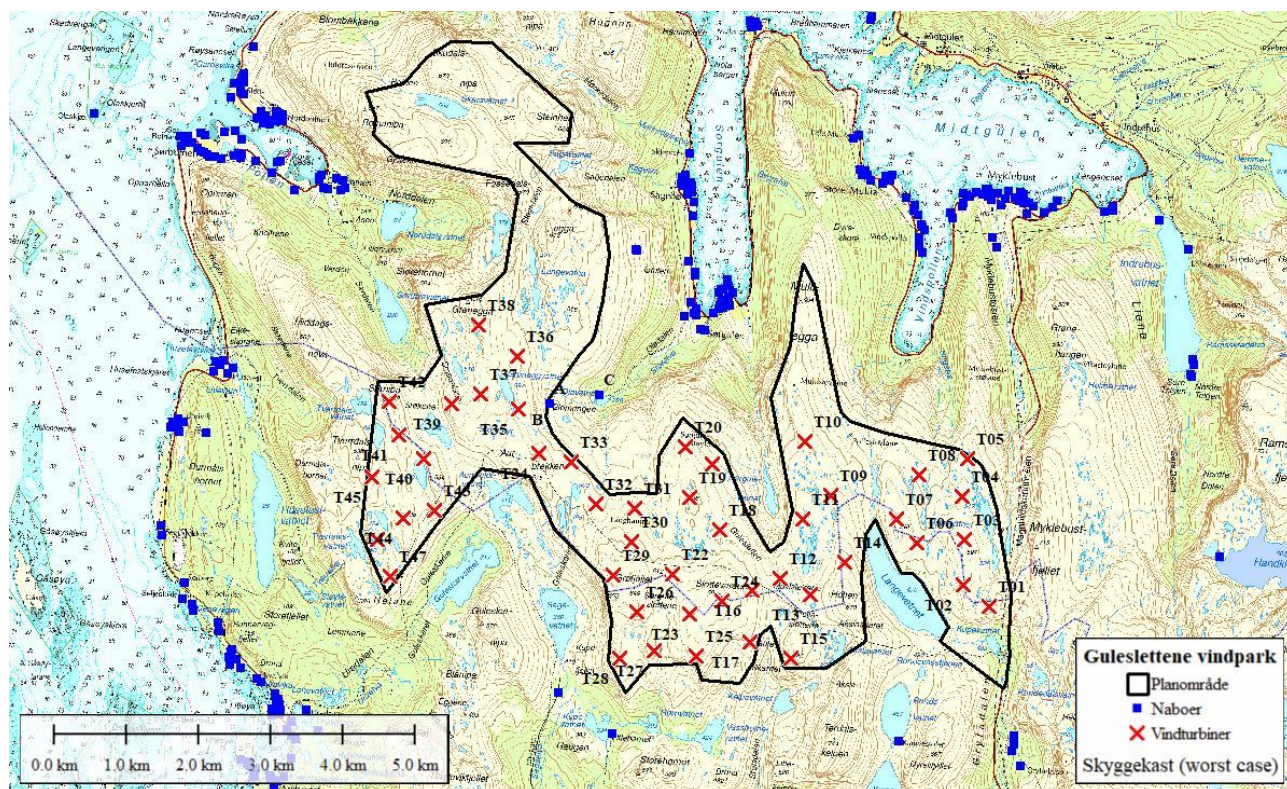


GULESLETTENE VINDPARK – BEREGNING AV STØY OG SKYGGEKAST

1 Bakgrunn

Støy og skyggecast beregninger er utført for et utbyggingsalternativ med 47 vindturbiner på Guleslettene Vindpark. De planlagte vindturbinene har en størrelse på 4.2 MW, en rotordiameter på 136 m og en tårnhøyde på 90 m. Kildestøy fra turbinene er 106.9 dB ved vindhastighet på 8 m/s 10 m over bakken.

Totalt 68 naboer er kartlagt i området rundt Guleslettene vindpark (se oversiktskart i Figur 1).



Figur 1 – Oversikt over aktuelt utbyggingsalternativ og nærliggende boliger

2 Støy fra vindkraftanlegget

Støyberegninger er utført for aktuelt utbyggingsalternativ i henhold til gjeldende retningslinje for behandling av støy i arealplanlegging (T-1442/2016) fra Klima- og Miljødepartementet, og Veileder til retningslinje for behandling av støy i arealplanlegging (T-1442/2016) fra Miljødirektoratet.

Støy fra vindturbiner oppgis som lydeffektnivå i dB(A) ved vindstyrke 8 m/s i 10 meters høyde. Denne skalaen måler lydintensiteten over hele spekteret av hørbare frekvenser samtidig med at skalaen korregerer for at ørets følsomhet er avhengig av lydfrekvensen.

I henhold til retningslinjen benyttes årsmiddelverdien, L_{den} , som målenhet på støy. Denne vektet med henholdsvis 5 og 10 dB(A) tillegg for støy som opptrer på kveld og natt, hvor dag er definert som perioden fra 07–19, kveld fra 19–23 og natt fra 23–07. Støynivåene er i henhold til retningslinjen evaluert basert på følgende grenseverdier:

- $L_{den} = 45\text{--}55$ dB(A). Gul vurderingssone. Støypåvirkningen skal vurderes i hvert enkelt tilfelle.
- $L_{den} \geq 55$ dB(A). Rød restriktiv sone. Normalt krav om støyreduserende tiltak.

Støyberegningene er utført ved bruk av Nord2000-modulen i windPRO (versjon 3.1.633, Nord2000 versjon 4.0.1.1). Følgende antagelser ble lagt til grunn i beregningene:

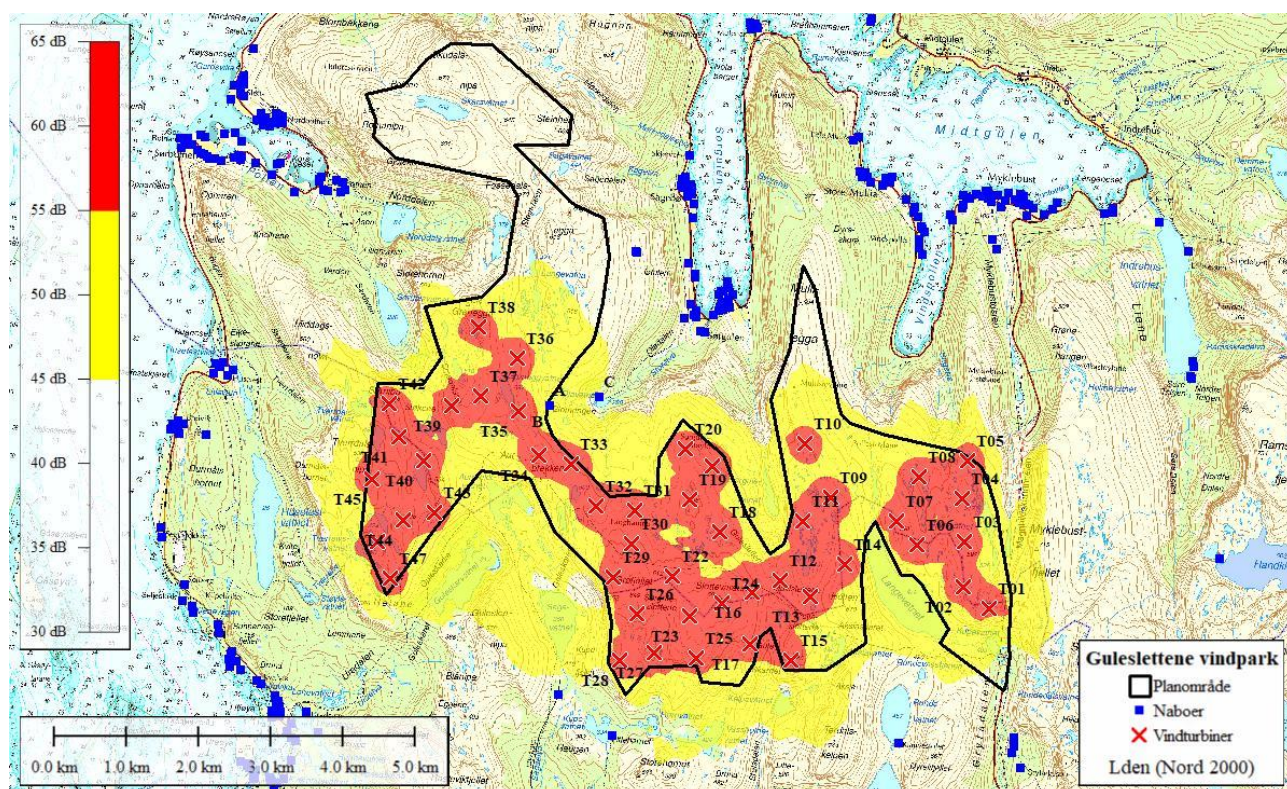
- Konstant vindhastighet på 8 m/s i 10 m høyde for alle turbinene.
- Vindhastighet justert til tårnhøyde ved bruk av IEC skjærprofil ($z_0 = 0.05$ m).
- Medvind fra alle retninger.
- 12 sektors retningsfordeling.
- 10 m DTM (terrenghøyde).
- Ruhet basert på verdiene brukt i vind strømningsmodellen for enkelte områder definert på arealdekke data fra Kartverket
 - Bakgrunn ruhet (åpent område): Ruhetsklasse 1, Ruhetslengde 0.03 m
 - Dyrt mark, Steinbrudd: Ruhetsklasse 1.4, Ruhetslengde 0.05 m
 - Myr: Ruhetsklasse 2, Ruhetslengde 0.1 m
 - Skog: Ruhetsklasse 3.5, Ruhetslengde 0.8 m
 - Havflate, Innsjø: Ruhetsklasse 0, Ruhetslengde 0.0001 m
 - Industriområde, Tettbebyggelse: Ruhetsklasse 3, Ruhetslengde 0.4 m
- Hardhet basert på arealdekke fra Kartverket
 - Bakgrunn ruhet (åpent område): 500
 - Skog, Myr: 31.5
 - Havflate, Innsjø: 20000
 - Industriområde, Tettbebyggelse, Steinbrudd: 2000
- Høyde på mottaker (nabo) er 4 m.
- Stabilitetsforhold: Natt og skyet.
- Klimaparametere:
 - Luftfuktighet: 50 %
 - Temperatur: 15 grader Celsius 2 m over bakken

Nord2000-modulen i windPRO er et detaljert og anerkjent verktøy for beregning av støy. Det er imidlertid kun det fysiske (ekvivalente) støynivået som beregnes i denne modulen, mens den vektete verdien, L_{den} , må beregnes ut fra ekvivalent lydnivå på dag, kveld og natt ved bruk av følgende formel:

$$L_{den} = \frac{1}{24} \left(12 * 10^{\frac{L_{day}}{10}} + 4 * 10^{\frac{L_{evening}+5}{10}} + 8 * 10^{\frac{L_{night}+10}{10}} \right)$$

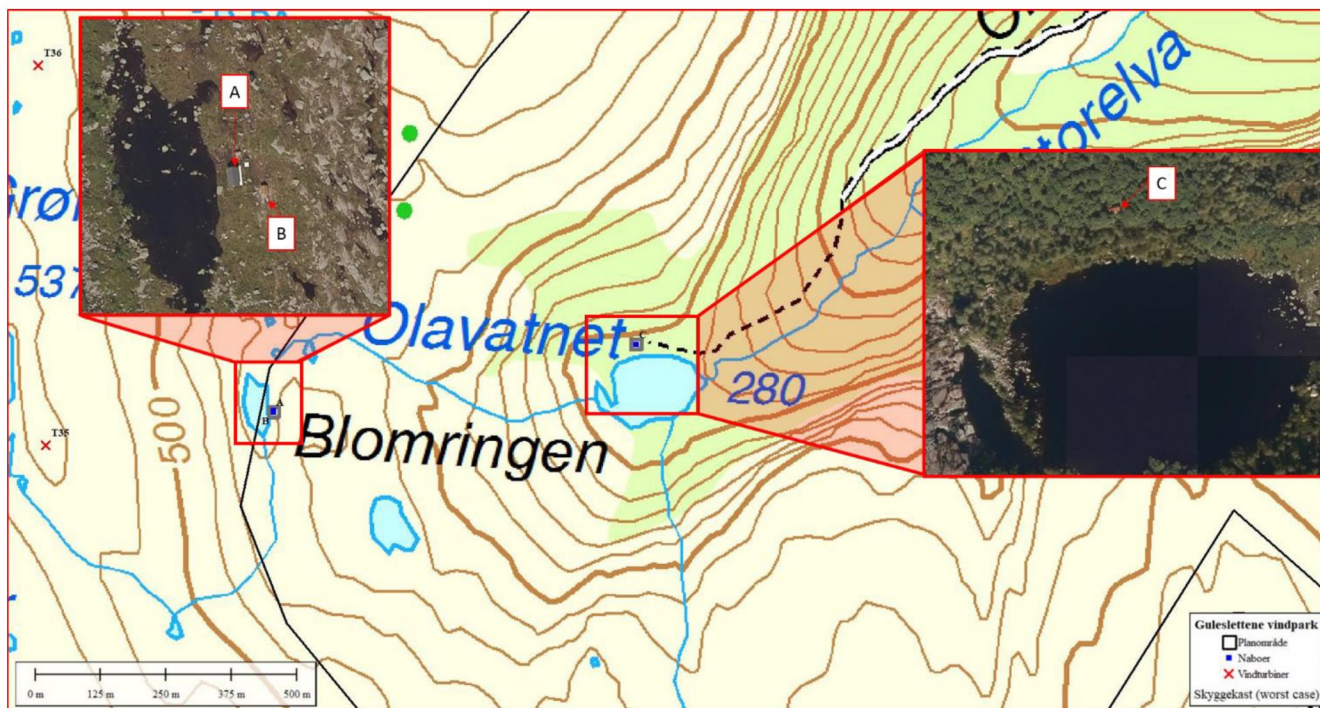
Når det tas hensyn til vektingen av støy på kveld og natt, vil L_{den} -verdien ligge 6.4 dB(A) over ekvivalent støynivå, L_{ekv} .

