

DECIBEL - Main Result

Calculation: Noise calculation layout 1

Noise calculation model:

ISO 9613-2 General

Wind speed (at 10 m height):

6,0 m/s

Ground attenuation:

Fixed values, Agr: 0,0, Dc: 0,0

Meteorological coefficient, C0:
Selected option: Fixed value: 0,0 dB

Type of demand in calculation:

1: WTG noise is compared to demand (DK, DE, SE, NL etc.)

Noise values in calculation:

All noise values are mean values (Lwa) (Normal)

Pure tones:

Fixed penalty added to source noise of WTGs with pure tones

Model: 5,0 dB(A)

Height above ground level, when no value in NSA object:

0.0 m; Don't allow override of model height with height from NSA object

Uncertainty margin:

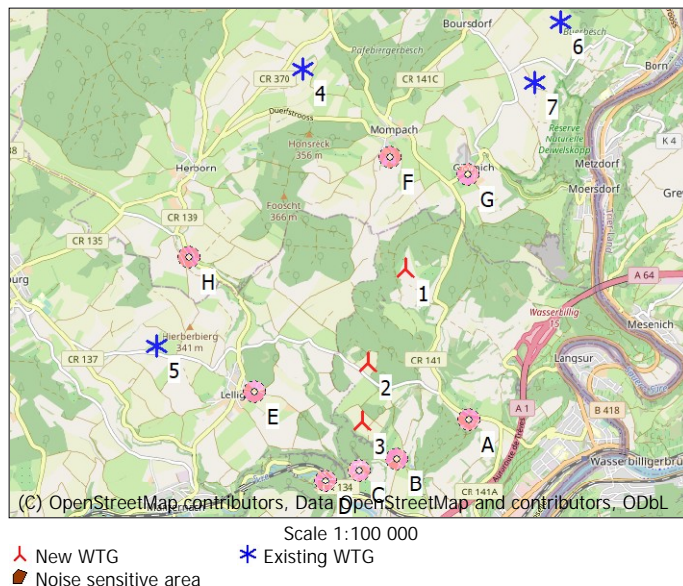
0,0 dB; Uncertainty margin in model has priority

Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:

0.0 dB(A)

All coordinates are in

Luxemburgian TM-LUREF (LU)



WTGs

	X	Y	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data		Wind speed [m/s]	LwA_ref [dB(A)]
					Valid	Manufact.	Type-generator				Creator	Name		
			[m]											
1	101 520	89 035	282,2	ENERCON E-160 EP5 ...	Yes	ENERCON	E-160 EP5 E3-5 560	5 560	160,0	166,6	EMD	Mode 00 - OM 0 s (5560 kW)	6,0	106,8
2	101 027	87 795	298,9	ENERCON E-160 EP5 ...	Yes	ENERCON	E-160 EP5 E3 R1-5 560	5 560	160,0	166,6	EMD	Mode 00 - OM 0 s (5560 kW)	6,0	106,8
3	100 951	87 011	279,6	ENERCON E-160 EP5 ...	Yes	ENERCON	E-160 EP5 E3-5 560	5 560	160,0	166,6	EMD	Mode 00 - OM 0 s (5560 kW)	6,0	106,8
4	100 138	91 672	395,6	ENERCON E-115 EP3 ...	Yes	ENERCON	E-115 EP3 E3-4 200	4 200	115,7	149,0	EMD	Mode 00 - OM 0 s (4200 kW)	6,0	102,8
5	98 216	87 997	319,2	ENERCON E-138 EP3 ...	Yes	ENERCON	E-138 EP3 E3-4 260	4 260	138,3	160,0	EMD	Mode 00 - OM 0 s (4260 kW)	6,0	105,8
6	103 561	92 322	355,4	ENERCON E-138 EP3 ...	Yes	ENERCON	E-138 EP3 E3-4 260	4 260	138,3	160,0	EMD	Mode 00 - OM 0 s (4260 kW)	6,0	105,8
7	103 220	91 517	349,3	ENERCON E-138 EP3 ...	Yes	ENERCON	E-138 EP3 E3-4 260	4 260	138,3	160,0	EMD	Mode 00 - OM 0 s (4260 kW)	6,0	105,8

