

Bilaga 3A - Ljud

Layout B

16 st Gamesa G128, 4,5 MW

Totalhöjd 150 meter

Project:

Grönhult

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2014-05-27 22:56 / 1

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VATTENFALL AB IT
Företagsenhet 1002
SE-962 80 Jokkmokk

Jenny Longworth / jenny.longworth@vattenfall.com

Calculated:

2014-05-27 22:52/2.9.269

DECIBEL - Main Result**Calculation: 140421 G128 16kv 86HH Noise**

SVENSKA BESTÄMMELSER FÖR EXTERNT BULLER FRÅN
LANDBASERADE VINDKRAFTVERK

Beräkningen är baserad på den av Statens Naturvårdsverk
rekommenderad metod "Ljud från vindkraftverk", 2010 (NV dnr
382-6897-07 Rv)

WTGs

Swedish RT90 2.5gonV 0:-15-RT90 (SE)				WTG type			Noise data			Wind speed [m/s]	Status	LwA_ref [dB(A)]	Pure tones			
East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]					Creator	Name	
B1	1,358,386	6,365,230	293.4	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B10	1,360,224	6,364,520	282.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B11	1,360,781	6,365,123	268.8	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B12	1,361,225	6,365,880	270.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B13	1,361,607	6,365,395	271.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B14	1,361,178	6,364,684	275.9	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B15	1,361,929	6,364,826	277.9	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B16	1,361,528	6,364,353	281.5	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B2	1,358,252	6,364,777	306.3	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B3	1,357,824	6,364,337	295.1	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B4	1,357,844	6,363,917	266.9	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B5	1,358,458	6,364,142	260.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B6	1,358,871	6,364,586	282.3	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h
B7	1,359,246	6,364,152	278.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B8	1,360,036	6,365,555	270.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 3 - Estimated - 102,5 dB - 05-2012	8.0	From other hub height	102.5	No h
B9	1,360,623	6,366,042	270.0	GAMESA G128 4500 128.0 IO! h...	Yes	GAMESA	G128-4500	4,500	128.0	86.0	EMD	Level 2 - Estimated - 104,5 dB - 05-2012	8.0	From other hub height	104.5	No h

h) Generic octave distribution used

Calculation Results**Sound Level**

Noise sensitive area	Swedish RT90 2.5gonV 0:-15-RT90 (SE)	Demands	Sound Level	Demands fulfilled ?				
No.	Name	East	North	Z	Imission height	Noise	From WTGs	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	
15	15	1,359,229	6,363,485	249.2	1.5	40.0	39.3	Yes
17	17	1,355,329	6,364,845	246.6	1.5	40.0	28.6	Yes
36	36	1,362,376	6,365,370	289.1	1.5	40.0	39.0	Yes
37	37	1,362,741	6,365,134	285.3	1.5	40.0	36.3	Yes
38	38	1,358,933	6,363,420	248.3	1.5	40.0	39.0	Yes
A	1	1,354,438	6,365,935	231.9	1.5	40.0	25.0	Yes
AA	32	1,359,427	6,365,846	262.2	1.5	40.0	39.3	Yes
AB	33	1,353,753	6,365,140	228.1	1.5	40.0	23.7	Yes
AC	35	1,362,402	6,364,358	271.0	1.5	40.0	38.4	Yes
B	2	1,354,302	6,365,863	228.0	1.5	40.0	24.7	Yes
C	3	1,355,719	6,366,777	230.0	1.5	40.0	27.2	Yes
D	4	1,355,823	6,366,785	228.0	1.5	40.0	27.4	Yes
E	5	1,356,247	6,366,773	220.8	1.5	40.0	28.6	Yes
F	6	1,356,082	6,365,087	238.0	1.5	40.0	31.5	Yes
G	7	1,356,579	6,366,515	237.5	1.5	40.0	30.1	Yes
H	8	1,356,602	6,365,151	223.5	1.5	40.0	33.9	Yes
I	9	1,355,989	6,364,921	223.8	1.5	40.0	31.2	Yes
J	10	1,355,455	6,364,908	260.8	1.5	40.0	29.0	Yes
K	11	1,356,610	6,364,688	204.8	1.5	40.0	34.8	Yes
L	12	1,357,660	6,365,318	239.4	1.5	40.0	39.5	Yes
M	13	1,358,185	6,366,173	238.8	1.5	40.0	35.9	Yes
N	14	1,359,151	6,365,788	250.8	1.5	40.0	38.5	Yes
O	18	1,358,766	6,363,487	243.7	1.5	40.0	39.9	Yes
P	19	1,358,000	6,363,182	217.0	1.5	40.0	38.5	Yes
Q	20	1,357,380	6,363,227	204.0	1.5	40.0	37.1	Yes
R	21	1,357,225	6,363,317	206.3	1.5	40.0	36.9	Yes
S	23	1,360,701	6,363,647	259.7	1.5	40.0	37.7	Yes
T	24	1,361,391	6,363,807	280.0	1.5	40.0	39.8	Yes
U	26	1,362,356	6,365,303	284.8	1.5	40.0	39.5	Yes
V	27	1,362,521	6,365,953	278.0	1.5	40.0	35.8	Yes
W	28	1,361,906	6,366,738	260.8	1.5	40.0	35.2	Yes
X	29	1,360,812	6,366,711	272.4	1.5	40.0	38.9	Yes
Y	30	1,360,247	6,366,836	262.8	1.5	40.0	36.9	Yes
Z	31	1,359,762	6,366,416	259.0	1.5	40.0	37.6	Yes