Støysonekart basert på støynivå for verste scenario (medvind fra alle retninger) er presentert i Figur 2.



Figur 2 - Støykart for området med estimerte grenseverdier for støy; årlig L_{den} (Nord2000)

Det er 3 naboer innenfor eller like utenfor planområdet som vil oppleve mest støy. To er hytter og én er et stølshus. Selv om stølshuset i henhold til gjeldende regelverk vurderes som ikke 'støyfølsomt', er det likevel blitt vurdert i denne analysen. Figur 3 under viser mer detaljert de aktuelle naboers lokalisering.



Figur 3 – Lokalisering av de nærliggende naboer

Beregninger viser at støynivået for de to naboer som ligger innenfor grensen for den gule vurderingssonen (Blomringen Hytte Utmarkslaget (A) og Stølshus (B)) overskrider grenseverdiene. Overskridelsene er på henholdsvis 7.5 og 7.6 dB. En minnelig avtale med eierne av de to hyttene (Blomringen (A) og Olavatnet (C)) og Stølshuset (B) på Blomringen er inngått for både støy og skyggekast. Omfanget av forventet støynivå for de to fritidsboligene og stølshus og tiltak er presentert i Tabell1.

Tabell 1 – Støypåvirkning for nærliggende bebyggelse

Nr	Bebyggelse	Type bygg	Koordinater (WGS84, UTM sone 32)		Avstand til nærmeste vindturbin (m)	Støynivå (L_{den})	Tiltak
			X	Y		dB	
A	Hytte Utmarkslaget (Blomringen)	Fritidsbolig	292260	6846248	439 (T35)	52.5	Avtale inngått med grunneier
B	Stølshus for GNr.49.1 (Blomringen)	Stølshus	292259	6846251	439 (T35)	52.6	Avtale inngått med grunneier, stølshuset skal saneres
C	Oladalshytta (Olavatnet)	Fritidsbolig	292952	6846377	1008 (T33)	43.7	Støy krav overholdt. Avtale inngått med grunneier, hytta skal saneres

For ytterligere informasjon om støyberegningene se vedlegg 1 (Guleslettene støyberegninger– 47 x V136 4.2 MW 90m HH). Det er som nevnt kun det ekvivalente støynivået, L_{ekv} , som beregnes i Nord2000-modulen i windPRO og som er oppgitt i rapporten. Den vektete verdien, L_{den} , vil ligge 6.4 dB(A) høyere enn L_{ekv} , såfremt det ikke er benyttet støyreducerende tiltak, som taggete bakkanter eller redusert produksjon på natten.

3 Skyggecast fra vindkraftanlegget

Skyggecast oppstår når en vindturbin i drift blir stående mellom solen og et mottakerpunkt, og det dannes roterende skygger fra rotorbladenes bevegelser. Hvor og når skyggecast inntreffer avhenger blant annet av lokal topografi, tidspunkt på dagen, sesong og mottakerpunktets lokalisering i forhold til vindturbinen.

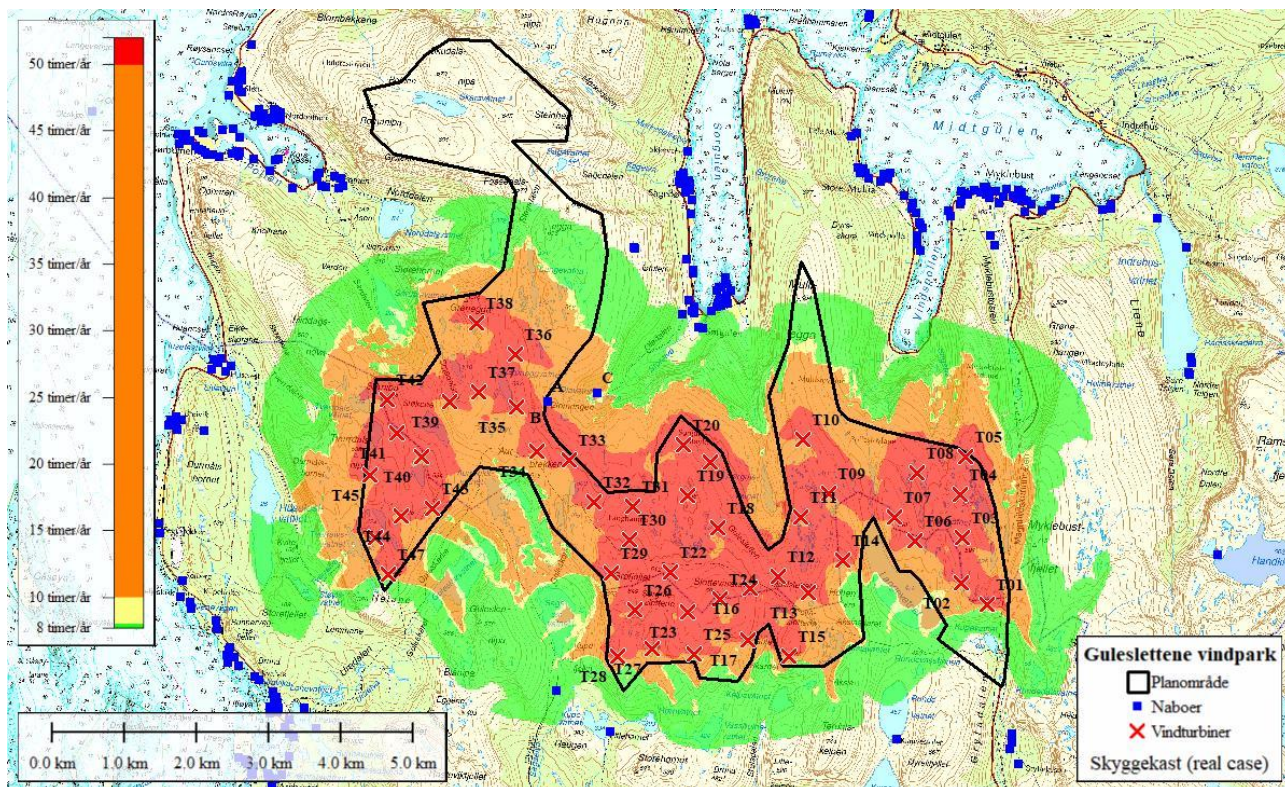
Norske retningslinjer for omfang av skyggecast inkluderer grenser for teoretisk («worst case») og sannsynlig («real case») scenario. Ved beregning av sannsynlig skyggecast skal sannsynlighetsdata for antall solskinnstimer og forventet sektorvis antall driftstimer for turbinene benyttes. Teoretisk skyggecast er derimot kun basert på solens posisjon relativ til vindturbinen, hvor det antas at solen alltid skinner, turbinene er i drift hele tiden og vindretningen er slik at turbinene alltid står vendt mot skyggecastmottaker.

I henhold til konsesjonsvilkårene for Guleslettene vindpark er det kun faktisk (sannsynlig) skyggecast som skal beregnes. Beregningene skal utføres for nærliggende helårs og fritidsboliger og beregnet faktisk skyggecastomfang skal ikke overstige 8 timer per år. Beregnet teoretisk («worst case») skyggecastomfang skal ikke overstige 30 timer per år, eller 30 minutter/dag (maksimum).

Skyggecastberegningene er utført i WindPRO (versjon 3.1.633). Beregningene er gjennomført i henhold til gjeldende retningslinje («Skyggecast fra Vindkraftverk, NVE 2/2014»), og følgende antagelser er lagt til grunn i beregningene:

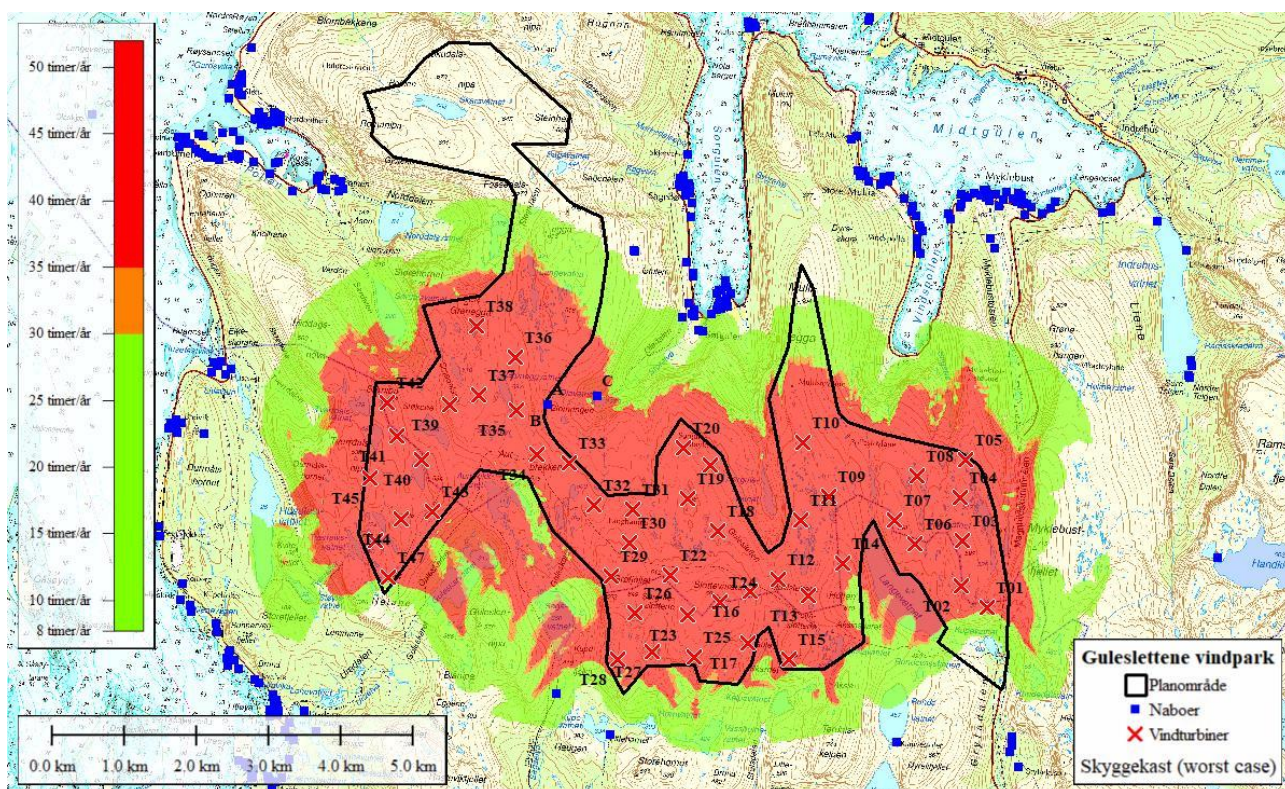
- Standard faktor for solskinnssannsynlighet på 0.5.
- 12 sektors vindretningsfordeling.
- Årlig driftstid på 7000 timer.
- Naboer som ligger mer enn 1500 m unna nærmeste turbin er ikke hensyntatt.
- Skyggecast inntreffer ikke når solen står lavere enn 3 grader over horisonten.
- Beregninger av teoretisk skyggecast er basert på drivhustilstand, det vil si at bygningene ikke har én bestemt retning mot turbinene og at mottakeren har vinduer i alle retninger. Mottakeren er angitt som en vertikal flate på 2x2 m hevet 2 meter over bakken.
- Skjermingseffekt av mellomliggende terreng er hensyntatt (basert på 10 m høydekoter).
- Frekvensfordeling fra langtidskorrigert tidsserie fra mast 4806 (Storemyr) er benyttet i beregningene.

I henhold til konsesjonsvilkårene er kun nærliggende helårs og fritidsboliger hensyntatt i beregningene. Figur 4 viser beregnet omfang av sannsynlig skyggecast (timer/år) for aktuelt utbyggingsalternativ. Områder som ventes å oppleve skyggecast, er fargelagt. Grønnfargede områder er områder som er eksponert for skyggecast, men hvor omfanget er i henhold til konsesjonsvilkårene (skyggecastomfang under 8 timer i året). Gulfargede områder er eksponert mellom 8 og 10 timer i året, oransjefargede områder mellom 10 og 50 timer i året og områder hvor skyggecast forventes å inntreffe over 50 timer i året er farget røde. Naboer er i figuren markert med blå prikker.

