

Bilaga 3A - Ljud

Layout A

17 st Senvion M122, 3 MW

Totalhöjd 150 meter

Project:

140330_Grönhult_MKBBkompl

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VATTENFALL AB IT

Företagsenhet 1002

SE-962 80 Jokkmokk

Jenny Longworth / jenny.longworth@vattenfall.com

Calculated:

2014-05-28 11:37/2.9.269

DECIBEL - Main Result**Calculation:** 140408 M122 17kv 89HHSVENSKA BESTÄMMELSER FÖR EXTERNT BULLER FRÅN
LANDBASERADE VINDKRAFTVERKBeräkningen 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)			Row data/Description	WTG type		Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data		Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
	East	North	Z		Valid	Manufact.				Type-generator	Creator			
			[m]											
A1	1,358,439	6,365,530	272.8	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 2	8.0	101.7	No h
A10	1,360,678	6,366,135	271.3	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A11	1,360,231	6,364,523	281.8	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 0	8.0	104.5	No h
A12	1,360,807	6,365,141	270.0	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 0	8.0	104.5	No h
A13	1,361,225	6,365,690	270.0	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A14	1,361,607	6,365,391	270.8	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 0	8.0	104.5	No h
A15	1,361,214	6,364,706	277.0	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A16	1,361,858	6,364,781	278.5	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A17	1,361,557	6,364,376	281.9	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A2	1,358,455	6,365,132	293.4	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 0	8.0	104.5	No h
A3	1,358,269	6,364,731	311.1	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A4	1,357,827	6,364,349	295.3	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 0	8.0	104.5	No h
A5	1,357,826	6,363,944	268.4	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A6	1,358,471	6,364,158	261.0	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A7	1,358,818	6,364,562	287.1	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A8	1,359,241	6,364,153	278.0	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h
A9	1,360,036	6,365,568	270.0	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	89.0	USER	Level 1	8.0	103.0	No h

h) Generic octave distribution used

Calculation Results**Sound Level**

No.	Name	Swedish RT90 2.5gonV 0:-15-RT90 (SE)			Imission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Demands fulfilled ?
		East	North	Z				
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	39.3	Yes
37	37	1,362,741	6,365,134	285.3	1.5	40.0	36.5	Yes
38	38	1,358,933	6,363,420	248.3	1.5	40.0	38.9	Yes
A	1	1,354,438	6,365,935	231.9	1.5	40.0	25.1	Yes
AA	32	1,359,427	6,365,846	262.2	1.5	40.0	39.7	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	38.8	Yes
B	2	1,354,302	6,365,863	228.0	1.5	40.0	24.8	Yes
C	3	1,355,719	6,366,777	230.0	1.5	40.0	27.4	Yes
D	4	1,355,823	6,366,785	228.0	1.5	40.0	27.7	Yes
E	5	1,356,247	6,366,773	220.8	1.5	40.0	28.8	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	30.4	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	34.7	Yes
L	12	1,357,660	6,365,318	239.4	1.5	40.0	39.7	Yes
M	13	1,358,185	6,366,173	238.8	1.5	40.0	37.7	Yes
N	14	1,359,151	6,365,788	250.8	1.5	40.0	39.4	Yes
O	18	1,358,766	6,363,487	243.7	1.5	40.0	39.7	Yes
P	19	1,358,000	6,363,182	217.0	1.5	40.0	37.8	Yes
Q	20	1,357,380	6,363,227	204.0	1.5	40.0	36.5	Yes
R	21	1,357,225	6,363,317	206.3	1.5	40.0	36.3	Yes
S	23	1,360,701	6,363,647	259.7	1.5	40.0	37.8	Yes
T	24	1,361,391	6,363,807	280.0	1.5	40.0	39.9	Yes
U	26	1,362,356	6,365,303	284.8	1.5	40.0	39.7	Yes

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Project:

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Calculated:

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DECIBEL - Main Result

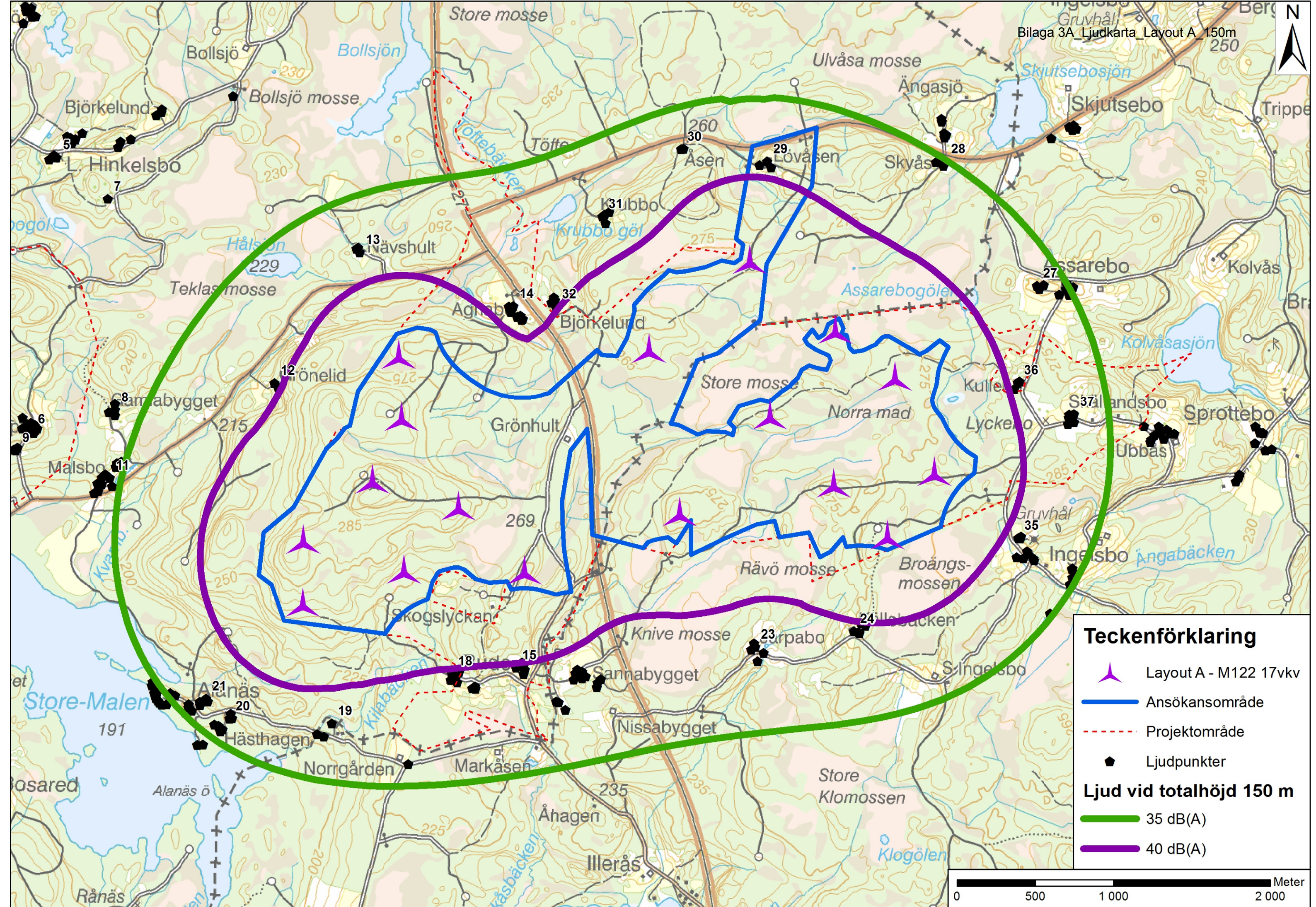
Calculation: 140408 M122 17vkv 89HH

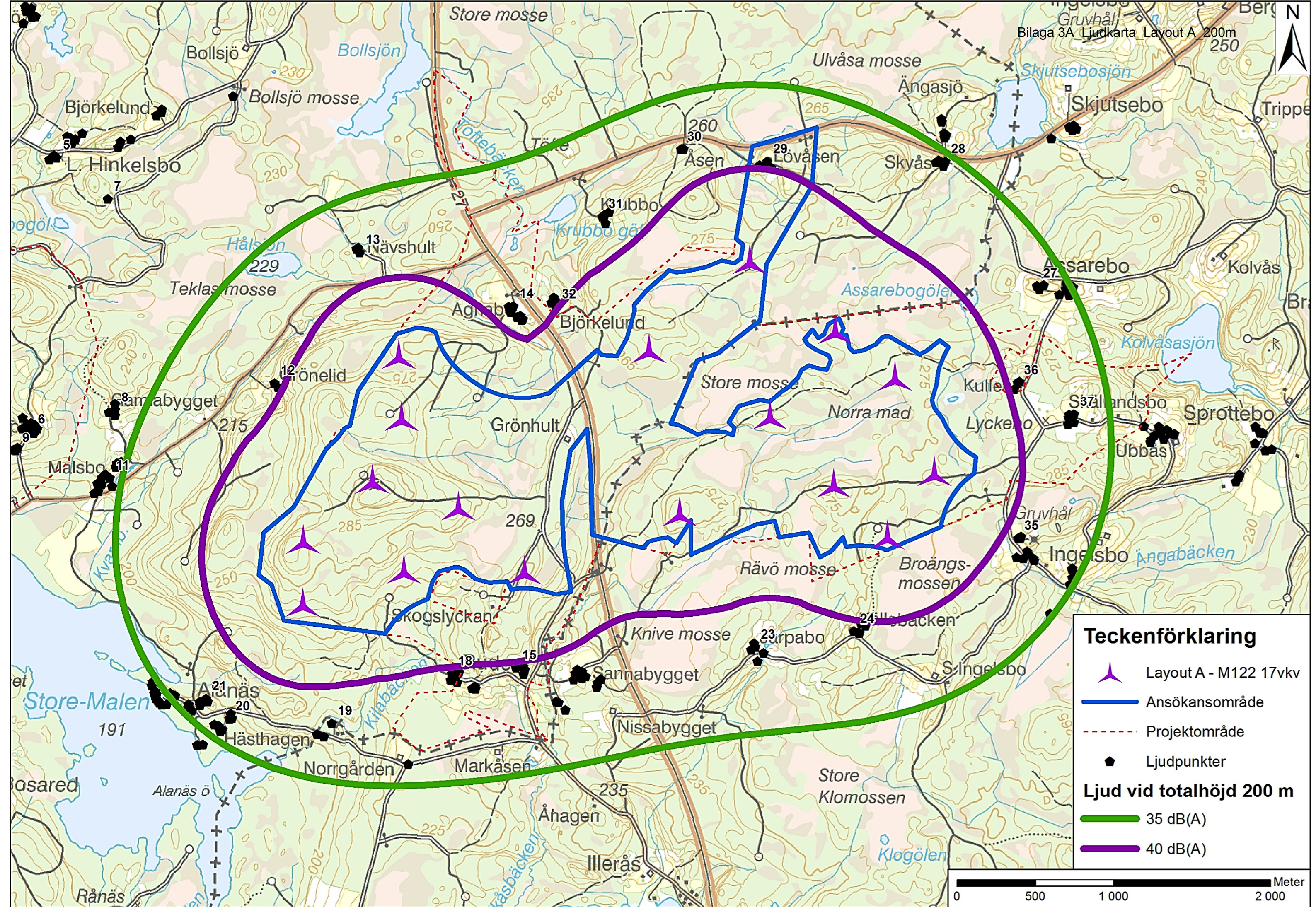
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No.	Name	East	North	Z [m]	Emission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Demands fulfilled ? Noise
V 27		1,362,521	6,365,953	278.0	1.5	40.0	36.2	Yes
W 28		1,361,906	6,366,738	260.8	1.5	40.0	35.2	Yes
X 29		1,360,812	6,366,711	272.4	1.5	40.0	39.2	Yes
Y 30		1,360,247	6,366,836	262.8	1.5	40.0	36.8	Yes
Z 31		1,359,762	6,366,416	259.0	1.5	40.0	37.5	Yes

