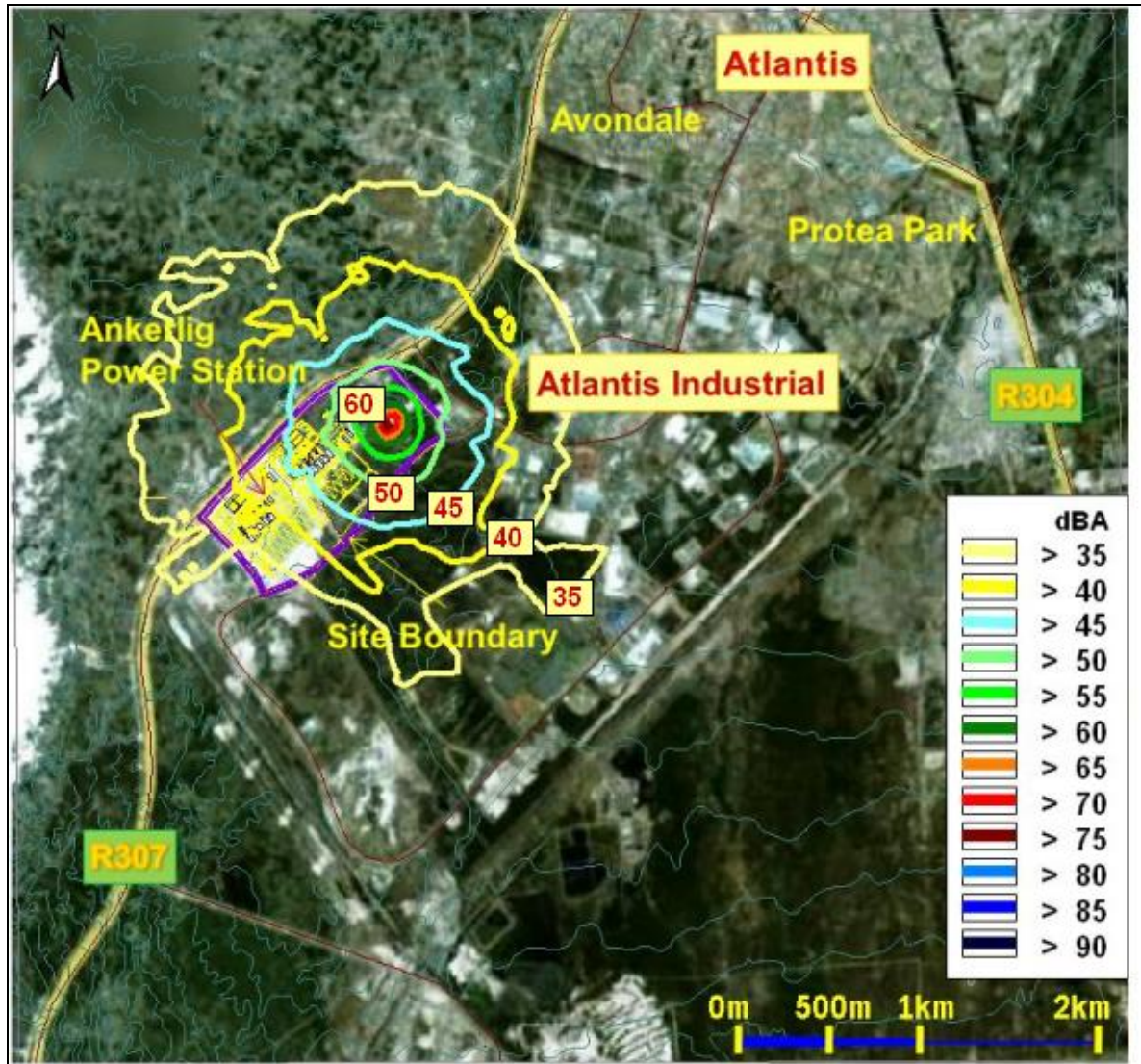


Figure D-8-b. Scenario 8: Night-time Noise Levels

APPENDIX E

Noise Emission Sources from Siemens and B&V

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Annex A

Content

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2	TABLES OF THE SOUND PROPAGATION CALCULATION	4

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Table of sound power levels of the noise sources

This table shows the sound power levels of the noise sources installed which have optionally been calculated with or without time rating.