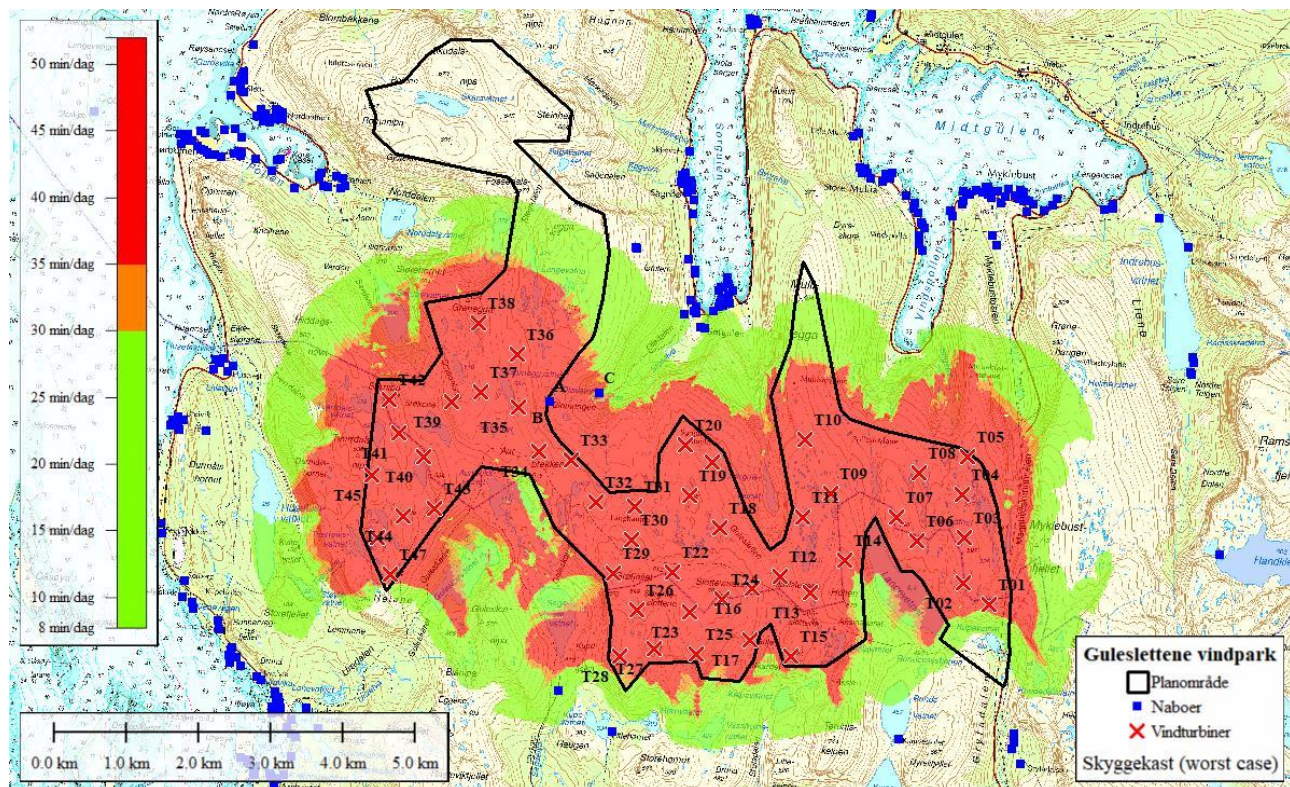


Figur 4 – Oversikt over omfang av reelt skyggecast (timer/år) for Guleslettene vindpark.

Figur 5 og Figur 6 viser beregnet omfang av teoretisk («worst case») skyggecast for aktuelt utbyggingsalternativ som viser henholdsvis forventet timer per år og maksimum minutter per dag. Oransje og rødfargede områder er områder hvor skyggecast forventes å inntreffe over grensen (30 timer/år (Figur 4) og 30 min/dag (Figur 5)).



Figur 5 – Oversikt over omfang av teoretisk skyggecast (timer/år) for Guleslettene vindpark.



Figur 6 – Oversikt over omfang av teoretisk skyggekast (maks minutter/dag) for Guleslettene vindpark.

Beregninger viser at skyggekast for tre naboer er forventet å inntreffe over grensen (Blomringen Hytte Utmarkslaget (A), Stølshus (B) og Oladalshytta på Olavatnet (C)). Omfanget av sannsynlig og teoretisk skyggekast for de to fritidsboligene og stølshuset og tiltak er spesifisert i Tabell 2.

Tabell 2 – Skyggekastpåvirkning for nærliggende bebyggelse

Nr.	Bebyggelse	Type bygg	Sannsynlig («Real case») skyggekast	Teoretisk («Worst case») skyggekast		Sesong	Tiltak
			Timer/År	Timer/År	Min/dag		
A	Hytte Utmarkslaget (Blomringen)	Fritidsbolig	45:10	198:47	101	Vår/Høst	Avtale inngått med grunneier
B	Stølshus for Gnr.49.1 (Blomringen)	Stølshus	44:55	197:13	101	Vår/Høst	Avtale inngått med grunneier, stølshuset skal saneres
C	Oladalshytta (Olavatnet)	Fritidsbolig	11:49	47:41	37	Høst/Vinter	Avtale inngått med grunneier, hytta skal saneres

Som det fremgår av tabellen vil de to hyttene og stølshus bli eksponert for skyggekast fra vindturbinene med verdier som overstiger grenseverdiene for alle tre kriterier. Som tidligere nevnt, er en minnelig avtale med eierne av de to hyttene og stølshus inngått. Hytta ved Olavatnet og stølshuset skal saneres, og en avtale om dette er inngått med grunneierne.

For ytterligere informasjon om skyggekastomfanget for de aktuelle naboene, se vedlegg 2 (Guleslettene skyggekastberegninger– 47 x V136 4.2 MW 90m HH).

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden - 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

Licensed user:

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

Assumptions

Weather stability

Relative humidity

Air temperature

Height for air temperature

Stability parameters

Inverse Monin Obukhov length

Temperature scale T*

50.0 %

15.0 °C

2.0 m

Night; Clouded

0.0000

0.0000

Terrain

Elevation based on object

DTM Guleslettene 10x10m

Roughness based on area object

Area object (Roughness): REGIONS_Guleslettene_4.w2r (5)

Terrain type based on area object

Terrain hardness

Month for calculation

January

Wind speed criteria

Uniform wind speed at 10 m agl.

Height above ground level for receiver

Wind speed has been extrapolated to calculation height using

IEC profile shear (z0 = 0.05m)

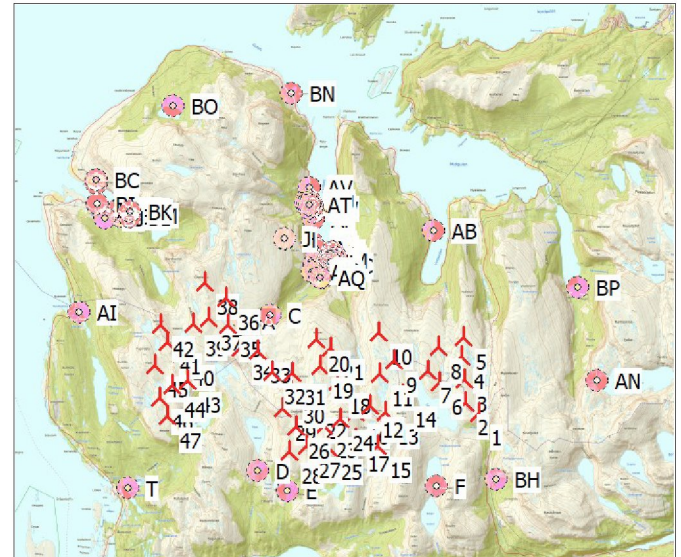
No stability correction

Version

4.0.1.1

All coordinates are in

UTM (north)-WGS84 Zone: 32



Scale 1:200,000

New WTG

Noise sensitive area

WTGs

	Easting	Northing	Z [m]	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data	
					Valid	Manufact.	Type-generator				Creator	Name
1	298,334	6,843,450	587.4	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
2	297,984	6,843,752	583.2	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
3	298,001	6,844,367	582.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
4	297,969	6,844,963	538.8	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
5	298,039	6,845,489	515.9	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
6	297,340	6,844,333	517.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
7	297,054	6,844,657	541.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
8	297,369	6,845,275	491.6	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
9	296,156	6,844,978	561.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
10	295,796	6,845,731	541.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
11	295,766	6,844,654	554.2	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
12	295,455	6,843,835	583.3	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
13	295,860	6,843,617	581.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
14	296,347	6,844,061	613.9	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
15	295,594	6,842,741	641.3	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
16	295,060	6,843,680	617.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
17	295,031	6,842,955	602.1	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
18	294,619	6,844,504	578.6	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
19	294,205	6,844,951	602.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
20	294,138	6,845,650	561.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
21	294,507	6,845,419	535.7	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
22	293,964	6,843,891	623.4	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
23	294,195	6,843,349	680.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
24	294,640	6,843,526	692.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
25	294,291	6,842,767	663.6	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
26	293,473	6,843,375	640.2	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
27	293,713	6,842,844	599.7	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
28	293,235	6,842,732	562.4	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
29	293,145	6,843,875	639.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
30	293,400	6,844,339	601.1	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
31	293,437	6,844,802	561.8	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
32	292,898	6,844,868	520.2	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
33	292,554	6,845,451	500.5	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
34	292,112	6,845,561	544.8	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
35	291,825	6,846,184	540.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
36	291,810	6,846,911	528.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
37	291,313	6,846,391	570.6	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
38	291,277	6,847,334	601.0	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)
39	290,899	6,846,255	559.8	VESTAS V136-4.2-Gul...	Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-OS (106.9 dB)

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

Licensed user:

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

	Easting	Northing	Z	Row data/Description	WTG type		Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Noise data	
					Valid	Manufact. Type-generator				Creator	Name
			[m]								
40	290,519	6,845,497	500.8	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
41	290,167	6,845,825	529.5	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
42	290,038	6,846,283	549.9	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
43	290,662	6,844,772	486.2	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
44	290,233	6,844,669	504.6	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
45	289,799	6,845,237	493.9	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
46	289,873	6,844,369	440.0	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)
47	290,054	6,843,869	447.6	VESTAS V136-4.2-Gul... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	USER	PO1-0S (106.9 dB)