Project:

Grönhult

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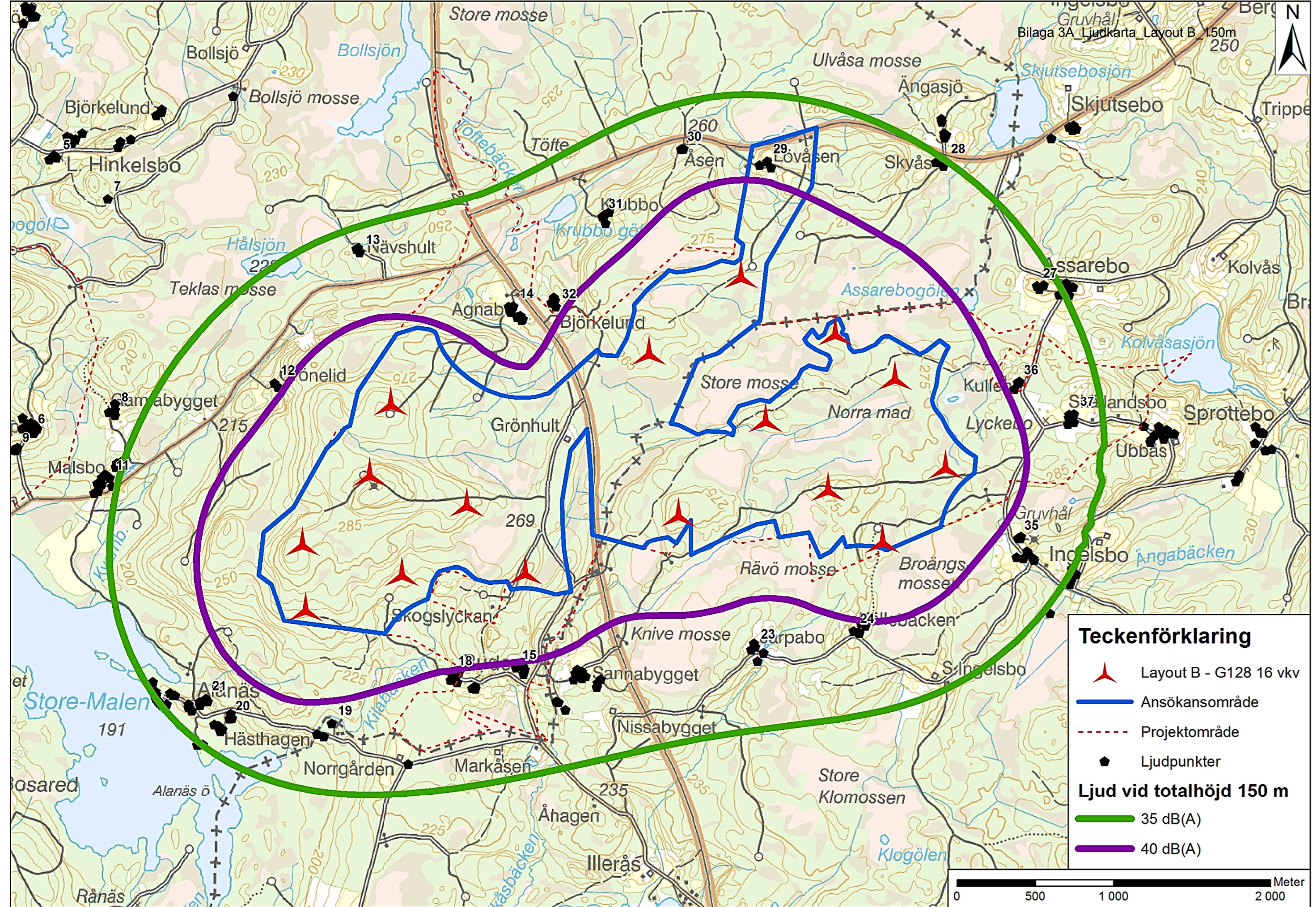
DECIBEL - Main Result