Column:	
Noise source	Short designation of the noise source
Spectrum	Short designation of the spectrum
Trans./Insert. loss	Short designation of sound reduction indices; if more than one reduction index (maximum 4) is indicated, the short designations 2 to 4 will be listed in the 2 nd line and separated by '+'
Coordinates [m]	X-, Y-coordinates and the height of the noise source above ground
Number [Stk]	Number of noise sources summarized to one
Surface [m ²]	Measuring surface, enveloping or radiating surface of the noise source
diff [dB]	Correction index for the sound field transition from the inside to the outside
Time [dB]	Time rating for discontinuously emitting sources (option)
32 - 8k [Hz]	A-weighted sound power levels within the individual octave bands
L _{WA} [dB(A)]	A-weighted added sound power levels calculated based on the sound power levels within the individual octave bands

The energetic sum of the power spectra of source groups is indicated as subtotal. Finally, the total sound power level of all the sources is shown.

Siemens / PG

**Table 1 OCGT Eskom Atlantis 4xSGT5-2000
Names and Descriptions of the Sound Sources**

Short name and	Description
Gas Turbine Package 11UMB	
wall N	wall north
wall E	wall east
wall S	wall south
wall W	wall west
roof	roof
gate E	gate east
gate W	gate west
doors	doors
air suppl. op. N	air supply openings in wall north
air suppl. op. E	air supply openings in wall east
air suppl. op. S	air supply openings in wall south
air exh. Unit N	air exhaust ventilation unit north
air exh. Units S	air exhaust ventilation units south
Gas Turbine Filterhouse 11MBL	
EB casing	elbow casing
SL casing	silencer casing
FHA intakes	filterhouse air intakes
Gas Turbine Diffuser Extension Duct 11MBR	
diff. ext. duct	diffuser extension duct
Exhaust Stack 11UHN	
LS part	lower part of the exhaust stack
SL casing	exhaust silencer casing
outlet duct	outlet duct
stack outlet	stack outlet
Lube Oil Coolers 11URC (MBV-System)	
FFC air int.	fin-fan cooler fan (air intake)
FFC air outl.	fin-fan cooler fan (air outlet)
Forced Cooling Water Cooler 11URB (MPR-System)	
FFC air int.	fin-fan cooler fan (air intake)
FFC air outl.	fin-fan cooler fan (air outlet)
Transformers 11BAT/BBT/BFT	
11BAT TF UBF	generator transformer 165MVA
11BBT TF UBE	HV-auxiliary transformer
11BFT TFUBD	low voltage transformers
Power Control Centers 11UBA01-02	
11UBA, ACU	air conditioning unit of a power control centre
Unidentified Noise Sources Unit 11	
UIF-NC	unidentified noise sources
Gas Turbine Package 12UMB	
wall N	wall north
wall E	wall east
wall S	wall south
wall W	wall west
roof	roof
gate E	gate east