Calculation Results

Sound level

Noise sensitive area

No.	Name		Easting	Northing	Z	Imission height	Wind speed	Noise	From WTGs	Noise
					[m]	[m]	[m/s]	[dB(A)]	[dB(A)]	[dB(A)]
A	Noise sensitive point: Norwegian - User defined (1060)		292,260	6,846,248	440.0	4.0	8.0	38.6	46.1	No
B	Noise sensitive point: Norwegian - User defined (1061)		292,259	6,846,251	439.9	4.0	8.0	38.6	46.2	No
C	Noise sensitive point: Norwegian - User defined (1062)		292,952	6,846,377	289.6	4.0	8.0	38.6	37.3	Yes
D	Noise sensitive point: Norwegian - User defined (1063)		292,377	6,842,261	340.3	4.0	8.0	38.6	35.4	Yes
E	Noise sensitive point: Norwegian - User defined (1064)		293,123	6,841,693	335.8	4.0	8.0	38.6	34.9	Yes
F	Noise sensitive point: Norwegian - User defined (1065)		297,092	6,841,586	460.4	4.0	8.0	38.6	33.5	Yes
G	Noise sensitive point: Norwegian - User defined (1066)		294,720	6,847,930	7.0	4.0	8.0	38.6	31.3	Yes
H	Noise sensitive point: Norwegian - User defined (1067)		293,464	6,848,370	365.0	4.0	8.0	38.6	31.0	Yes
I	Noise sensitive point: Norwegian - User defined (1068)		294,741	6,847,877	1.9	4.0	8.0	38.6	30.9	Yes
J	Noise sensitive point: Norwegian - User defined (1069)		293,457	6,848,376	365.0	4.0	8.0	38.6	30.9	Yes
K	Noise sensitive point: Norwegian - User defined (1070)		294,794	6,847,783	1.1	4.0	8.0	38.6	30.8	Yes
L	Noise sensitive point: Norwegian - User defined (1071)		294,642	6,847,663	22.4	4.0	8.0	38.6	30.5	Yes
M	Noise sensitive point: Norwegian - User defined (1072)		294,739	6,847,707	9.4	4.0	8.0	38.6	30.5	Yes
N	Noise sensitive point: Norwegian - User defined (1073)		294,606	6,847,785	2.0	4.0	8.0	38.6	30.4	Yes
O	Noise sensitive point: Norwegian - User defined (1074)		294,742	6,847,612	15.4	4.0	8.0	38.6	30.3	Yes
P	Noise sensitive point: Norwegian - User defined (1075)		294,683	6,847,689	19.7	4.0	8.0	38.6	30.3	Yes
Q	Noise sensitive point: Norwegian - User defined (1076)		294,720	6,847,962	2.8	4.0	8.0	38.6	30.1	Yes
R	Noise sensitive point: Norwegian - User defined (1077)		294,665	6,847,830	2.5	4.0	8.0	38.6	30.0	Yes
S	Noise sensitive point: Norwegian - User defined (1078)		294,663	6,847,609	33.4	4.0	8.0	38.6	29.9	Yes
T	Noise sensitive point: Norwegian - User defined (1079)		288,899	6,842,024	20.0	4.0	8.0	38.6	29.7	Yes
U	Noise sensitive point: Norwegian - User defined (1080)		294,656	6,847,579	35.2	4.0	8.0	38.6	29.7	Yes
V	Noise sensitive point: Norwegian - User defined (1081)		294,265	6,848,029	4.1	4.0	8.0	38.6	29.7	Yes
W	Noise sensitive point: Norwegian - User defined (1082)		294,627	6,847,629	19.8	4.0	8.0	38.6	29.6	Yes
X	Noise sensitive point: Norwegian - User defined (1083)		294,210	6,847,651	16.0	4.0	8.0	38.6	29.6	Yes
Y	Noise sensitive point: Norwegian - User defined (1084)		294,630	6,847,833	0.7	4.0	8.0	38.6	29.6	Yes
Z	Noise sensitive point: Norwegian - User defined (1085)		294,607	6,847,562	25.2	4.0	8.0	38.6	29.5	Yes
AA	Noise sensitive point: Norwegian - User defined (1086)		294,267	6,848,074	1.6	4.0	8.0	38.6	29.5	Yes
AB	Noise sensitive point: Norwegian - User defined (1087)		297,422	6,848,342	1.8	4.0	8.0	38.6	29.4	Yes
AC	Noise sensitive point: Norwegian - User defined (1088)		294,610	6,847,594	16.8	4.0	8.0	38.6	28.8	Yes
AD	Noise sensitive point: Norwegian - User defined (1089)		294,289	6,847,480	4.1	4.0	8.0	38.6	28.4	Yes
AE	Noise sensitive point: Norwegian - User defined (1090)		294,280	6,847,559	4.0	4.0	8.0	38.6	28.4	Yes
AF	Noise sensitive point: Norwegian - User defined (1091)		294,244	6,848,839	7.2	4.0	8.0	38.6	28.2	Yes
AG	Noise sensitive point: Norwegian - User defined (1092)		294,521	6,847,508	0.3	4.0	8.0	38.6	28.2	Yes
AH	Noise sensitive point: Norwegian - User defined (1093)		294,184	6,848,219	18.8	4.0	8.0	38.6	28.0	Yes
AI	Noise sensitive point: Norwegian - User defined (1094)		287,872	6,846,749	19.8	4.0	8.0	38.6	27.9	Yes
AJ	Noise sensitive point: Norwegian - User defined (1095)		294,131	6,849,405	3.6	4.0	8.0	38.6	27.7	Yes
AK	Noise sensitive point: Norwegian - User defined (1096)		294,129	6,847,457	35.0	4.0	8.0	38.6	27.4	Yes
AL	Noise sensitive point: Norwegian - User defined (1097)		294,256	6,849,036	11.8	4.0	8.0	38.6	27.2	Yes
AM	Noise sensitive point: Norwegian - User defined (1098)		294,091	6,849,378	10.5	4.0	8.0	38.6	27.1	Yes
AN	Noise sensitive point: Norwegian - User defined (1099)		301,527	6,844,141	498.8	4.0	8.0	38.6	27.0	Yes
AO	Noise sensitive point: Norwegian - User defined (1100)		294,255	6,847,497	5.0	4.0	8.0	38.6	26.8	Yes
AP	Noise sensitive point: Norwegian - User defined (1101)		294,403	6,847,268	12.6	4.0	8.0	38.6	26.6	Yes
AQ	Noise sensitive point: Norwegian - User defined (1102)		294,341	6,847,280	9.8	4.0	8.0	38.6	26.6	Yes
AR	Noise sensitive point: Norwegian - User defined (1103)		294,234	6,849,170	13.6	4.0	8.0	38.6	26.5	Yes
AS	Noise sensitive point: Norwegian - User defined (1104)		294,231	6,849,257	5.1	4.0	8.0	38.6	26.2	Yes
AT	Noise sensitive point: Norwegian - User defined (1105)		294,174	6,849,245	12.0	4.0	8.0	38.6	26.1	Yes
AU	Noise sensitive point: Norwegian - User defined (1106)		294,206	6,849,305	1.9	4.0	8.0	38.6	26.0	Yes
AV	Noise sensitive point: Norwegian - User defined (1107)		294,202	6,849,704	4.0	4.0	8.0	38.6	26.0	Yes
AW	Noise sensitive point: Norwegian - User defined (1108)		294,169	6,849,140	14.9	4.0	8.0	38.6	25.9	Yes
AX	Noise sensitive point: Norwegian - User defined (1109)		294,110	6,849,264	8.6	4.0	8.0	38.6	25.9	Yes

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

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Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Demands		Sound level		Demands fulfilled?	
							Noise	From WTGs	Noise		Noise	
				[m]	[m]	[m/s]	[dB(A)]		[dB(A)]		[dB(A)]	
AY	Noise sensitive point: Norwegian - User defined (1110)	294,074	6,849,286	8.6	4.0	8.0	38.6		25.8		Yes	
AZ	Noise sensitive point: Norwegian - User defined (1111)	288,559	6,850,149	17.5	4.0	8.0	38.6		25.6		Yes	
BA	Noise sensitive point: Norwegian - User defined (1112)	289,303	6,849,369	7.4	4.0	8.0	38.6		25.5		Yes	
BB	Noise sensitive point: Norwegian - User defined (1113)	289,124	6,849,228	9.3	4.0	8.0	38.6		25.1		Yes	
BC	Noise sensitive point: Norwegian - User defined (1114)	288,563	6,850,239	34.5	4.0	8.0	38.6		25.0		Yes	
BD	Noise sensitive point: Norwegian - User defined (1115)	289,189	6,849,210	12.0	4.0	8.0	38.6		24.7		Yes	
BE	Noise sensitive point: Norwegian - User defined (1116)	289,095	6,849,418	4.5	4.0	8.0	38.6		24.6		Yes	
BF	Noise sensitive point: Norwegian - User defined (1117)	289,065	6,849,357	4.0	4.0	8.0	38.6		24.5		Yes	
BG	Noise sensitive point: Norwegian - User defined (1118)	289,073	6,849,386	3.3	4.0	8.0	38.6		24.5		Yes	
BH	Noise sensitive point: Norwegian - User defined (1119)	298,677	6,841,656	304.7	4.0	8.0	38.6		24.4		Yes	
BI	Noise sensitive point: Norwegian - User defined (1120)	288,542	6,849,600	9.4	4.0	8.0	38.6		24.1		Yes	
BJ	Noise sensitive point: Norwegian - User defined (1121)	288,728	6,849,208	15.2	4.0	8.0	38.6		23.5		Yes	
BK	Noise sensitive point: Norwegian - User defined (1122)	289,401	6,849,333	10.0	4.0	8.0	38.6		23.2		Yes	
BL	Noise sensitive point: Norwegian - User defined (1123)	289,376	6,849,205	10.0	4.0	8.0	38.6		23.0		Yes	
BM	Noise sensitive point: Norwegian - User defined (1124)	289,428	6,849,234	14.7	4.0	8.0	38.6		17.3		Yes	
BN	Noise sensitive point: Norwegian - User defined (1125)	293,874	6,852,214	13.0	4.0	8.0	38.6		17.0		Yes	
BO	Noise sensitive point: Norwegian - User defined (1126)	290,703	6,852,062	192.7	4.0	8.0	38.6		5.9		Yes	
BP	Noise sensitive point: Norwegian - User defined (1127)	301,148	6,846,630	3.0	4.0	8.0	38.6		3.4		Yes	

Sound level

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands		Sound level		Demands fulfilled?	
								Noise	From WTGs	Noise		Noise	
				[m]	[m]	[m/s]	[°]	[dB(A)]		[dB(A)]		[dB(A)]	
A	Noise sensitive point: Norwegian - User defined (1060)	292,260	6,846,248	440.0	4.0	8.0	0.0	38.6		46.0		No	
A						8.0	30.0	38.6		45.4		No	
A						8.0	60.0	38.6		45.4		No	
A						8.0	90.0	38.6		45.4		No	
A						8.0	120.0	38.6		45.1		No	
A						8.0	150.0	38.6		45.7		No	
A						8.0	180.0	38.6		45.7		No	
A						8.0	210.0	38.6		45.8		No	
A						8.0	240.0	38.6		46.0		No	
A						8.0	270.0	38.6		46.1		No	
A						8.0	300.0	38.6		46.0		No	
A						8.0	330.0	38.6		46.0		No	
B	Noise sensitive point: Norwegian - User defined (1061)	292,259	6,846,251	439.9	4.0	8.0	0.0	38.6		46.0		No	
B						8.0	30.0	38.6		45.9		No	
B						8.0	60.0	38.6		45.9		No	
B						8.0	90.0	38.6		45.9		No	
B						8.0	120.0	38.6		45.7		No	
B						8.0	150.0	38.6		45.7		No	
B						8.0	180.0	38.6		45.7		No	
B						8.0	210.0	38.6		45.8		No	
B						8.0	240.0	38.6		46.0		No	
B						8.0	270.0	38.6		46.2		No	
B						8.0	300.0	38.6		46.1		No	
B						8.0	330.0	38.6		46.0		No	
C	Noise sensitive point: Norwegian - User defined (1062)	292,952	6,846,377	289.6	4.0	8.0	0.0	38.6		35.7		Yes	
C						8.0	30.0	38.6		35.6		Yes	
C						8.0	60.0	38.6		35.7		Yes	
C						8.0	90.0	38.6		36.7		Yes	
C						8.0	120.0	38.6		36.9		Yes	
C						8.0	150.0	38.6		37.2		Yes	
C						8.0	180.0	38.6		36.8		Yes	
C						8.0	210.0	38.6		37.3		Yes	
C						8.0	240.0	38.6		37.3		Yes	
C						8.0	270.0	38.6		37.1		Yes	
C						8.0	300.0	38.6		36.9		Yes	
C						8.0	330.0	38.6		35.9		Yes	
D	Noise sensitive point: Norwegian - User defined (1063)	292,377	6,842,261	340.3	4.0	8.0	0.0	38.6		35.0		Yes	
D						8.0	30.0	38.6		35.2		Yes	
D						8.0	60.0	38.6		35.4		Yes	
D						8.0	90.0	38.6		35.0		Yes	
D						8.0	120.0	38.6		34.6		Yes	
D						8.0	150.0	38.6		34.3		Yes	
D						8.0	180.0	38.6		34.4		Yes	
D						8.0	210.0	38.6		34.5		Yes	

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

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Noise sensitive area

No.	Name	Easting	Northing	Z	Immission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
D						8.0	240.0	38.6	34.4	Yes
D						8.0	270.0	38.6	34.4	Yes
D						8.0	300.0	38.6	34.8	Yes
D						8.0	330.0	38.6	35.0	Yes
E	Noise sensitive point: Norwegian - User defined (1064)	293,123	6,841,693	335.8	4.0	8.0	0.0	38.6	34.5	Yes
E						8.0	30.0	38.6	34.9	Yes
E						8.0	60.0	38.6	34.1	Yes
E						8.0	90.0	38.6	33.5	Yes
E						8.0	120.0	38.6	33.2	Yes
E						8.0	150.0	38.6	33.2	Yes
E						8.0	180.0	38.6	33.3	Yes
E						8.0	210.0	38.6	33.3	Yes
E						8.0	240.0	38.6	33.5	Yes
E						8.0	270.0	38.6	33.5	Yes
E						8.0	300.0	38.6	33.5	Yes
E						8.0	330.0	38.6	33.6	Yes
F	Noise sensitive point: Norwegian - User defined (1065)	297,092	6,841,586	460.4	4.0	8.0	0.0	38.6	33.5	Yes
F						8.0	30.0	38.6	33.2	Yes
F						8.0	60.0	38.6	32.4	Yes
F						8.0	90.0	38.6	31.5	Yes
F						8.0	120.0	38.6	30.4	Yes
F						8.0	150.0	38.6	27.3	Yes
F						8.0	180.0	38.6	24.3	Yes
F						8.0	210.0	38.6	24.1	Yes
F						8.0	240.0	38.6	26.6	Yes
F						8.0	270.0	38.6	30.3	Yes
F						8.0	300.0	38.6	33.1	Yes
F						8.0	330.0	38.6	33.4	Yes
G	Noise sensitive point: Norwegian - User defined (1066)	294,720	6,847,930	7.0	4.0	8.0	0.0	38.6	24.2	Yes
G						8.0	30.0	38.6	24.6	Yes
G						8.0	60.0	38.6	24.9	Yes
G						8.0	90.0	38.6	29.1	Yes
G						8.0	120.0	38.6	30.7	Yes
G						8.0	150.0	38.6	31.2	Yes
G						8.0	180.0	38.6	31.3	Yes
G						8.0	210.0	38.6	30.5	Yes
G						8.0	240.0	38.6	28.9	Yes
G						8.0	270.0	38.6	28.4	Yes
G						8.0	300.0	38.6	25.7	Yes
G						8.0	330.0	38.6	25.1	Yes
H	Noise sensitive point: Norwegian - User defined (1067)	293,464	6,848,370	365.0	4.0	8.0	0.0	38.6	25.6	Yes
H						8.0	30.0	38.6	26.1	Yes
H						8.0	60.0	38.6	27.6	Yes
H						8.0	90.0	38.6	30.3	Yes
H						8.0	120.0	38.6	30.5	Yes
H						8.0	150.0	38.6	30.8	Yes
H						8.0	180.0	38.6	31.0	Yes
H						8.0	210.0	38.6	30.5	Yes
H						8.0	240.0	38.6	30.1	Yes
H						8.0	270.0	38.6	28.2	Yes
H						8.0	300.0	38.6	26.1	Yes
H						8.0	330.0	38.6	25.5	Yes
I	Noise sensitive point: Norwegian - User defined (1068)	294,741	6,847,877	1.9	4.0	8.0	0.0	38.6	22.9	Yes
I						8.0	30.0	38.6	22.5	Yes
I						8.0	60.0	38.6	23.2	Yes
I						8.0	90.0	38.6	26.9	Yes
I						8.0	120.0	38.6	30.1	Yes
I						8.0	150.0	38.6	30.8	Yes
I						8.0	180.0	38.6	30.9	Yes
I						8.0	210.0	38.6	30.4	Yes
I						8.0	240.0	38.6	29.3	Yes
I						8.0	270.0	38.6	27.8	Yes
I						8.0	300.0	38.6	24.8	Yes
I						8.0	330.0	38.6	23.9	Yes
J	Noise sensitive point: Norwegian - User defined (1069)	293,457	6,848,376	365.0	4.0	8.0	0.0	38.6	25.2	Yes
J						8.0	30.0	38.6	25.9	Yes
J						8.0	60.0	38.6	27.6	Yes
J						8.0	90.0	38.6	30.2	Yes
J						8.0	120.0	38.6	30.3	Yes