Calculation Results

Sound level

Noise sensitive area

Noise sensitive area					Immission height [m]	Demands	Sound level		Demands fulfilled ?
No.	Name	X	Y	Z [m]		Noise [dB(A)]	From WTGs [dB(A)]	Distance to noise demand [m]	Noise
A	Mertert, Schaefferreder 1	102 376	87 042	241,3	0,0	39,0	31,1	861	Yes
B	Mertert, Bei den dräi Eechen 1	101 411	86 525	192,4	0,0	39,0	36,6	163	Yes
C	Mertert, Scheidberg 1	100 916	86 361	224,8	0,0	39,0	36,8	159	Yes
D	Mertert, Fielsmillen 1	100 463	86 221	159,8	0,0	39,0	33,5	407	Yes
E	Lellig, Op de Scheedbiereg (limite)	99 521	87 399	282,0	0,0	37,0	32,2	718	Yes
F	Mompach, An der Uecht 11	101 307	90 508	309,9	0,0	37,0	30,4	836	Yes
G	Givenich, Maison 6	102 349	90 291	309,9	0,0	37,0	31,2	850	Yes
H	Herbon, Hierber Milen 3	98 645	89 180	282,7	0,0	39,0	30,2	773	Yes

Distances (m)

NSA	WTG						
	1	2	3	4	5	6	7
A	2169	1545	1425	5143	4268	5411	4554
B	2512	1327	669	5302	3518	6183	5310
C	2741	1438	651	5368	3157	6521	5647
D	3006	1672	929	5461	2864	6842	5971
E	2583	1557	1482	4318	1436	6368	5535
F	1488	2727	3515	1650	3982	2893	2163
G	1505	2824	3565	2607	4727	2365	1504
H	2879	2755	3166	2906	1258	5834	5137

DECIBEL - Detailed results

Calculation: Noise calculation layout 1 Noise calculation model: ISO 9613-2 General 6,0 m/s

Assumptions

Calculated L(DW) = LWA,ref + K + Dc - (Adiv + Aatm + Agr + Abar + Amisc) - Cmet
(when calculated with ground attenuation, then Dc = Domega)

LWA,ref:	Sound pressure level at WTG
K:	Pure tone
Dc:	Directivity correction
Adiv:	the attenuation due to geometrical divergence
Aatm:	the attenuation due to atmospheric absorption
Agr:	the attenuation due to ground effect
Abar:	the attenuation due to a barrier
Amisc:	the attenuation due to miscellaneous other effects
Cmet:	Meteorological correction

Calculation Results

Noise sensitive area: A Mertert, Schaeffereder 1

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	2 169	2 179	22,51	106,8	0,00	77,76	6,51	0,00	0,00	0,00	84,28
2	1 545	1 561	26,69	106,8	0,00	74,87	5,23	0,00	0,00	0,00	80,10
3	1 425	1 440	27,67	106,8	0,00	74,17	4,95	0,00	0,00	0,00	79,12
4	5 143	5 152	7,99	102,8	0,00	85,24	9,53	0,00	0,00	0,00	94,77
5	4 268	4 275	13,42	105,8	0,00	83,62	8,74	0,00	0,00	0,00	92,35
6	5 411	5 418	10,05	105,8	0,00	85,68	10,05	0,00	0,00	0,00	95,72
7	4 554	4 562	12,50	105,8	0,00	84,18	9,09	0,00	0,00	0,00	93,27
Sum			31,09								

Noise sensitive area: B Mertert, Bei den dräi Eechen 1

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	2 512	2 525	20,58	106,8	0,00	79,05	7,16	0,00	0,00	0,00	86,20
2	1 327	1 355	28,40	106,8	0,00	73,64	4,75	0,00	0,00	0,00	78,38
3	669	716	35,70	106,8	0,00	68,09	3,00	0,00	0,00	0,00	71,09
4	5 302	5 314	7,56	102,8	0,00	85,51	9,69	0,00	0,00	0,00	95,20
5	3 518	3 529	16,08	105,8	0,00	81,95	7,74	0,00	0,00	0,00	89,70
6	6 183	6 191	8,12	105,8	0,00	86,84	10,81	0,00	0,00	0,00	97,65
7	5 310	5 319	10,32	105,8	0,00	85,52	9,94	0,00	0,00	0,00	95,46
Sum			36,61								