Calculation: 140421 G128 16kvk 86HH Noise

Distances (m)

WTG

NSA	B4	B5	B14	B10	B12	B11	B3	B9	B2	B16	B6	B8	B15	B13	B1	B7
15	1450	1012	2287	1435	2965	2255	1643	2911	1618	2456	1157	2221	3013	3048	1937	667
17	2680	3206	5848	4903	5952	5456	2545	5425	2923	6215	3550	4758	6597	6299	3080	3976
36	4757	4104	1380	2313	1192	1614	4666	1877	4164	1324	3590	2346	704	769	3991	3357
37	5043	4394	1626	2589	1610	1959	4979	2303	4500	1442	3906	2736	868	1163	4353	3628
38	1197	864	2575	1695	3217	2511	1439	3118	1517	2756	1167	2402	3308	3322	1890	796
A	3956	4399	6851	5952	6787	6391	3741	6182	3984	7260	4631	5607	7568	7185	4008	5125
AA	2494	1959	2100	1546	1804	1534	2200	1211	1588	2576	1377	675	2701	2225	1209	1703
AB	4267	4807	7434	6496	7487	7023	4146	6925	4511	7810	5145	6293	8177	7853	4631	5578
AC	4577	3948	1266	2183	1769	1791	4576	2448	4168	874	3536	2650	665	1306	4107	3161
B	4039	4495	6972	6068	6921	6517	3835	6320	4094	7377	4741	5739	7693	7316	4130	5228
C	3561	3799	5844	5036	5611	5323	3220	4957	3227	6291	3837	4485	6506	6045	3082	4395
D	3507	3731	5750	4947	5511	5227	3160	4855	3151	6198	3757	4387	6409	5946	2997	4317
E	3270	3435	5353	4568	5094	4823	2900	4435	2829	5806	3415	3978	6003	5532	2636	3981
F	2114	2556	5109	4178	5174	4696	1895	4638	2191	5492	2832	3980	5850	5531	2307	3297
G	2888	3026	4948	4153	4718	4424	2507	4070	2412	5398	2995	3586	5608	5149	2216	3562
H	1750	2111	4597	3674	4650	4177	1467	4116	1691	4987	2337	3456	5334	5008	1785	2825
I	2108	2588	5192	4252	5288	4794	1925	4766	2267	5565	2900	4095	5938	5635	2416	3345
J	2584	3097	5724	4782	5818	5327	2435	5288	2799	6094	3429	4624	6471	6168	2947	3863
K	1454	1926	4565	3615	4717	4191	1262	4233	1644	4926	2262	3532	5318	5044	1856	2688
L	1411	1420	3572	2683	3581	3125	993	3048	802	3984	1414	2386	4294	3945	730	1967
M	2280	2048	3341	2622	3077	2798	1869	2440	1397	3803	1728	1950	3976	3507	963	2281
N	2280	1785	2307	1660	2076	1760	1965	1494	1352	2775	1234	915	2939	2486	946	1638
O	1016	723	2691	1786	3293	2594	1268	3157	1387	2893	1103	2425	3433	3421	1782	820
P	751	1062	3512	2593	4076	3388	1168	3878	1613	3714	1650	3124	4256	4229	2082	1578
Q	831	1413	4065	3122	4558	3891	1195	4292	1777	4295	2015	3529	4819	4747	2240	2081
R	861	1482	4180	3229	4643	3985	1182	4353	1783	4423	2076	3591	4937	4847	2236	2185
S	2868	2295	1140	994	2098	1476	2957	2395	2695	1086	2055	2019	1701	1968	2802	1539
T	3547	2950	901	1367	1879	1449	3604	2362	3283	562	2636	2210	1151	1601	3323	2171
U	4717	4065	1330	2270	1192	1585	4631	1883	4135	1259	3556	2332	639	754	3968	3314
V	5098	4446	1847	2706	1324	1927	4964	1899	4425	1882	3895	2515	1272	1070	4195	3735
W	4942	4313	2178	2782	1257	1967	4733	1458	4144	2413	3719	2211	1911	1375	3827	3708
X	4074	3483	2059	2267	1110	1588	3814	695	3207	2463	2877	1392	2190	1537	2841	2999
Y	3779	3232	2344	2315	1513	1794	3479	878	2866	2792	2636	1298	2620	1980	2457	2863
Z	3148	2620	2236	1950	1637	1646	2841	938	2227	2714	2035	903	2686	2108	1816	2321