To be continued on next page...

Project:

Description:

Licensed user:

Guleslettene

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
J						8.0	150.0	38.6	30.9	Yes
J						8.0	180.0	38.6	30.6	Yes
J						8.0	210.0	38.6	30.5	Yes
J						8.0	240.0	38.6	30.2	Yes
J						8.0	270.0	38.6	28.2	Yes
J						8.0	300.0	38.6	25.7	Yes
J						8.0	330.0	38.6	25.0	Yes
K	Noise sensitive point: Norwegian - User defined (1070)	294,794	6,847,783	1.1	4.0	8.0	0.0	38.6	21.2	Yes
K						8.0	30.0	38.6	21.0	Yes
K						8.0	60.0	38.6	21.5	Yes
K						8.0	90.0	38.6	22.9	Yes
K						8.0	120.0	38.6	29.9	Yes
K						8.0	150.0	38.6	30.8	Yes
K						8.0	180.0	38.6	30.8	Yes
K						8.0	210.0	38.6	29.7	Yes
K						8.0	240.0	38.6	28.9	Yes
K						8.0	270.0	38.6	26.5	Yes
K						8.0	300.0	38.6	22.4	Yes
K						8.0	330.0	38.6	21.9	Yes
L	Noise sensitive point: Norwegian - User defined (1071)	294,642	6,847,663	22.4	4.0	8.0	0.0	38.6	23.2	Yes
L						8.0	30.0	38.6	23.2	Yes
L						8.0	60.0	38.6	23.4	Yes
L						8.0	90.0	38.6	25.2	Yes
L						8.0	120.0	38.6	29.7	Yes
L						8.0	150.0	38.6	30.3	Yes
L						8.0	180.0	38.6	30.5	Yes
L						8.0	210.0	38.6	30.5	Yes
L						8.0	240.0	38.6	29.9	Yes
L						8.0	270.0	38.6	27.7	Yes
L						8.0	300.0	38.6	24.6	Yes
L						8.0	330.0	38.6	23.5	Yes
M	Noise sensitive point: Norwegian - User defined (1072)	294,739	6,847,707	9.4	4.0	8.0	0.0	38.6	15.6	Yes
M						8.0	30.0	38.6	15.7	Yes
M						8.0	60.0	38.6	17.3	Yes
M						8.0	90.0	38.6	21.1	Yes
M						8.0	120.0	38.6	29.8	Yes
M						8.0	150.0	38.6	30.0	Yes
M						8.0	180.0	38.6	30.5	Yes
M						8.0	210.0	38.6	29.2	Yes
M						8.0	240.0	38.6	29.1	Yes
M						8.0	270.0	38.6	26.2	Yes
M						8.0	300.0	38.6	19.8	Yes
M						8.0	330.0	38.6	17.2	Yes
N	Noise sensitive point: Norwegian - User defined (1073)	294,606	6,847,785	2.0	4.0	8.0	0.0	38.6	23.5	Yes
N						8.0	30.0	38.6	23.2	Yes
N						8.0	60.0	38.6	23.6	Yes
N						8.0	90.0	38.6	26.2	Yes
N						8.0	120.0	38.6	29.7	Yes
N						8.0	150.0	38.6	29.9	Yes
N						8.0	180.0	38.6	30.3	Yes
N						8.0	210.0	38.6	30.4	Yes
N						8.0	240.0	38.6	29.8	Yes
N						8.0	270.0	38.6	26.8	Yes
N						8.0	300.0	38.6	24.7	Yes
N						8.0	330.0	38.6	24.1	Yes
O	Noise sensitive point: Norwegian - User defined (1074)	294,742	6,847,612	15.4	4.0	8.0	0.0	38.6	11.3	Yes
O						8.0	30.0	38.6	11.3	Yes
O						8.0	60.0	38.6	12.8	Yes
O						8.0	90.0	38.6	18.9	Yes
O						8.0	120.0	38.6	29.4	Yes
O						8.0	150.0	38.6	29.9	Yes
O						8.0	180.0	38.6	30.3	Yes
O						8.0	210.0	38.6	28.5	Yes
O						8.0	240.0	38.6	28.0	Yes
O						8.0	270.0	38.6	24.9	Yes
O						8.0	300.0	38.6	15.5	Yes
O						8.0	330.0	38.6	12.2	Yes
P	Noise sensitive point: Norwegian - User defined (1075)	294,683	6,847,689	19.7	4.0	8.0	0.0	38.6	21.5	Yes
P						8.0	30.0	38.6	21.7	Yes

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

Licensed user:

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
P						8.0	60.0	38.6	21.9	Yes
P						8.0	90.0	38.6	25.7	Yes
P						8.0	120.0	38.6	29.3	Yes
P						8.0	150.0	38.6	29.7	Yes
P						8.0	180.0	38.6	30.3	Yes
P						8.0	210.0	38.6	29.4	Yes
P						8.0	240.0	38.6	28.4	Yes
P						8.0	270.0	38.6	26.4	Yes
P						8.0	300.0	38.6	22.5	Yes
P						8.0	330.0	38.6	21.9	Yes
Q	Noise sensitive point: Norwegian - User defined (1076)	294,720	6,847,962	2.8	4.0	8.0	0.0	38.6	22.8	Yes
Q						8.0	30.0	38.6	22.5	Yes
Q						8.0	60.0	38.6	23.4	Yes
Q						8.0	90.0	38.6	28.1	Yes
Q						8.0	120.0	38.6	29.3	Yes
Q						8.0	150.0	38.6	30.0	Yes
Q						8.0	180.0	38.6	30.1	Yes
Q						8.0	210.0	38.6	29.6	Yes
Q						8.0	240.0	38.6	27.7	Yes
Q						8.0	270.0	38.6	26.4	Yes
Q						8.0	300.0	38.6	24.0	Yes
Q						8.0	330.0	38.6	23.7	Yes
R	Noise sensitive point: Norwegian - User defined (1077)	294,665	6,847,830	2.5	4.0	8.0	0.0	38.6	21.6	Yes
R						8.0	30.0	38.6	21.7	Yes
R						8.0	60.0	38.6	21.8	Yes
R						8.0	90.0	38.6	26.3	Yes
R						8.0	120.0	38.6	29.2	Yes
R						8.0	150.0	38.6	29.9	Yes
R						8.0	180.0	38.6	30.0	Yes
R						8.0	210.0	38.6	29.7	Yes
R						8.0	240.0	38.6	28.0	Yes
R						8.0	270.0	38.6	26.0	Yes
R						8.0	300.0	38.6	22.9	Yes
R						8.0	330.0	38.6	22.5	Yes
S	Noise sensitive point: Norwegian - User defined (1078)	294,663	6,847,609	33.4	4.0	8.0	0.0	38.6	21.6	Yes
S						8.0	30.0	38.6	21.5	Yes
S						8.0	60.0	38.6	21.9	Yes
S						8.0	90.0	38.6	23.5	Yes
S						8.0	120.0	38.6	28.8	Yes
S						8.0	150.0	38.6	29.6	Yes
S						8.0	180.0	38.6	29.9	Yes
S						8.0	210.0	38.6	29.8	Yes
S						8.0	240.0	38.6	29.1	Yes
S						8.0	270.0	38.6	27.1	Yes
S						8.0	300.0	38.6	24.3	Yes
S						8.0	330.0	38.6	21.9	Yes
T	Noise sensitive point: Norwegian - User defined (1079)	288,899	6,842,024	20.0	4.0	8.0	0.0	38.6	28.8	Yes
T						8.0	30.0	38.6	29.7	Yes
T						8.0	60.0	38.6	29.7	Yes
T						8.0	90.0	38.6	27.7	Yes
T						8.0	120.0	38.6	26.0	Yes
T						8.0	150.0	38.6	24.2	Yes
T						8.0	180.0	38.6	23.4	Yes
T						8.0	210.0	38.6	23.1	Yes
T						8.0	240.0	38.6	23.5	Yes
T						8.0	270.0	38.6	24.4	Yes
T						8.0	300.0	38.6	26.0	Yes
T						8.0	330.0	38.6	27.9	Yes
U	Noise sensitive point: Norwegian - User defined (1080)	294,656	6,847,579	35.2	4.0	8.0	0.0	38.6	20.9	Yes
U						8.0	30.0	38.6	21.1	Yes
U						8.0	60.0	38.6	21.4	Yes
U						8.0	90.0	38.6	23.1	Yes
U						8.0	120.0	38.6	28.5	Yes
U						8.0	150.0	38.6	29.3	Yes
U						8.0	180.0	38.6	29.7	Yes
U						8.0	210.0	38.6	29.6	Yes
U						8.0	240.0	38.6	29.1	Yes
U						8.0	270.0	38.6	26.7	Yes
U						8.0	300.0	38.6	23.8	Yes

To be continued on next page...

Project:

Description:

Licensed user:

Guleslettene

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Immission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
U						8.0	330.0	38.6	21.2	Yes
V	Noise sensitive point: Norwegian - User defined (1081)	294,265	6,848,029	4.1	4.0	8.0	0.0	38.6	21.8	Yes
V						8.0	30.0	38.6	20.9	Yes
V						8.0	60.0	38.6	23.1	Yes
V						8.0	90.0	38.6	25.6	Yes
V						8.0	120.0	38.6	28.0	Yes
V						8.0	150.0	38.6	29.2	Yes
V						8.0	180.0	38.6	29.7	Yes
V						8.0	210.0	38.6	28.9	Yes
V						8.0	240.0	38.6	27.4	Yes
V						8.0	270.0	38.6	25.1	Yes
V						8.0	300.0	38.6	20.9	Yes
V						8.0	330.0	38.6	20.4	Yes
W	Noise sensitive point: Norwegian - User defined (1082)	294,627	6,847,629	19.8	4.0	8.0	0.0	38.6	23.1	Yes
W						8.0	30.0	38.6	23.0	Yes
W						8.0	60.0	38.6	23.2	Yes
W						8.0	90.0	38.6	24.5	Yes
W						8.0	120.0	38.6	28.6	Yes
W						8.0	150.0	38.6	29.5	Yes
W						8.0	180.0	38.6	29.2	Yes
W						8.0	210.0	38.6	29.6	Yes
W						8.0	240.0	38.6	29.2	Yes
W						8.0	270.0	38.6	27.0	Yes
W						8.0	300.0	38.6	25.2	Yes
W						8.0	330.0	38.6	23.6	Yes
X	Noise sensitive point: Norwegian - User defined (1083)	294,210	6,847,651	16.0	4.0	8.0	0.0	38.6	20.8	Yes
X						8.0	30.0	38.6	22.4	Yes
X						8.0	60.0	38.6	22.4	Yes
X						8.0	90.0	38.6	23.6	Yes
X						8.0	120.0	38.6	26.1	Yes
X						8.0	150.0	38.6	29.4	Yes
X						8.0	180.0	38.6	29.6	Yes
X						8.0	210.0	38.6	28.8	Yes
X						8.0	240.0	38.6	25.5	Yes
X						8.0	270.0	38.6	23.2	Yes
X						8.0	300.0	38.6	19.4	Yes
X						8.0	330.0	38.6	18.8	Yes
Y	Noise sensitive point: Norwegian - User defined (1084)	294,630	6,847,833	0.7	4.0	8.0	0.0	38.6	23.3	Yes
Y						8.0	30.0	38.6	22.5	Yes
Y						8.0	60.0	38.6	23.0	Yes
Y						8.0	90.0	38.6	26.4	Yes
Y						8.0	120.0	38.6	29.1	Yes
Y						8.0	150.0	38.6	29.6	Yes
Y						8.0	180.0	38.6	29.6	Yes
Y						8.0	210.0	38.6	29.6	Yes
Y						8.0	240.0	38.6	28.8	Yes
Y						8.0	270.0	38.6	27.1	Yes
Y						8.0	300.0	38.6	24.9	Yes
Y						8.0	330.0	38.6	24.0	Yes
Z	Noise sensitive point: Norwegian - User defined (1085)	294,607	6,847,562	25.2	4.0	8.0	0.0	38.6	21.5	Yes
Z						8.0	30.0	38.6	20.8	Yes
Z						8.0	60.0	38.6	21.3	Yes
Z						8.0	90.0	38.6	23.7	Yes
Z						8.0	120.0	38.6	28.2	Yes
Z						8.0	150.0	38.6	29.5	Yes
Z						8.0	180.0	38.6	29.3	Yes
Z						8.0	210.0	38.6	29.3	Yes
Z						8.0	240.0	38.6	28.2	Yes
Z						8.0	270.0	38.6	26.2	Yes
Z						8.0	300.0	38.6	23.8	Yes
Z						8.0	330.0	38.6	21.8	Yes
AA	Noise sensitive point: Norwegian - User defined (1086)	294,267	6,848,074	1.6	4.0	8.0	0.0	38.6	17.6	Yes
AA						8.0	30.0	38.6	19.3	Yes
AA						8.0	60.0	38.6	22.7	Yes
AA						8.0	90.0	38.6	26.1	Yes
AA						8.0	120.0	38.6	28.3	Yes
AA						8.0	150.0	38.6	29.3	Yes
AA						8.0	180.0	38.6	29.5	Yes
AA						8.0	210.0	38.6	28.6	Yes