**Table4 OCGT Eskom Atlantis 4xSGT5-2000
Sound Power Levels emitted to the Environment**

A-weighted octave band sound power level [dB(A)]										Coordinates			Num- Surface diff			L _{WA} [dB(A)]
Noise source		Spectrum				Trans./Insert.loss				x[m]	y[m]	h[m]	ber	[m ²]	[dB]	
32	63	125	250	500	1k	2k	4k	8kHz								
Gas Turbine Package 11UMB																
wall N			SPL ins.	UMB		0,6(S/MW/TS)			-5	51	7	1	252	-6	93	
76	86	87	88	82	73	70	64	56								
wall E			SPL ins.	UMB		0,6(S/MW/TS)			7	33	7	1	378	-6	94	
77	88	89	90	84	75	72	66	58								
wall S			SPL ins.	UMB		0,6(S/MW/TS)			-5	15	7	1	252	-6	93	
76	86	87	88	82	73	70	64	56								
wall W			SPL ins.	UMB		0,6(S/MW/TS)			-17	33	7	1	378	-6	94	
77	88	89	90	84	75	72	66	58								
roof			SPL ins.	UMB		0,6(S/MW/TS)			-5	33	10,5	1	864	-6	98	
81	91	93	93	88	78	75	70	61								
gate E			SPL ins.	UMB		steel s. gate			7	33	7	1	9	-6	90	
61	74	79	82	84	85	80	71	64								
gate W			SPL ins.	UMB		steel s. gate			-17	31	7	1	9	-6	90	
61	74	79	82	84	85	80	71	64								
doors			SPL ins.	UMB		steel s. gate			-5	33	7	1	8	-6	89	
61	73	78	81	83	84	80	70	63								
air suppl. op. N			SPL ins.	UMB		[SL 2/1/5]			-4	51	2	1	2,25	-6	84	
57	72	78	80	76	68	73	74	71								
air suppl. op. E			SPL ins.	UMB		[SL 2/1/5]			7	33	2	3	6,25	-6	94	
66	81	87	89	85	77	83	83	80								
air suppl. op. S			SPL ins.	UMB		[SL 2/1/5]			-9	15	2	1	6,25	-6	89	
62	76	82	84	80	72	78	78	75								
air exh. Unit N			House, Fan			[SL 2/1/7,5]			6	56	1,5	1			85	
65	75	81	81	73	59	63	65	63								
air exh. Units S			House, Fan			[SL 2/1/7,5]			8	11	1,5	2			88	
68	78	84	84	76	62	66	68	66								
Gas Turbine Package 11UMB																
85	96	98	99	94	90	88	85	82							104	
Gas Turbine Filterhouse 11MBL																
EB casing			GT compr. ait.			[S/120MW/S]			0	26	13	1	3,16		92	
61	69	68	67	79	82	90	83	78								
SL casing			GT compr. ait.			1 elbow			0	28	14,5	1	1,803		75	
						0,25 x AIS + [S/120MW/S]										
55	62	60	54	60	63	71	65	69								
FHA intakes			GT compr. ait.			1 elbow			0	36	16	1			99	
						2 x filter + AI silencer										
77	84	88	74	64	73	74	71	98								
Gas Turbine Filterhouse 11MBL																
77	84	88	75	79	83	90	83	98							100	
Gas Turbine Diffuser Extension Duct 11MBR																
diff. ext. duct			GT diff. exh.			3 ST/150/10 ST			0	10	3	1	10,67		106	
						insertion loss value SBW										
67	86	93	97	102	98	99	94	87								
Gas Turbine Diffuser Extension Duct 11MBR																
67	86	93	97	102	98	99	94	87							106	
Exhaust Stack 11UHN																
LS part			GT diff. exh.			[3SS+200CW+8S]			0	0	8,5	1	7,429		104	
						[1SE]-barrier wall										
92	101	94	91	93	90	91	95	86								
SL casing			GT diff. exh.			1 elbow			0	0	16	1	4,571		97	
						0,25 x ES + 3SST+150CW+6ST										
79	89	95	84	84	81	88	85	80								

**Table4 OCGT Eskom Atlantis 4xSGT5-2000
Sound Power Levels emitted to the Environment**

A-weighted octave band sound power level [dB(A)]																
Noise source	Spectrum				Trans./Insert.loss				Coordinates			Num- Surface	diff	L _{WA}		
	32	63	125	250	500	1k	2k	4k	8kHz	x[m]	y[m]	h[m]	ber	[m ²]	[dB]	[dB(A)]
outlet duct										0	0	26	1	8		78
	69	74	75	59	56	48	48	45	40							
stack outlet										0	0	30	1			105
	92	103	91	89	94	93	93	88	81							
Exhaust Stack 11UHN																
	95	105	98	93	97	95	96	96	88							108
Lube Oil Coolers 11URC (MBV-System)																
FFC air int.										-15	4	2	3			95
	52	68	80	88	89	88	87	85	82							
FFC air outl.										-15	4	3,5	3			97
	54	70	82	90	91	90	89	87	84							
Lube Oil Coolers 11URC (MBV-System)																
	57	72	84	92	93	92	91	89	86							99
Forced Cooling Water Cooler 11URB (MPR-System)																
FFC air int.										-15	-11	2	8			99
	57	72	84	92	93	92	91	89	86							
FFC air outl.										-15	-11	4,5	8			101
	59	74	86	94	95	94	93	91	88							
Forced Cooling Water Cooler 11URB (MPR-System)																
	61	76	88	97	97	96	95	93	90							103
Transformers 11BAT/BBT/BFT																
11BAT TF UBF										-12	75	3	1			100
	40	63	87	93	96	94	88	84	72							
11BBT TF UBE										-12	66	2	1			85
	24	51	76	82	76	77	71	63	50							
11BFT TFUBD										-10	56	1,5	2			81
	23	47	72	78	72	73	67	59	46							
Transformers 11BAT/BBT/BFT																
	40	63	87	94	96	94	88	84	72							100
Power Control Centers 11UBA01-02																
11UBA, ACU										-11	47	3	2			87
	52	64	73	80	82	81	77	71	62							
Power Control Centers 11UBA01-02																
	52	64	73	80	82	81	77	71	62							87
Unidentified Noise Sources Unit 11																
UIF-NC										-5	27	10	1			107
	82	95	100	103	100	97	92	86	80							
Unidentified Noise Sources Unit 11																
	82	95	100	103	100	97	92	86	80							107
Gas Turbine Package 12UMB																
wall N										35	51	7	1	252	-6	93
	76	86	87	88	82	73	70	64	56							
wall E										47	33	7	1	378	-6	94
	77	88	89	90	84	75	72	66	58							
wall S										35	15	7	1	252	-6	93
	76	86	87	88	82	73	70	64	56							
wall W										23	33	7	1	378	-6	94
	77	88	89	90	84	75	72	66	58							
roof										35	33	10,5	1	864	-6	98
	81	91	93	93	88	78	75	70	61							
gate E										47	33	7	1	9	-6	90
	61	74	79	82	84	85	80	71	64							