Bilaga 3A - Ljud

Layout B

16 st Gamesa G128, 4,5 MW

Totalhöjd 200 meter

Project:

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Företagsenhet 1002
SE-962 80 Jokkmokk

Jenny Longworth / jenny.longworth@vattenfall.com

Calculated:

2014-05-27 21:29/2.9.269

DECIBEL - Main Result

Calculation: 140421 G128 16kvk 136HH

SVENSKA BESTÄMMELSER FÖR EXTERNT BULLER FRÅN
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WTGs

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East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]					Creator	Name	
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Calculation Results

Sound Level

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V	27	1,362,521	6,365,953	278.0	1.5	40.0	35.9	Yes
W	28	1,361,906	6,366,738	260.8	1.5	40.0	35.3	Yes
X	29	1,360,812	6,366,711	272.4	1.5	40.0	38.9	Yes
Y	30	1,360,247	6,366,836	262.8	1.5	40.0	36.9	Yes
Z	31	1,359,762	6,366,416	259.0	1.5	40.0	37.6	Yes

Project:

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VATTENFALL AB IT

Företagsenhet 1002

SE-962 80 Jokkmokk

Jenny Longworth / jenny.longworth@vattenfall.com

Calculated:

2014-05-27 21:29/2.9.269

DECIBEL - Main Result

Calculation: 140421 G128 16vkv 136HH

Distances (m)**WTG**

NSA	B4	B5	B14	B10	B12	B11	B3	B9	B2	B16	B6	B8	B15	B13	B1	B7
15	1450	1012	2287	1435	2965	2255	1643	2911	1618	2456	1157	2221	3013	3048	1937	667
17	2680	3206	5848	4903	5952	5456	2545	5425	2923	6215	3550	4758	6597	6299	3080	3976
36	4757	4104	1380	2313	1192	1614	4666	1877	4164	1324	3590	2346	704	769	3991	3357
37	5043	4394	1626	2589	1610	1959	4979	2303	4500	1442	3906	2736	868	1163	4353	3628
38	1197	864	2575	1695	3217	2511	1439	3118	1517	2756	1167	2402	3308	3322	1890	796
A	3956	4399	6851	5952	6787	6391	3741	6182	3984	7260	4631	5607	7568	7185	4008	5125
AA	2494	1959	2100	1546	1804	1534	2200	1211	1588	2576	1377	675	2701	2225	1209	1703
AB	4267	4807	7434	6496	7487	7023	4146	6925	4511	7810	5145	6293	8177	7853	4631	5578
AC	4577	3948	1266	2183	1769	1791	4576	2448	4168	874	3536	2650	665	1306	4107	3161