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

Licensed user:

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result**Calculation:** 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
AA						8.0	240.0	38.6	27.1	Yes
AA						8.0	270.0	38.6	23.5	Yes
AA						8.0	300.0	38.6	17.5	Yes
AA						8.0	330.0	38.6	16.6	Yes
AB	Noise sensitive point: Norwegian - User defined (1087)	297,422	6,848,342	1.8	4.0	8.0	0.0	38.6	22.8	Yes
AB						8.0	30.0	38.6	22.8	Yes
AB						8.0	60.0	38.6	23.6	Yes
AB						8.0	90.0	38.6	26.8	Yes
AB						8.0	120.0	38.6	28.3	Yes
AB						8.0	150.0	38.6	29.0	Yes
AB						8.0	180.0	38.6	29.3	Yes
AB						8.0	210.0	38.6	29.4	Yes
AB						8.0	240.0	38.6	27.9	Yes
AB						8.0	270.0	38.6	26.0	Yes
AB						8.0	300.0	38.6	24.5	Yes
AB						8.0	330.0	38.6	23.6	Yes
AC	Noise sensitive point: Norwegian - User defined (1088)	294,610	6,847,594	16.8	4.0	8.0	0.0	38.6	21.7	Yes
AC						8.0	30.0	38.6	21.6	Yes
AC						8.0	60.0	38.6	21.6	Yes
AC						8.0	90.0	38.6	22.4	Yes
AC						8.0	120.0	38.6	27.0	Yes
AC						8.0	150.0	38.6	28.6	Yes
AC						8.0	180.0	38.6	28.6	Yes
AC						8.0	210.0	38.6	28.8	Yes
AC						8.0	240.0	38.6	27.9	Yes
AC						8.0	270.0	38.6	25.7	Yes
AC						8.0	300.0	38.6	24.1	Yes
AC						8.0	330.0	38.6	22.2	Yes
AD	Noise sensitive point: Norwegian - User defined (1089)	294,289	6,847,480	4.1	4.0	8.0	0.0	38.6	22.6	Yes
AD						8.0	30.0	38.6	20.3	Yes
AD						8.0	60.0	38.6	21.5	Yes
AD						8.0	90.0	38.6	26.1	Yes
AD						8.0	120.0	38.6	27.7	Yes
AD						8.0	150.0	38.6	28.4	Yes
AD						8.0	180.0	38.6	27.1	Yes
AD						8.0	210.0	38.6	24.8	Yes
AD						8.0	240.0	38.6	24.4	Yes
AD						8.0	270.0	38.6	24.7	Yes
AD						8.0	300.0	38.6	25.4	Yes
AD						8.0	330.0	38.6	24.6	Yes
AE	Noise sensitive point: Norwegian - User defined (1090)	294,280	6,847,559	4.0	4.0	8.0	0.0	38.6	19.7	Yes
AE						8.0	30.0	38.6	19.9	Yes
AE						8.0	60.0	38.6	23.7	Yes
AE						8.0	90.0	38.6	24.9	Yes
AE						8.0	120.0	38.6	27.0	Yes
AE						8.0	150.0	38.6	28.4	Yes
AE						8.0	180.0	38.6	27.7	Yes
AE						8.0	210.0	38.6	26.9	Yes
AE						8.0	240.0	38.6	24.6	Yes
AE						8.0	270.0	38.6	23.8	Yes
AE						8.0	300.0	38.6	24.2	Yes
AE						8.0	330.0	38.6	22.7	Yes
AF	Noise sensitive point: Norwegian - User defined (1091)	294,244	6,848,839	7.2	4.0	8.0	0.0	38.6	20.9	Yes
AF						8.0	30.0	38.6	22.2	Yes
AF						8.0	60.0	38.6	24.5	Yes
AF						8.0	90.0	38.6	26.3	Yes
AF						8.0	120.0	38.6	27.4	Yes
AF						8.0	150.0	38.6	28.2	Yes
AF						8.0	180.0	38.6	28.1	Yes
AF						8.0	210.0	38.6	27.8	Yes
AF						8.0	240.0	38.6	26.5	Yes
AF						8.0	270.0	38.6	24.3	Yes
AF						8.0	300.0	38.6	22.8	Yes
AF						8.0	330.0	38.6	21.0	Yes
AG	Noise sensitive point: Norwegian - User defined (1092)	294,521	6,847,508	0.3	4.0	8.0	0.0	38.6	22.8	Yes
AG						8.0	30.0	38.6	22.7	Yes
AG						8.0	60.0	38.6	22.7	Yes
AG						8.0	90.0	38.6	22.9	Yes
AG						8.0	120.0	38.6	23.9	Yes

To be continued on next page...

Project:

Description:

Licensed user:

Guleslettene

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

Meventus AS

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
AG						8.0	150.0	38.6	27.3	Yes
AG						8.0	180.0	38.6	28.2	Yes
AG						8.0	210.0	38.6	28.2	Yes
AG						8.0	240.0	38.6	25.9	Yes
AG						8.0	270.0	38.6	25.0	Yes
AG						8.0	300.0	38.6	24.3	Yes
AG						8.0	330.0	38.6	23.2	Yes
AH	Noise sensitive point: Norwegian - User defined (1093)	294,184	6,848,219	18.8	4.0	8.0	0.0	38.6	18.6	Yes
AH						8.0	30.0	38.6	20.0	Yes
AH						8.0	60.0	38.6	22.4	Yes
AH						8.0	90.0	38.6	25.4	Yes
AH						8.0	120.0	38.6	27.3	Yes
AH						8.0	150.0	38.6	27.6	Yes
AH						8.0	180.0	38.6	28.0	Yes
AH						8.0	210.0	38.6	27.0	Yes
AH						8.0	240.0	38.6	24.6	Yes
AH						8.0	270.0	38.6	22.1	Yes
AH						8.0	300.0	38.6	19.8	Yes
AH						8.0	330.0	38.6	18.4	Yes
AI	Noise sensitive point: Norwegian - User defined (1094)	287,872	6,846,749	19.8	4.0	8.0	0.0	38.6	10.7	Yes
AI						8.0	30.0	38.6	13.5	Yes
AI						8.0	60.0	38.6	24.4	Yes
AI						8.0	90.0	38.6	27.8	Yes
AI						8.0	120.0	38.6	27.9	Yes
AI						8.0	150.0	38.6	24.2	Yes
AI						8.0	180.0	38.6	15.0	Yes
AI						8.0	210.0	38.6	10.7	Yes
AI						8.0	240.0	38.6	10.0	Yes
AI						8.0	270.0	38.6	9.7	Yes
AI						8.0	300.0	38.6	9.5	Yes
AI						8.0	330.0	38.6	9.9	Yes
AJ	Noise sensitive point: Norwegian - User defined (1095)	294,131	6,849,405	3.6	4.0	8.0	0.0	38.6	16.7	Yes
AJ						8.0	30.0	38.6	19.0	Yes
AJ						8.0	60.0	38.6	22.2	Yes
AJ						8.0	90.0	38.6	24.2	Yes
AJ						8.0	120.0	38.6	25.9	Yes
AJ						8.0	150.0	38.6	27.5	Yes
AJ						8.0	180.0	38.6	27.7	Yes
AJ						8.0	210.0	38.6	27.2	Yes
AJ						8.0	240.0	38.6	25.1	Yes
AJ						8.0	270.0	38.6	22.3	Yes
AJ						8.0	300.0	38.6	19.5	Yes
AJ						8.0	330.0	38.6	16.5	Yes
AK	Noise sensitive point: Norwegian - User defined (1096)	294,129	6,847,457	35.0	4.0	8.0	0.0	38.6	23.8	Yes
AK						8.0	30.0	38.6	23.9	Yes
AK						8.0	60.0	38.6	24.5	Yes
AK						8.0	90.0	38.6	25.6	Yes
AK						8.0	120.0	38.6	27.4	Yes
AK						8.0	150.0	38.6	27.4	Yes
AK						8.0	180.0	38.6	27.4	Yes
AK						8.0	210.0	38.6	27.0	Yes
AK						8.0	240.0	38.6	26.6	Yes
AK						8.0	270.0	38.6	25.7	Yes
AK						8.0	300.0	38.6	25.0	Yes
AK						8.0	330.0	38.6	23.3	Yes
AL	Noise sensitive point: Norwegian - User defined (1097)	294,256	6,849,036	11.8	4.0	8.0	0.0	38.6	20.4	Yes
AL						8.0	30.0	38.6	22.0	Yes
AL						8.0	60.0	38.6	23.7	Yes
AL						8.0	90.0	38.6	25.4	Yes
AL						8.0	120.0	38.6	26.3	Yes
AL						8.0	150.0	38.6	26.9	Yes
AL						8.0	180.0	38.6	27.2	Yes
AL						8.0	210.0	38.6	27.0	Yes
AL						8.0	240.0	38.6	25.6	Yes
AL						8.0	270.0	38.6	23.6	Yes
AL						8.0	300.0	38.6	22.1	Yes
AL						8.0	330.0	38.6	20.7	Yes
AM	Noise sensitive point: Norwegian - User defined (1098)	294,091	6,849,378	10.5	4.0	8.0	0.0	38.6	18.1	Yes
AM						8.0	30.0	38.6	19.1	Yes

To be continued on next page...