Noise sensitive area: C Mertert, Scheidberg 1

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	2 741	2 751	19,44	106,8	0,00	79,79	7,55	0,00	0,00	0,00	87,34
2	1 438	1 458	27,52	106,8	0,00	74,28	4,99	0,00	0,00	0,00	79,27
3	651	687	36,13	106,8	0,00	67,74	2,91	0,00	0,00	0,00	70,65
4	5 368	5 378	7,40	102,8	0,00	85,61	9,75	0,00	0,00	0,00	95,36
5	3 157	3 167	17,55	105,8	0,00	81,01	7,21	0,00	0,00	0,00	88,22
6	6 521	6 528	7,35	105,8	0,00	87,30	11,12	0,00	0,00	0,00	98,42
7	5 647	5 654	9,44	105,8	0,00	86,05	10,29	0,00	0,00	0,00	96,34
Sum			36,84								

Noise sensitive area: D Mertert, Fielsmillen 1

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	3 006	3 020	18,18	106,8	0,00	80,60	8,00	0,00	0,00	0,00	88,60

To be continued on next page...

DECIBEL - Detailed results

Calculation: Noise calculation layout 1 Noise calculation model: ISO 9613-2 General 6,0 m/s

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WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
2	1 672	1 700	25,64	106,8	0,00	75,61	5,54	0,00	0,00	0,00	81,14
3	929	972	32,28	106,8	0,00	70,75	3,75	0,00	0,00	0,00	74,50
4	5 461	5 475	7,16	102,8	0,00	85,77	9,83	0,00	0,00	0,00	95,60
5	2 864	2 882	18,81	105,8	0,00	80,19	6,77	0,00	0,00	0,00	86,96
6	6 842	6 852	6,65	105,8	0,00	87,72	11,41	0,00	0,00	0,00	99,13
7	5 971	5 981	8,62	105,8	0,00	86,54	10,61	0,00	0,00	0,00	97,15
Sum			33,46								

Noise sensitive area: E Lellig, Op de Scheedbiereg (limite)

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	2 583	2 589	20,25	106,8	0,00	79,26	7,27	0,00	0,00	0,00	86,53
2	1 557	1 568	26,64	106,8	0,00	74,91	5,24	0,00	0,00	0,00	80,15
3	1 482	1 491	27,25	106,8	0,00	74,47	5,07	0,00	0,00	0,00	79,54
4	4 318	4 326	10,34	102,8	0,00	83,72	8,70	0,00	0,00	0,00	92,42
5	1 436	1 449	27,43	105,8	0,00	74,22	4,12	0,00	0,00	0,00	78,34
6	6 368	6 373	7,70	105,8	0,00	87,09	10,98	0,00	0,00	0,00	98,07
7	5 535	5 540	9,73	105,8	0,00	85,87	10,17	0,00	0,00	0,00	96,04
Sum			32,25								

Noise sensitive area: F Mompach, An der Uecht 11

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	1 488	1 495	27,22	106,8	0,00	74,49	5,08	0,00	0,00	0,00	79,57
2	2 727	2 732	19,54	106,8	0,00	79,73	7,52	0,00	0,00	0,00	87,25
3	3 515	3 518	16,08	106,8	0,00	81,93	8,78	0,00	0,00	0,00	90,71
4	1 650	1 666	22,33	102,8	0,00	75,43	4,99	0,00	0,00	0,00	80,43
5	3 982	3 986	14,40	105,8	0,00	83,01	8,37	0,00	0,00	0,00	91,38
6	2 893	2 901	18,73	105,8	0,00	80,25	6,80	0,00	0,00	0,00	87,05
7	2 163	2 172	22,48	105,8	0,00	77,74	5,55	0,00	0,00	0,00	83,29
Sum			30,44								