B	4039	4495	6972	6068	6921	6517	3835	6320	4094	7377	4741	5739	7693	7316	4130	5228
C	3561	3799	5844	5036	5611	5323	3220	4957	3227	6291	3837	4485	6506	6045	3082	4395
D	3507	3731	5750	4947	5511	5227	3160	4855	3151	6198	3757	4387	6409	5946	2997	4317
E	3270	3435	5353	4568	5094	4823	2900	4435	2829	5806	3415	3978	6003	5532	2636	3981
F	2114	2556	5109	4178	5174	4696	1895	4638	2191	5492	2832	3980	5850	5531	2307	3297
G	2888	3026	4948	4153	4718	4424	2507	4070	2412	5398	2995	3586	5608	5149	2216	3562
H	1750	2111	4597	3674	4650	4177	1467	4116	1691	4987	2337	3456	5334	5008	1785	2825
I	2108	2588	5192	4252	5288	4794	1925	4766	2267	5565	2900	4095	5938	5635	2416	3345
J	2584	3097	5724	4782	5818	5327	2435	5288	2799	6094	3429	4624	6471	6168	2947	3863
K	1454	1926	4565	3615	4717	4191	1262	4233	1644	4926	2262	3532	5318	5044	1856	2688
L	1411	1420	3572	2683	3581	3125	993	3048	802	3984	1414	2386	4294	3945	730	1967
M	2280	2048	3341	2622	3077	2798	1869	2440	1397	3803	1728	1950	3976	3507	963	2281
N	2280	1785	2307	1660	2076	1760	1965	1494	1352	2775	1234	915	2939	2486	946	1638
O	1016	723	2691	1786	3293	2594	1268	3157	1387	2893	1103	2425	3433	3421	1782	820
P	751	1062	3512	2593	4076	3388	1168	3878	1613	3714	1650	3124	4256	4229	2082	1578
Q	831	1413	4065	3122	4558	3891	1195	4292	1777	4295	2015	3529	4819	4747	2240	2081
R	861	1482	4180	3229	4643	3985	1182	4353	1783	4423	2076	3591	4937	4847	2236	2185
S	2868	2295	1140	994	2098	1476	2957	2395	2695	1086	2055	2019	1701	1968	2802	1539
T	3547	2950	901	1367	1879	1449	3604	2362	3283	562	2636	2210	1151	1601	3323	2171
U	4717	4065	1330	2270	1192	1585	4631	1883	4135	1259	3556	2332	639	754	3968	3314
V	5098	4446	1847	2706	1324	1927	4964	1899	4425	1882	3895	2515	1272	1070	4195	3735
W	4942	4313	2178	2782	1257	1967	4733	1458	4144	2413	3719	2211	1911	1375	3827	3708
X	4074	3483	2059	2267	1110	1588	3814	695	3207	2463	2877	1392	2190	1537	2841	2999
Y	3779	3232	2344	2315	1513	1794	3479	878	2866	2792	2636	1298	2620	1980	2457	2863
Z	3148	2620	2236	1950	1637	1646	2841	938	2227	2714	2035	903	2686	2108	1816	2321