Distances (m)

WTG																			
NSA	A5	A6	A8	A15	A11	A13	A12	A4	A10	A2	A3	A17	A7	A9	A16	A1	A14		
15	1475	1013	668	2329	1442	2973	2286	1646	3019	1819	1572	2491	1153	2233	2930	2191	3046		
17	2654	3215	3971	5884	4910	5953	5483	2546	5500	3137	2941	6243	3499	4760	6526	3183	6299		
36	4766	4087	3361	1338	2305	1194	1585	4660	1862	3927	4155	1288	3647	2347	784	3939	769		
37	5054	4377	3632	1585	2582	1614	1933	4973	2291	4284	4488	1405	3962	2738	950	4318	1162		
38	1224	871	795	2617	1702	3224	2543	1444	3226	1777	1469	2791	1148	2414	3224	2166	3320		
A	3928	4404	5120	6882	5959	6787	6414	3739	6239	4093	4013	7283	4587	5607	7505	4018	7185		
AA	2485	1938	1702	2118	1548	1804	1549	2190	1283	1206	1607	2587	1420	669	2652	1037	2226		
AB	4243	4816	5573	7469	6503	7488	7050	4147	6992	4699	4531	7836	5095	6294	8108	4699	7853		
AC	4592	3933	3165	1237	2176	1776	1776	4572	2474	4020	4147	845	3588	2656	689	4130	1303		
B	4010	4501	5224	7004	6075	6921	6541	3834	6378	4214	4123	7401	4697	5738	7628	4147	7316		
C	3529	3797	4390	5869	5042	5610	5342	3214	4998	3191	3268	6309	3807	4481	6452	2991	6046		
D	3475	3728	4312	5775	4952	5509	5246	3153	4896	3106	3193	6216	3728	4383	6356	2900	5947		
E	3239	3431	3977	5377	4574	5092	4841	2892	4475	2749	2872	5823	3389	3974	5951	2519	5533		
F	2084	2562	3293	5143	4185	5175	4723	1894	4712	2372	2215	5518	2784	3981	5781	2397	5531		
G	2856	3021	3557	4973	4158	4716	4443	2499	4115	2329	2456	5415	2969	3583	5554	2104	5150		
H	1718	2115	2820	4631	3681	4652	4203	1463	4191	1852	1718	5012	2292	3458	5266	1874	5008		
I	2080	2596	3340	5227	4259	5290	4821	1924	4841	2474	2287	5592	2850	4097	5868	2523	5635		
J	2558	3106	3858	5759	4789	5819	5354	2435	5362	3006	2818	6121	3379	4626	6400	3046	6168		
K	1425	1934	2683	4601	3623	4720	4219	1262	4315	1896	1658	4954	2210	3535	5246	2012	5043		
L	1383	1414	1962	3604	2689	3582	3150	982	3125	815	845	4006	1381	2388	4229	806	3945		
M	2256	2033	2277	3363	2627	3076	2816	1857	2491	1074	1443	3818	1729	1946	3925	691	3508		
N	2269	1764	1636	2328	1663	2076	1777	1954	1566	956	1375	2788	1269	912	2887	757	2487		
O	1044	732	818	2734	1793	3300	2626	1273	3264	1673	1338	2928	1076	2437	3350	2067	3419		
P	781	1083	1575	3555	2601	4083	3421	1179	3984	2001	1571	3749	1603	3135	4173	2387	4227		
Q	844	1433	2077	4107	3129	4563	3923	1207	4394	2186	1745	4329	1961	3538	4737	2533	4746		
R	868	1502	2181	4221	3237	4648	4017	1194	4454	2191	1756	4457	2020	3599	4856	2522	4845		
S	2888	2286	1544	1176	993	2108	1497	2957	2487	2691	2661	1124	2092	2031	1619	2941	1964		
T	3565	2939	2176	916	1362	1889	1455	3603	2433	3219	3254	592	2680	2220	1080	3416	1598		
U	4726	4047	3318	1287	2262	1195	1557	4626	1872	3903	4125	1223	3613	2334	720	3922	754		
V	5103	4427	3739	1805	2698	1322	1895	4958	1851	4146	4422	1847	3953	2513	1345	4102	1072		
W	4942	4293	3710	2145	2775	1249	1937	4724	1367	3804	4152	2386	3775	2204	1956	3670	1378		
X	4069	3461	3000	2043	2263	1101	1569	3804	591	2836	3221	2450	2930	1381	2194	2650	1540		
Y	3769	3211	2863	2338	2312	1506	1784	3468	822	2472	2887	2786	2684	1284	2609	2230	1983		
Z	3138	2599	2321	2242	1950	1632	1648	2830	958	1831	2250	2716	2079	891	2657	1592	2109		