Noise sensitive area: G Givenich, Maison 6

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	1 505	1 511	27,08	106,8	0,00	74,59	5,11	0,00	0,00	0,00	79,70
2	2 824	2 829	19,07	106,8	0,00	80,03	7,69	0,00	0,00	0,00	87,72
3	3 565	3 568	15,88	106,8	0,00	82,05	8,86	0,00	0,00	0,00	90,91
4	2 607	2 617	16,84	102,8	0,00	79,36	6,56	0,00	0,00	0,00	85,92
5	4 727	4 730	11,99	105,8	0,00	84,50	9,29	0,00	0,00	0,00	93,78
6	2 365	2 374	21,35	105,8	0,00	78,51	5,92	0,00	0,00	0,00	84,43
7	1 504	1 517	26,89	105,8	0,00	74,62	4,27	0,00	0,00	0,00	78,89
Sum			31,20								

Noise sensitive area: H Herbon, Hierber Milen 3

Wind speed: 6,0 m/s

WTG

No.	Distance [m]	Sound distance [m]	Calculated [dB(A)]	LwA,ref [dB(A)]	Dc [dB]	Adiv [dB]	Aatm [dB]	Agr [dB]	Abar [dB]	Amisc [dB]	A [dB]
1	2 879	2 883	18,81	106,8	0,00	80,20	7,78	0,00	0,00	0,00	87,98
2	2 755	2 761	19,39	106,8	0,00	79,82	7,57	0,00	0,00	0,00	87,39
3	3 166	3 170	17,52	106,8	0,00	81,02	8,25	0,00	0,00	0,00	89,27
4	2 906	2 917	15,47	102,8	0,00	80,30	6,99	0,00	0,00	0,00	87,29
5	1 258	1 274	28,94	105,8	0,00	73,10	3,73	0,00	0,00	0,00	76,83
6	5 834	5 839	8,97	105,8	0,00	86,33	10,47	0,00	0,00	0,00	96,80
7	5 137	5 142	10,80	105,8	0,00	85,22	9,75	0,00	0,00	0,00	94,97
Sum			30,24								

DECI BEL - Assumptions for noise calculation

Calculation: Noise calculation layout 1

Noise calculation model:

ISO 9613-2 General

Wind speed (at 10 m height):

6,0 m/s

Ground attenuation:

Fixed values, Agr: 0,0, Dc: 0,0

Meteorological coefficient, CO:

Selected option: Fixed value: 0,0 dB

Type of demand in calculation:

1: WTG noise is compared to demand (DK, DE, SE, NL etc.)

Noise values in calculation:

All noise values are mean values (Lwa) (Normal)

Pure tones:

Fixed penalty added to source noise of WTGs with pure tones

Model: 5,0 dB(A)

Height above ground level, when no value in NSA object:

0,0 m; Don't allow override of model height with height from NSA object

Uncertainty margin:

0,0 dB; Uncertainty margin in model has priority

Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:

0,0 dB(A)

Octave data required

Frequency dependent air absorption

63	125	250	500	1 000	2 000	4 000	8 000
[dB/km]	[dB/km]	[dB/km]	[dB/km]	[dB/km]	[dB/km]	[dB/km]	[dB/km]
0,10	0,40	1,00	1,90	3,70	9,70	32,80	117,00

All coordinates are in

Luxemburgian TM-LUREF (LU)

WTG: ENERCON E-160 EP5 E3 5560 160.0 !O!

Noise: Mode 00 - OM 0 s (5560 kW)

Source	Source/Date	Creator	Edited
ENERCON GmbH	14.04.2022	EMD	14.04.2022 14:42

The sound power levels do not include uncertainties.

According to manufacturer specification document (D02250920_4.0_de_Operating mode E-160 EP5 E3-5560 kW with TES.pdf/D02250991_3.0_de_One-third octave band level E-160 EP5 E3-5560 kW with TES.pdf).