APPENDIX F

BLACK & VEATCH

MEMORANDUM

ESKOMESKOM

Atlantis

Preliminary Noise Evaluation

B&V Project 149106

January 11, 2008

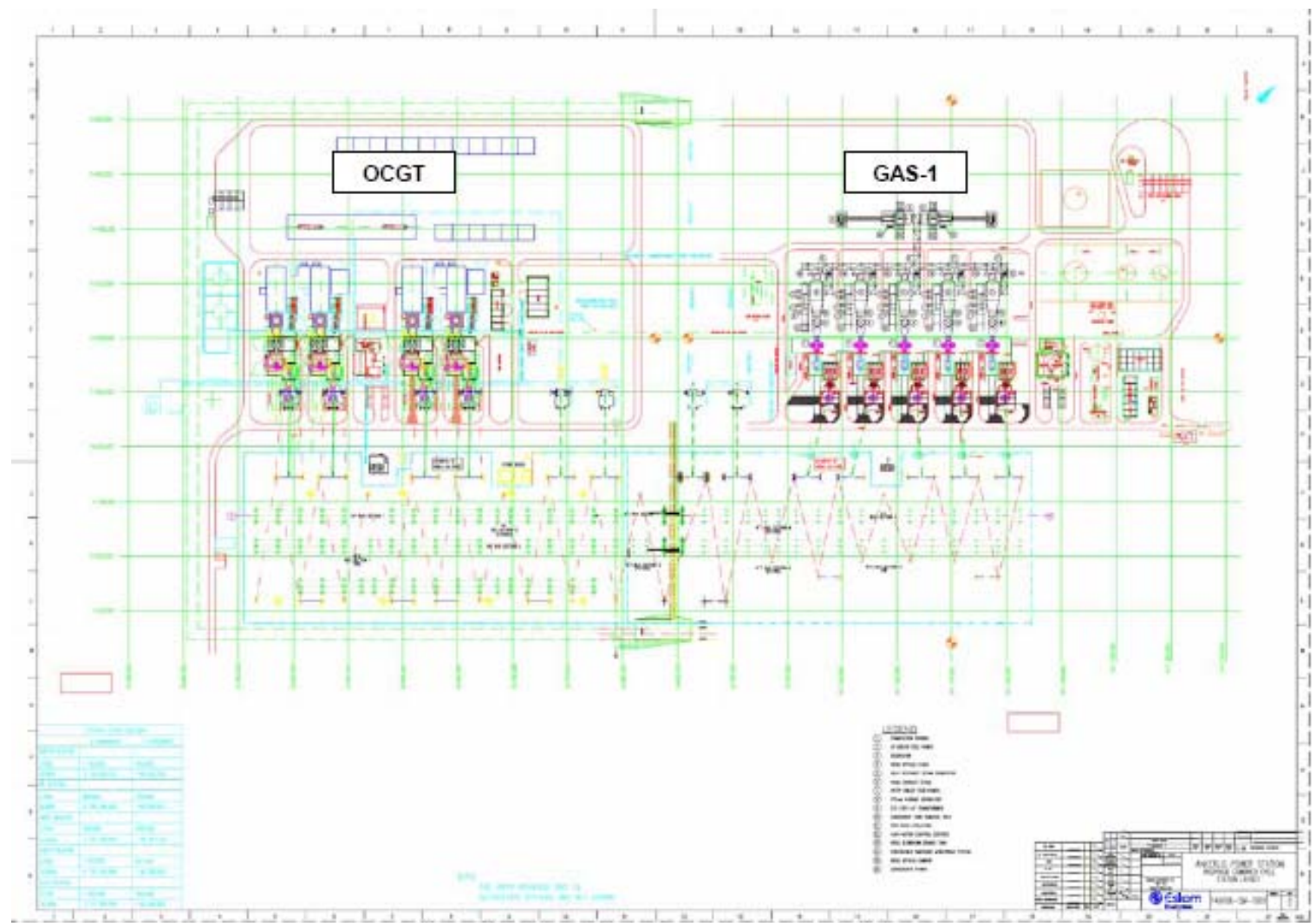


Figure 1. Eskom Atlantis OCGT & GAS-1 Facilities.