Project:

Description:

Licensed user:

Guleslettene

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
AM						8.0	60.0	38.6	21.6	Yes
AM						8.0	90.0	38.6	24.0	Yes
AM						8.0	120.0	38.6	25.5	Yes
AM						8.0	150.0	38.6	27.1	Yes
AM						8.0	180.0	38.6	27.0	Yes
AM						8.0	210.0	38.6	26.5	Yes
AM						8.0	240.0	38.6	23.6	Yes
AM						8.0	270.0	38.6	21.4	Yes
AM						8.0	300.0	38.6	19.6	Yes
AM						8.0	330.0	38.6	18.0	Yes
AN	Noise sensitive point: Norwegian - User defined (1099)	301,527	6,844,141	498.8	4.0	8.0	0.0	38.6	7.8	Yes
AN						8.0	30.0	38.6	6.2	Yes
AN						8.0	60.0	38.6	5.0	Yes
AN						8.0	90.0	38.6	4.5	Yes
AN						8.0	120.0	38.6	4.7	Yes
AN						8.0	150.0	38.6	6.2	Yes
AN						8.0	180.0	38.6	12.5	Yes
AN						8.0	210.0	38.6	16.1	Yes
AN						8.0	240.0	38.6	23.6	Yes
AN						8.0	270.0	38.6	27.0	Yes
AN						8.0	300.0	38.6	24.6	Yes
AN						8.0	330.0	38.6	14.3	Yes
AO	Noise sensitive point: Norwegian - User defined (1100)	294,255	6,847,497	5.0	4.0	8.0	0.0	38.6	16.8	Yes
AO						8.0	30.0	38.6	16.4	Yes
AO						8.0	60.0	38.6	22.5	Yes
AO						8.0	90.0	38.6	24.0	Yes
AO						8.0	120.0	38.6	25.6	Yes
AO						8.0	150.0	38.6	26.8	Yes
AO						8.0	180.0	38.6	26.2	Yes
AO						8.0	210.0	38.6	25.1	Yes
AO						8.0	240.0	38.6	23.2	Yes
AO						8.0	270.0	38.6	22.7	Yes
AO						8.0	300.0	38.6	19.5	Yes
AO						8.0	330.0	38.6	18.6	Yes
AP	Noise sensitive point: Norwegian - User defined (1101)	294,403	6,847,268	12.6	4.0	8.0	0.0	38.6	21.4	Yes
AP						8.0	30.0	38.6	21.1	Yes
AP						8.0	60.0	38.6	21.1	Yes
AP						8.0	90.0	38.6	21.5	Yes
AP						8.0	120.0	38.6	21.5	Yes
AP						8.0	150.0	38.6	21.6	Yes
AP						8.0	180.0	38.6	24.5	Yes
AP						8.0	210.0	38.6	26.4	Yes
AP						8.0	240.0	38.6	26.6	Yes
AP						8.0	270.0	38.6	25.8	Yes
AP						8.0	300.0	38.6	21.6	Yes
AP						8.0	330.0	38.6	21.5	Yes
AQ	Noise sensitive point: Norwegian - User defined (1102)	294,341	6,847,280	9.8	4.0	8.0	0.0	38.6	21.5	Yes
AQ						8.0	30.0	38.6	20.2	Yes
AQ						8.0	60.0	38.6	20.1	Yes
AQ						8.0	90.0	38.6	21.3	Yes
AQ						8.0	120.0	38.6	22.0	Yes
AQ						8.0	150.0	38.6	22.2	Yes
AQ						8.0	180.0	38.6	25.3	Yes
AQ						8.0	210.0	38.6	26.0	Yes
AQ						8.0	240.0	38.6	26.6	Yes
AQ						8.0	270.0	38.6	25.9	Yes
AQ						8.0	300.0	38.6	21.9	Yes
AQ						8.0	330.0	38.6	21.7	Yes
AR	Noise sensitive point: Norwegian - User defined (1103)	294,234	6,849,170	13.6	4.0	8.0	0.0	38.6	20.8	Yes
AR						8.0	30.0	38.6	21.6	Yes
AR						8.0	60.0	38.6	22.7	Yes
AR						8.0	90.0	38.6	24.4	Yes
AR						8.0	120.0	38.6	25.7	Yes
AR						8.0	150.0	38.6	26.3	Yes
AR						8.0	180.0	38.6	26.5	Yes
AR						8.0	210.0	38.6	26.2	Yes
AR						8.0	240.0	38.6	25.0	Yes
AR						8.0	270.0	38.6	23.3	Yes
AR						8.0	300.0	38.6	21.7	Yes

To be continued on next page...

Project:

Description:

Licensed user:

Guleslettene

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Immission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
AR						8.0	330.0	38.6	20.9	Yes
AS	Noise sensitive point: Norwegian - User defined (1104)	294,231	6,849,257	5.1	4.0	8.0	0.0	38.6	20.3	Yes
AS						8.0	30.0	38.6	21.1	Yes
AS						8.0	60.0	38.6	22.5	Yes
AS						8.0	90.0	38.6	24.1	Yes
AS						8.0	120.0	38.6	25.6	Yes
AS						8.0	150.0	38.6	25.8	Yes
AS						8.0	180.0	38.6	26.2	Yes
AS						8.0	210.0	38.6	25.9	Yes
AS						8.0	240.0	38.6	24.7	Yes
AS						8.0	270.0	38.6	22.2	Yes
AS						8.0	300.0	38.6	21.5	Yes
AS						8.0	330.0	38.6	20.5	Yes
AT	Noise sensitive point: Norwegian - User defined (1105)	294,174	6,849,245	12.0	4.0	8.0	0.0	38.6	19.9	Yes
AT						8.0	30.0	38.6	21.0	Yes
AT						8.0	60.0	38.6	21.7	Yes
AT						8.0	90.0	38.6	24.1	Yes
AT						8.0	120.0	38.6	25.7	Yes
AT						8.0	150.0	38.6	25.8	Yes
AT						8.0	180.0	38.6	26.1	Yes
AT						8.0	210.0	38.6	25.9	Yes
AT						8.0	240.0	38.6	24.8	Yes
AT						8.0	270.0	38.6	22.4	Yes
AT						8.0	300.0	38.6	21.3	Yes
AT						8.0	330.0	38.6	19.8	Yes
AU	Noise sensitive point: Norwegian - User defined (1106)	294,206	6,849,305	1.9	4.0	8.0	0.0	38.6	17.9	Yes
AU						8.0	30.0	38.6	19.3	Yes
AU						8.0	60.0	38.6	20.9	Yes
AU						8.0	90.0	38.6	23.4	Yes
AU						8.0	120.0	38.6	25.0	Yes
AU						8.0	150.0	38.6	25.7	Yes
AU						8.0	180.0	38.6	26.0	Yes
AU						8.0	210.0	38.6	25.4	Yes
AU						8.0	240.0	38.6	24.2	Yes
AU						8.0	270.0	38.6	21.4	Yes
AU						8.0	300.0	38.6	19.2	Yes
AU						8.0	330.0	38.6	17.7	Yes
AV	Noise sensitive point: Norwegian - User defined (1107)	294,202	6,849,704	4.0	4.0	8.0	0.0	38.6	20.6	Yes
AV						8.0	30.0	38.6	21.0	Yes
AV						8.0	60.0	38.6	21.9	Yes
AV						8.0	90.0	38.6	23.6	Yes
AV						8.0	120.0	38.6	25.4	Yes
AV						8.0	150.0	38.6	26.0	Yes
AV						8.0	180.0	38.6	25.8	Yes
AV						8.0	210.0	38.6	25.9	Yes
AV						8.0	240.0	38.6	24.1	Yes
AV						8.0	270.0	38.6	21.7	Yes
AV						8.0	300.0	38.6	20.9	Yes
AV						8.0	330.0	38.6	20.4	Yes
AW	Noise sensitive point: Norwegian - User defined (1108)	294,169	6,849,140	14.9	4.0	8.0	0.0	38.6	19.7	Yes
AW						8.0	30.0	38.6	21.6	Yes
AW						8.0	60.0	38.6	22.8	Yes
AW						8.0	90.0	38.6	23.9	Yes
AW						8.0	120.0	38.6	25.0	Yes
AW						8.0	150.0	38.6	25.8	Yes
AW						8.0	180.0	38.6	25.9	Yes
AW						8.0	210.0	38.6	25.5	Yes
AW						8.0	240.0	38.6	23.7	Yes
AW						8.0	270.0	38.6	21.9	Yes
AW						8.0	300.0	38.6	21.8	Yes
AW						8.0	330.0	38.6	20.2	Yes
AX	Noise sensitive point: Norwegian - User defined (1109)	294,110	6,849,264	8.6	4.0	8.0	0.0	38.6	15.8	Yes
AX						8.0	30.0	38.6	17.4	Yes
AX						8.0	60.0	38.6	20.1	Yes
AX						8.0	90.0	38.6	23.5	Yes
AX						8.0	120.0	38.6	24.5	Yes
AX						8.0	150.0	38.6	25.7	Yes
AX						8.0	180.0	38.6	25.9	Yes
AX						8.0	210.0	38.6	25.5	Yes

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

Licensed user:

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Immission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
AX						8.0	240.0	38.6	23.7	Yes
AX						8.0	270.0	38.6	20.1	Yes
AX						8.0	300.0	38.6	17.0	Yes
AX						8.0	330.0	38.6	15.1	Yes
AY	Noise sensitive point: Norwegian - User defined (1110)	294,074	6,849,286	8.6	4.0	8.0	0.0	38.6	14.9	Yes
AY						8.0	30.0	38.6	17.1	Yes
AY						8.0	60.0	38.6	19.8	Yes
AY						8.0	90.0	38.6	23.0	Yes
AY						8.0	120.0	38.6	24.8	Yes
AY						8.0	150.0	38.6	25.6	Yes
AY						8.0	180.0	38.6	25.8	Yes
AY						8.0	210.0	38.6	25.5	Yes
AY						8.0	240.0	38.6	23.2	Yes
AY						8.0	270.0	38.6	20.8	Yes
AY						8.0	300.0	38.6	15.5	Yes
AY						8.0	330.0	38.6	13.0	Yes
AZ	Noise sensitive point: Norwegian - User defined (1111)	288,559	6,850,149	17.5	4.0	8.0	0.0	38.6	17.2	Yes
AZ						8.0	30.0	38.6	17.2	Yes
AZ						8.0	60.0	38.6	18.3	Yes
AZ						8.0	90.0	38.6	23.6	Yes
AZ						8.0	120.0	38.6	25.2	Yes
AZ						8.0	150.0	38.6	25.6	Yes
AZ						8.0	180.0	38.6	25.0	Yes
AZ						8.0	210.0	38.6	22.5	Yes
AZ						8.0	240.0	38.6	19.4	Yes
AZ						8.0	270.0	38.6	17.4	Yes
AZ						8.0	300.0	38.6	16.8	Yes
AZ						8.0	330.0	38.6	16.4	Yes
BA	Noise sensitive point: Norwegian - User defined (1112)	289,303	6,849,369	7.4	4.0	8.0	0.0	38.6	10.4	Yes
BA						8.0	30.0	38.6	11.4	Yes
BA						8.0	60.0	38.6	16.6	Yes
BA						8.0	90.0	38.6	23.2	Yes
BA						8.0	120.0	38.6	25.1	Yes
BA						8.0	150.0	38.6	25.5	Yes
BA						8.0	180.0	38.6	25.2	Yes
BA						8.0	210.0	38.6	24.9	Yes
BA						8.0	240.0	38.6	21.0	Yes
BA						8.0	270.0	38.6	12.5	Yes
BA						8.0	300.0	38.6	10.8	Yes
BA						8.0	330.0	38.6	9.9	Yes
BB	Noise sensitive point: Norwegian - User defined (1113)	289,124	6,849,228	9.3	4.0	8.0	0.0	38.6	10.5	Yes
BB						8.0	30.0	38.6	14.9	Yes
BB						8.0	60.0	38.6	18.6	Yes
BB						8.0	90.0	38.6	19.8	Yes
BB						8.0	120.0	38.6	24.3	Yes
BB						8.0	150.0	38.6	25.1	Yes
BB						8.0	180.0	38.6	24.7	Yes
BB						8.0	210.0	38.6	21.7	Yes
BB						8.0	240.0	38.6	17.9	Yes
BB						8.0	270.0	38.6	12.9	Yes
BB						8.0	300.0	38.6	10.3	Yes
BB						8.0	330.0	38.6	10.3	Yes
BC	Noise sensitive point: Norwegian - User defined (1114)	288,563	6,850,239	34.5	4.0	8.0	0.0	38.6	16.7	Yes
BC						8.0	30.0	38.6	16.8	Yes
BC						8.0	60.0	38.6	18.1	Yes
BC						8.0	90.0	38.6	23.1	Yes
BC						8.0	120.0	38.6	24.8	Yes
BC						8.0	150.0	38.6	25.0	Yes
BC						8.0	180.0	38.6	24.8	Yes
BC						8.0	210.0	38.6	22.5	Yes
BC						8.0	240.0	38.6	19.6	Yes
BC						8.0	270.0	38.6	17.0	Yes
BC						8.0	300.0	38.6	16.4	Yes
BC						8.0	330.0	38.6	16.0	Yes
BD	Noise sensitive point: Norwegian - User defined (1115)	289,189	6,849,210	12.0	4.0	8.0	0.0	38.6	9.7	Yes
BD						8.0	30.0	38.6	14.1	Yes
BD						8.0	60.0	38.6	18.9	Yes
BD						8.0	90.0	38.6	21.3	Yes
BD						8.0	120.0	38.6	24.5	Yes