Enercon reserves the right to change the above specifications without prior notice.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones	Octave data								
					63	125	250	500	1000	2000	4000	8000	
					[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From Windcat	166,6	6,0	106,8	No	85,9	91,9	96,1	100,2	101,8	101,1	94,5	75,2	

WTG: ENERCON E-160 EP5 E3 R1 5560 160.0 !O!

Noise: Mode 00 - OM 0 s (5560 kW)

Source	Source/Date	Creator	Edited
ENERCON GmbH	02.12.2022	EMD	02.12.2022 16:27

The sound power levels do not include uncertainties.

According to manufacturer specification document (D02693750_1.0_de_Operating Mode E-160 EP5 E3 R1-5560 kW with TES.pdf/D02693756_1.0_de_One-third octave band level E-160 EP5 E3 R1-5560 kW with TES.pdf).

Enercon reserves the right to change the above specifications without prior notice.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones	Octave data							
					63	125	250	500	1000	2000	4000	8000
					[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From Windcat	166,6	6,0	106,8	No	85,9	91,9	96,1	100,2	101,8	101,1	94,5	75,2

DECI BEL - Assumptions for noise calculation

Calculation: Noise calculation layout 1

WTG: ENERCON E-115 EP3 E3 4200 115.7 !O!

Noise: Mode 00 - OM 0 s (4200 kW)

Source	Source/Date	Creator	Edited
ENERCON GmbH	19.12.2022	EMD	19.12.2022 10:49

The sound power levels do not include uncertainties. According to manufacturer specification document (D0828520_8.0_de_Operating Modes E-115 EP3 E3-4200 kW with TES.pdf/D0828576_6.0_de_One-third octave band level E-115 EP3 E3-4200 kW with TES.pdf). Enercon reserves the right to change the above specifications without prior notice.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones	Octave data							
					63	125	250	500	1000	2000	4000	8000
					[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From Windcat	149,0	6,0	102,8	No	84,7	90,4	93,5	95,9	97,0	96,9	91,2	74,5

WTG: ENERCON E-138 EP3 E3 4260 138.3 !O!

Noise: Mode 00 - OM 0 s (4260 kW)

Source	Source/Date	Creator	Edited
ENERCON GmbH	16.03.2022	EMD	31.05.2022 15:54

The sound power levels do not include uncertainties.
According to manufacturer specification document (D1018685_3.0_de_Operating Mode E-138 EP3 E3-4260 kW mit TES.p/D1018696_3.0_de_One-third octave band level E-138 EP3 E3-4260 kW with TES.pdf).
Enercon reserves the right to change the above specifications without prior notice.

Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones	Octave data							
					63	125	250	500	1000	2000	4000	8000
					[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
From Windcat	160,0	6,0	105,8	No	86,5	92,5	96,4	99,7	101,7	97,9	88,9	70,1

Noise sensitive area: A Mertert, Schaeferreder 1

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 39,0 dB(A)

No distance demand

Noise sensitive area: B Mertert, Bei den dräi Eechen 1

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 39,0 dB(A)

No distance demand

Noise sensitive area: C Mertert, Scheidberg 1

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 39,0 dB(A)

No distance demand

Noise sensitive area: D Mertert, Fielsmillen 1

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 39,0 dB(A)

No distance demand

Noise sensitive area: E Lellig, Op de Scheedbiereg (limite)

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 37,0 dB(A)

No distance demand

Project:
WP Mertert

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Calculated:
18.04.2025 09:13/4.0.531

DECI BEL - Assumptions for noise calculation

Calculation: Noise calculation layout 1

Noise sensitive area: F Mompach, An der Uecht 11

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 37,0 dB(A)

No distance demand

Noise sensitive area: G Givenich, Maison 6

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

No temporal binning

Noise demand: 37,0 dB(A)

No distance demand

Noise sensitive area: H Herbon, Hierber Milen 3

Predefined calculation standard:

Immission height(a.g.l.): Use standard value from calculation model

Uncertainty margin: Use default value from calculation model

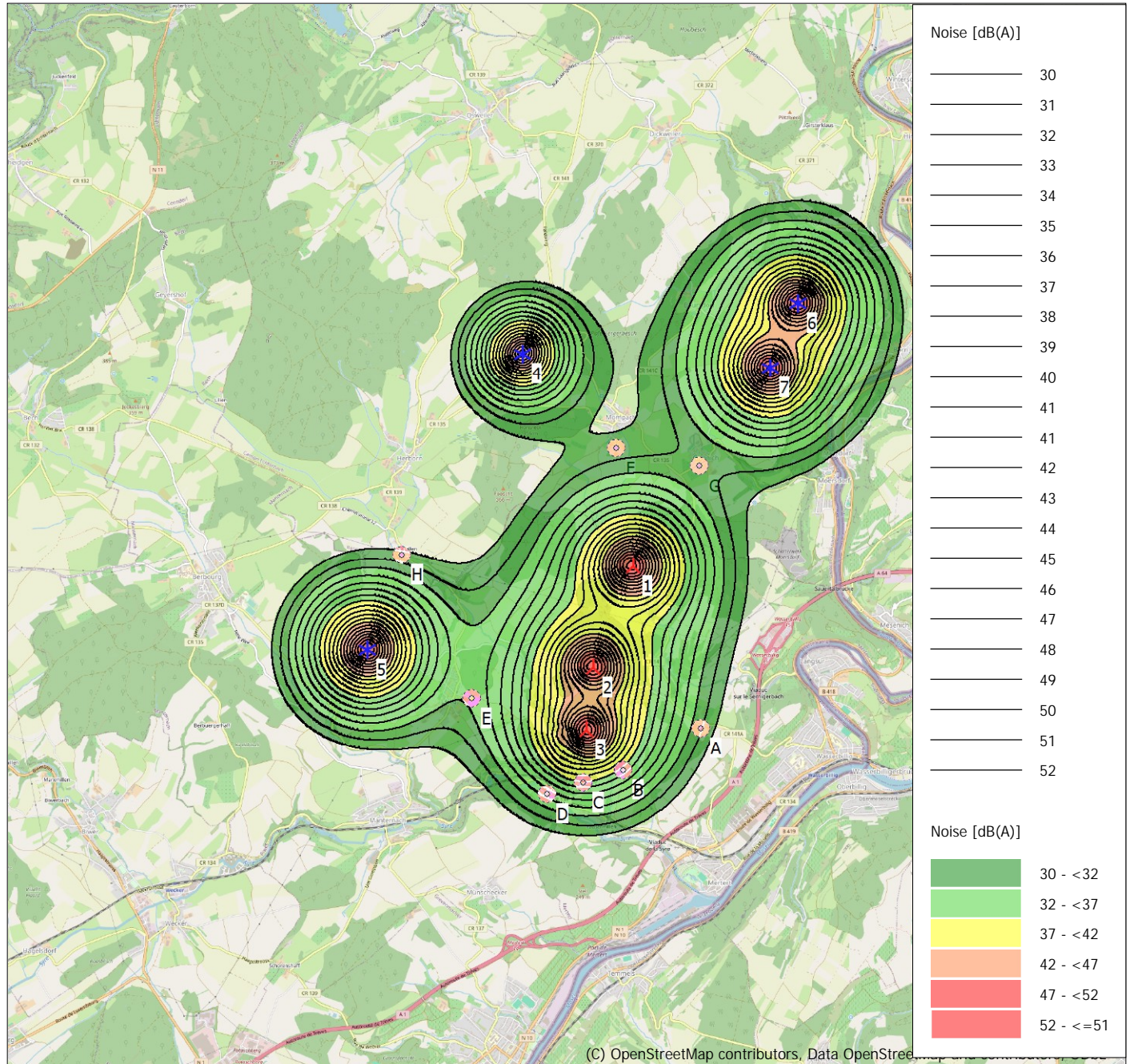
No temporal binning

Noise demand: 39,0 dB(A)

No distance demand

DECIBEL - Map 6,0 m/s

Calculation: Noise calculation layout 1



New WTG

Existing WTG

Noise sensitive area

Noise calculation model: ISO 9613-2 General. Wind speed: 6,0 m/s
Height above sea level from active line object