Bilaga 3A - Ljud

Layout A

17 st Senvion M122, 3 MW

Totalhöjd 200 meter

Project:

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Företagsenhet 1002

SE-962 80 Jokkmokk

Jenny Longworth / jenny.longworth@vattenfall.com

Calculated:

2014-05-28 10:59/2.9.269

DECIBEL - Main Result

Calculation: 140408 M122 17kv 139HH Ljud

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)			Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data		Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones
	East	North	Z		Valid	Manufact.	Type-generator				Creator	Name			
			[m]												
A1	1,358,439	6,365,530	272.8	REpower 3.0M122 3000...No	REpower	3.0M122-3,000	3,000	122.0	139.0	USER	Level 2	8.0	101.7	No h	
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h) Generic octave distribution used

Calculation Results

Sound Level

No.	Name	East	North	Z	Imission height [m]	Noise [dB(A)]	From WTGs [dB(A)]	Demands fulfilled ?
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I	9	1,355,989	6,364,921	223.8	1.5	40.0	31.2	Yes
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Jenny Longworth / jenny.longworth@vattenfall.com

Calculated:

2014-05-28 10:59/2.9.269

DECIBEL - Main Result

Calculation: 140408 M122 17vkv 139HH Ljud

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No.	Name	East	North	Z [m]	Imission height [m]	Demands Noise [dB(A)]	Sound Level From WTGs [dB(A)]	Demands fulfilled ? Noise
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W 28		1,361,906	6,366,738	260.8	1.5	40.0	35.5	Yes
X 29		1,360,812	6,366,711	272.4	1.5	40.0	39.9	Yes
Y 30		1,360,247	6,366,836	262.8	1.5	40.0	37.3	Yes
Z 31		1,359,762	6,366,416	259.0	1.5	40.0	37.8	Yes

Distances (m)