Table 1-1 Summary of Preliminary Acoustical Design Requirements for the Eskom Atlantis Project.							
Equipment	Qty	Noise Source Components	Major Equipment Packages				
			Standard Equipment Package Specification	Intermediate Mitigation Specification	Anticipated Mitigation	Substantial Mitigation Specification	Anticipated Mitigation
CTG Pkg (SGT5-2000E) Indoor	9	Turbine compartment, generator compartment, load compartment, ventilation fans, fin fan cooler, lube oil cooler, cooling water pumps and all other auxiliary equipment /modules included in the CTG scope-of-supply.	85 dBA @ 1 m ^(b) 63 dBA @ 122 m ^(a)	85 dBA @ 1 m ^(b) 63 dBA @ 122 m ^(a)	N/A	85 dBA @ 1 m ^(b) 63 dBA @ 122 m ^(a)	N/A [tbl1]
HRSG	9	HRSG package including transition, boiler, stack, and stack exit	85 dBA @ 1 m ^(b) 67 dBA @ 122 m ^(a)	62 dBA @ 122 m ^(a)	<ul style="list-style-type: none"> • Increase in Boiler Casing Thickness • Stack Exit Silencer 	56 dBA @ 122 m ^(a)	<ul style="list-style-type: none"> • Increase in Boiler Casing Thickness • Stack Exit Silencer • Transition barrier
GSUT	9	Transformer with fans at max cooling	85 dBA per IEEE C57.12.90	85 dBA per IEEE C57.12.90	N/A	85 dBA per IEEE C57.12.90	N/A
AUX XFMR	9	Transformer with fans at max cooling	80 dBA per IEEE C57.12.90	80 dBA per IEEE C57.12.90	N/A	80 dBA per IEEE C57.12.90	N/A
BFP	9	Low Pressure Pump and motor assembly	90 dBA @ 1 m ^(b)	85 dBA @ 1 m ^(b)	<ul style="list-style-type: none"> • Pump/motor assembly upgrade 	65 dBA @ 1 m ^(b)	<ul style="list-style-type: none"> • Place BFP indoors high STC enclosure
	9	High Pressure Pump and motor assembly	90 dBA @ 1 m ^(b)	85 dBA @ 1 m ^(b)	<ul style="list-style-type: none"> • Pump/motor assembly upgrade 	65 dBA @ 1 m ^(b)	<ul style="list-style-type: none"> • Place BFP indoors high STC enclosure

Table 1-1 Summary of Preliminary Acoustical Design Requirements for the Eskom Atlantis Project.							
Equipment	Qty	Noise Source Components	Major Equipment Packages				
			Standard Equipment Package Specification	Intermediate Mitigation Specification	Anticipated Mitigation	Substantial Mitigation Specification	Anticipated Mitigation
STG Pkg	4	Turbine sections, generator compartment, piping, and all other auxiliary equipment included in the STG scope-of-supply.	85 dBA @ 1 m ^(b) 68 dBA @ 122 m ^(a)	60 dBA @ 122 m ^(a)	• Place STG inside enclosure	45 dBA @ 122 m ^(a)	• Place STG indoors high STC enclosure
Air Cooled Condenser	4	Fan, motor, gearbox, water splash.	85 dBA @ 1 m ^(b) 63 dBA @ 122 m ^(a)	50 dBA @ 122 m ^(a)	• Low noise fans	45 dBA @ 122 m ^(a)	• Low noise fans • inlet and exit silencers • larger footprint
CCCW Coolers	4	Fan and motor assembly.	85 dBA @ 1m ^(b)	75 dBA @ 1m ^(b)	• Low noise fans	65 dBA @ 1m ^(b)	• Low noise fans • inlet and exit silencers • larger footprint
NOTES (a) The maximum sound pressure level in any direction from the equipment envelope at the distance specified. The equipment envelope is defined as the contour that completely encompasses all equipment components at a distance of one meter from the equipment face or enclosure. (b) Average sound pressure level along the equipment envelope.							