WTG																			
NSA	A5	A6	A8	A15	A11	A13	A12	A4	A10	A2	A3	A17	A7	A9	A16	A1	A14		
15	1475	1013	668	2329	1442	2973	2286	1646	3019	1819	1572	2491	1153	2233	2930	2191	3046		
17	2654	3215	3971	5884	4910	5953	5483	2546	5500	3137	2941	6243	3499	4760	6526	3183	6299		
36	4766	4087	3361	1338	2305	1194	1585	4660	1862	3927	4155	1288	3647	2347	784	3939	769		
37	5054	4377	3632	1585	2582	1614	1933	4973	2291	4284	4488	1405	3962	2738	950	4318	1162		
38	1224	871	795	2617	1702	3224	2543	1444	3226	1777	1469	2791	1148	2414	3224	2166	3320		
A	3928	4404	5120	6882	5959	6787	6414	3739	6239	4093	4013	7283	4587	5607	7505	4018	7185		
AA	2485	1938	1702	2118	1548	1804	1549	2190	1283	1206	1607	2587	1420	669	2652	1037	2226		
AB	4243	4816	5573	7469	6503	7488	7050	4147	6992	4699	4531	7836	5095	6294	8108	4699	7853		
AC	4592	3933	3165	1237	2176	1776	1776	4572	2474	4020	4147	845	3588	2656	689	4130	1303		
B	4010	4501	5224	7004	6075	6921	6541	3834	6378	4214	4123	7401	4697	5738	7628	4147	7316		
C	3529	3797	4390	5869	5042	5610	5342	3214	4998	3191	3268	6309	3807	4481	6452	2991	6046		
D	3475	3728	4312	5775	4952	5509	5246	3153	4896	3106	3193	6216	3728	4383	6356	2900	5947		
E	3239	3431	3977	5377	4574	5092	4841	2892	4475	2749	2872	5823	3389	3974	5951	2519	5533		
F	2084	2562	3293	5143	4185	5175	4723	1894	4712	2372	2215	5518	2784	3981	5781	2397	5531		
G	2856	3021	3557	4973	4158	4716	4443	2499	4115	2329	2456	5415	2969	3583	5554	2104	5150		
H	1718	2115	2820	4631	3681	4652	4203	1463	4191	1852	1718	5012	2292	3458	5266	1874	5008		
I	2080	2596	3340	5227	4259	5290	4821	1924	4841	2474	2287	5592	2850	4097	5868	2523	5635		
J	2558	3106	3858	5759	4789	5819	5354	2435	5362	3006	2818	6121	3379	4626	6400	3046	6168		
K	1425	1934	2683	4601	3623	4720	4219	1262	4315	1896	1658	4954	2210	3535	5246	2012	5043		
L	1383	1414	1962	3604	2689	3582	3150	982	3125	815	845	4006	1381	2388	4229	806	3945		
M	2256	2033	2277	3363	2627	3076	2816	1857	2491	1074	1443	3818	1729	1946	3925	691	3508		
N	2269	1764	1636	2328	1663	2076	1777	1954	1566	956	1375	2788	1269	912	2887	757	2487		
O	1044	732	818	2734	1793	3300	2626	1273	3264	1673	1338	2928	1076	2437	3350	2067	3419		
P	781	1083	1575	3555	2601	4083	3421	1179	3984	2001	1571	3749	1603	3135	4173	2387	4227		
Q	844	1433	2077	4107	3129	4563	3923	1207	4394	2186	1745	4329	1961	3538	4737	2533	4746		
R	868	1502	2181	4221	3237	4648	4017	1194	4454	2191	1756	4457	2020	3599	4856	2522	4845		
S	2888	2286	1544	1176	993	2108	1497	2957	2487	2691	2661	1124	2092	2031	1619	2941	1964		
T	3565	2939	2176	916	1362	1889	1455	3603	2433	3219	3254	592	2680	2220	1080	3416	1598		
U	4726	4047	3318	1287	2262	1195	1557	4626	1872	3903	4125	1223	3613	2334	720	3922	754		
V	5103	4427	3739	1805	2698	1322	1895	4958	1851	4146	4422	1847	3953	2513	1345	4102	1072		
W	4942	4293	3710	2145	2775	1249	1937	4724	1367	3804	4152	2386	3775	2204	1956	3670	1378		
X	4069	3461	3000	2043	2263	1101	1569	3804	591	2836	3221	2450	2930	1381	2194	2650	1540		
Y	3769	3211	2863	2338	2312	1506	1784	3468	822	2472	2887	2786	2684	1284	2609	2230	1983		
Z	3138	2599	2321	2242	1950	1632	1648	2830	958	1831	2250	2716	2079	891	2657	1592	2109		