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as Lref ~ Lden – 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
BD						8.0	150.0	38.6	24.7	Yes
BD						8.0	180.0	38.6	23.9	Yes
BD						8.0	210.0	38.6	22.7	Yes
BD						8.0	240.0	38.6	18.6	Yes
BD						8.0	270.0	38.6	10.8	Yes
BD						8.0	300.0	38.6	9.0	Yes
BD						8.0	330.0	38.6	8.6	Yes
BE	Noise sensitive point: Norwegian - User defined (1116)	289,095	6,849,418	4.5	4.0	8.0	0.0	38.6	11.1	Yes
BE						8.0	30.0	38.6	13.8	Yes
BE						8.0	60.0	38.6	17.3	Yes
BE						8.0	90.0	38.6	22.0	Yes
BE						8.0	120.0	38.6	24.5	Yes
BE						8.0	150.0	38.6	24.6	Yes
BE						8.0	180.0	38.6	23.8	Yes
BE						8.0	210.0	38.6	22.3	Yes
BE						8.0	240.0	38.6	18.1	Yes
BE						8.0	270.0	38.6	13.5	Yes
BE						8.0	300.0	38.6	10.0	Yes
BE						8.0	330.0	38.6	9.4	Yes
BF	Noise sensitive point: Norwegian - User defined (1117)	289,065	6,849,357	4.0	4.0	8.0	0.0	38.6	9.1	Yes
BF						8.0	30.0	38.6	12.7	Yes
BF						8.0	60.0	38.6	16.0	Yes
BF						8.0	90.0	38.6	20.9	Yes
BF						8.0	120.0	38.6	24.2	Yes
BF						8.0	150.0	38.6	24.5	Yes
BF						8.0	180.0	38.6	24.3	Yes
BF						8.0	210.0	38.6	20.8	Yes
BF						8.0	240.0	38.6	16.0	Yes
BF						8.0	270.0	38.6	10.7	Yes
BF						8.0	300.0	38.6	7.1	Yes
BF						8.0	330.0	38.6	5.8	Yes
BG	Noise sensitive point: Norwegian - User defined (1118)	289,073	6,849,386	3.3	4.0	8.0	0.0	38.6	8.6	Yes
BG						8.0	30.0	38.6	12.8	Yes
BG						8.0	60.0	38.6	16.0	Yes
BG						8.0	90.0	38.6	20.7	Yes
BG						8.0	120.0	38.6	24.0	Yes
BG						8.0	150.0	38.6	24.5	Yes
BG						8.0	180.0	38.6	23.8	Yes
BG						8.0	210.0	38.6	21.0	Yes
BG						8.0	240.0	38.6	16.2	Yes
BG						8.0	270.0	38.6	10.8	Yes
BG						8.0	300.0	38.6	5.9	Yes
BG						8.0	330.0	38.6	5.6	Yes
BH	Noise sensitive point: Norwegian - User defined (1119)	298,677	6,841,656	304.7	4.0	8.0	0.0	38.6	23.2	Yes
BH						8.0	30.0	38.6	23.3	Yes
BH						8.0	60.0	38.6	24.2	Yes
BH						8.0	90.0	38.6	22.9	Yes
BH						8.0	120.0	38.6	18.8	Yes
BH						8.0	150.0	38.6	17.0	Yes
BH						8.0	180.0	38.6	17.7	Yes
BH						8.0	210.0	38.6	20.7	Yes
BH						8.0	240.0	38.6	24.4	Yes
BH						8.0	270.0	38.6	23.7	Yes
BH						8.0	300.0	38.6	23.2	Yes
BH						8.0	330.0	38.6	23.2	Yes
BI	Noise sensitive point: Norwegian - User defined (1120)	288,542	6,849,600	9.4	4.0	8.0	0.0	38.6	14.6	Yes
BI						8.0	30.0	38.6	15.6	Yes
BI						8.0	60.0	38.6	18.9	Yes
BI						8.0	90.0	38.6	21.6	Yes
BI						8.0	120.0	38.6	24.1	Yes
BI						8.0	150.0	38.6	24.0	Yes
BI						8.0	180.0	38.6	23.2	Yes
BI						8.0	210.0	38.6	21.3	Yes
BI						8.0	240.0	38.6	17.4	Yes
BI						8.0	270.0	38.6	14.6	Yes
BI						8.0	300.0	38.6	13.4	Yes
BI						8.0	330.0	38.6	13.3	Yes
BJ	Noise sensitive point: Norwegian - User defined (1121)	288,728	6,849,208	15.2	4.0	8.0	0.0	38.6	4.6	Yes
BJ						8.0	30.0	38.6	10.8	Yes

To be continued on next page...

Project:

Description:

Licensed user:

Guleslettene

Note 1: The results are given as Lref ~ Lden - 6.4 dB.

Note 2: Noise limit Lden is 45 dB, which equals a Lref limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height	Wind speed	Dir	Demands Noise	Sound level From WTGs	Demands fulfilled? Noise
				[m]	[m]	[m/s]	[°]	[dB(A)]	[dB(A)]	[dB(A)]
BJ						8.0	60.0	38.6	15.6	Yes
BJ						8.0	90.0	38.6	19.7	Yes
BJ						8.0	120.0	38.6	22.6	Yes
BJ						8.0	150.0	38.6	23.5	Yes
BJ						8.0	180.0	38.6	21.6	Yes
BJ						8.0	210.0	38.6	17.6	Yes
BJ						8.0	240.0	38.6	6.5	Yes
BJ						8.0	270.0	38.6	3.8	Yes
BJ						8.0	300.0	38.6	3.5	Yes
BJ						8.0	330.0	38.6	3.7	Yes
BK	Noise sensitive point: Norwegian - User defined (1122)	289,401	6,849,333	10.0	4.0	8.0	0.0	38.6	12.2	Yes
BK						8.0	30.0	38.6	13.6	Yes
BK						8.0	60.0	38.6	18.4	Yes
BK						8.0	90.0	38.6	20.8	Yes
BK						8.0	120.0	38.6	22.5	Yes
BK						8.0	150.0	38.6	23.2	Yes
BK						8.0	180.0	38.6	22.9	Yes
BK						8.0	210.0	38.6	22.3	Yes
BK						8.0	240.0	38.6	20.7	Yes
BK						8.0	270.0	38.6	18.0	Yes
BK						8.0	300.0	38.6	13.1	Yes
BK						8.0	330.0	38.6	11.7	Yes
BL	Noise sensitive point: Norwegian - User defined (1123)	289,376	6,849,205	10.0	4.0	8.0	0.0	38.6	3.8	Yes
BL						8.0	30.0	38.6	4.2	Yes
BL						8.0	60.0	38.6	5.4	Yes
BL						8.0	90.0	38.6	20.1	Yes
BL						8.0	120.0	38.6	22.8	Yes
BL						8.0	150.0	38.6	23.0	Yes
BL						8.0	180.0	38.6	22.9	Yes
BL						8.0	210.0	38.6	21.2	Yes
BL						8.0	240.0	38.6	19.2	Yes
BL						8.0	270.0	38.6	4.3	Yes
BL						8.0	300.0	38.6	3.7	Yes
BL						8.0	330.0	38.6	3.7	Yes
BM	Noise sensitive point: Norwegian - User defined (1124)	289,428	6,849,234	14.7	4.0	8.0	0.0	38.6	3.7	Yes
BM						8.0	30.0	38.6	4.5	Yes
BM						8.0	60.0	38.6	5.1	Yes
BM						8.0	90.0	38.6	6.6	Yes
BM						8.0	120.0	38.6	16.4	Yes
BM						8.0	150.0	38.6	17.2	Yes
BM						8.0	180.0	38.6	17.3	Yes
BM						8.0	210.0	38.6	16.1	Yes
BM						8.0	240.0	38.6	5.1	Yes
BM						8.0	270.0	38.6	3.7	Yes
BM						8.0	300.0	38.6	3.1	Yes
BM						8.0	330.0	38.6	3.1	Yes
BN	Noise sensitive point: Norwegian - User defined (1125)	293,874	6,852,214	13.0	4.0	8.0	0.0	38.6	-5.1	Yes
BN						8.0	30.0	38.6	-4.5	Yes
BN						8.0	60.0	38.6	-2.7	Yes
BN						8.0	90.0	38.6	6.8	Yes
BN						8.0	120.0	38.6	16.3	Yes
BN						8.0	150.0	38.6	17.0	Yes
BN						8.0	180.0	38.6	16.4	Yes
BN						8.0	210.0	38.6	11.1	Yes
BN						8.0	240.0	38.6	-1.1	Yes
BN						8.0	270.0	38.6	-3.7	Yes
BN						8.0	300.0	38.6	-5.0	Yes
BN						8.0	330.0	38.6	-5.3	Yes
BO	Noise sensitive point: Norwegian - User defined (1126)	290,703	6,852,062	192.7	4.0	8.0	0.0	38.6	-4.7	Yes
BO						8.0	30.0	38.6	-4.5	Yes
BO						8.0	60.0	38.6	-3.3	Yes
BO						8.0	90.0	38.6	-1.0	Yes
BO						8.0	120.0	38.6	4.3	Yes
BO						8.0	150.0	38.6	5.9	Yes
BO						8.0	180.0	38.6	1.0	Yes
BO						8.0	210.0	38.6	-1.2	Yes
BO						8.0	240.0	38.6	-3.0	Yes
BO						8.0	270.0	38.6	-3.9	Yes
BO						8.0	300.0	38.6	-4.5	Yes

To be continued on next page...

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4 \text{ dB}$.Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Main Result

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height [m]	Wind speed [m/s]	Dir [°]	Demands	Sound level	Demands fulfilled?
								Noise [dB(A)]	From WTGs [dB(A)]	Noise [dB(A)]
BO						8.0	330.0	38.6	-4.7	Yes
BP	Noise sensitive point: Norwegian - User defined (1127)	301,148	6,846,630	3.0	4.0	8.0	0.0	38.6	0.4	Yes
BP						8.0	30.0	38.6	-0.4	Yes
BP						8.0	60.0	38.6	-0.5	Yes
BP						8.0	90.0	38.6	-0.2	Yes
BP						8.0	120.0	38.6	0.5	Yes
BP						8.0	150.0	38.6	1.4	Yes
BP						8.0	180.0	38.6	2.2	Yes
BP						8.0	210.0	38.6	3.1	Yes
BP						8.0	240.0	38.6	3.4	Yes
BP						8.0	270.0	38.6	3.2	Yes
BP						8.0	300.0	38.6	2.5	Yes
BP						8.0	330.0	38.6	1.3	Yes

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

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NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

Assumptions

Weather stability

Relative humidity

50.0 %

Air temperature

15.0 °C

Height for air temperature

2.0 m

Stability parameters

Night; Clouded

Inverse Monin Obukhov length

0.0000

Temperature scale T^*

0.0000

Terrain

Elevation based on object

DTM Guleslettene 10x10m

Roughness based on area object

Area object (Roughness): REGIONS_Guleslettene_4.w2r (5)

Terrain type based on area object

Terrain Hardness

Month for calculation

January

Wind speed criteria

Uniform wind speed at 10 m agl.

Height above ground level for receiver

4.0 m

Wind speed has been extrapolated to calculation height using

IEC profile shear ($z_0 = 0.05$ m)

No stability correction

Version

4.0.1.1

All coordinates are in

UTM (north)-WGS84 Zone: 32

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

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NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

WTG: VESTAS V136-4.2-Gulesletten 4200 136.0 !O!

Noise: PO1-0S (106.9 dB)

Source	Source/Date	Creator	Edited
0067-4732_01	20.11.2017	USER	06.02.2018 12:06

Octave data

Wind speed	LwA,ref	63	125	250	500	1000	2000	4000	8000
[m/s]	[dB(A)]	[dB(A)]	[dB(A)]	[dB(A)]	[dB(A)]	[dB(A)]	[dB(A)]	[dB(A)]	[dB(A)]
3.0	93.2	73.2	80.7	85.7	88.0	87.6	84.6	79.0	70.7
4.0	93.6	73.8	81.4	86.3	88.5	87.9	84.7	78.7	70.0
5.0	96.5	77.0	84.7	89.6	91.6	90.7	86.8	80.1	70.4
6.0	100.0	80.0	87.8	92.7	94.9	94.3	91.0	84.9	76.0
7.0	103.2	83.0	90.7	95.7	98.0	97.6	94.5	88.8	80.3
8.0	105.9	84.8	92.3	97.4	100.1	100.4	98.4	93.9	87.1
9.0	106.9	85.5	92.9	98.1	100.9	101.4	99.7	95.6	89.3
10.0	106.9	85.3	92.6	97.8	100.7	101.4	99.9	96.1	90.1
11.0	106.9	85.0	92.3	97.5	100.5	101.4	100.1	96.7	91.1
12.0	106.9	84.7	92.0	97.2	100.3	101.3	100.2	97.2	91.9
13.0	106.9	84.0	91.2	96.4	99.8	101.1	100.6	98.1	93.7
14.0	106.8	83.3	90.3	95.6	99.1	100.8	100.8	99.0	95.3
15.0	106.8	82.5	89.5	94.8	98.5	100.5	100.8	99.6	96.6
16.0	106.8	81.7	88.7	94.0	97.8	100.1	100.8	100.1	97.7
17.0	106.7	81.0	87.8	93.2	97.2	99.6	100.7	100.4	98.6
18.0	106.7	80.2	86.9	92.3	96.4	99.2	100.6	100.7	99.5
19.0	106.6	79.3	86.0	91.4	95.6	98.6	100.3	100.9	100.2
20.0	106.6	78.5	85.1	90.5	95.0	98.1	100.1	101.0	100.7

NSA: Noise sensitive point: Norwegian - User defined (1060)-A

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1061)-B

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1062)-C

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1063)-D

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1064)-E

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1065)-F

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1066)-G

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

NSA: Noise sensitive point: Norwegian - User defined (1067)-H

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1068)-I

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1069)-J

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1070)-K

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1071)-L

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1072)-M

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1073)-N

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1074)-O

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1075)-P

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1076)-Q

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1077)-R

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

Licensed user:

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

NSA: Noise sensitive point: Norwegian - User defined (1078)-S

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1079)-T

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1080)-U

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1081)-V

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1082)-W

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1083)-X

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1084)-Y

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1085)-Z

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1086)-AA

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1087)-AB

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1088)-AC

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

Licensed user:

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Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

NSA: Noise sensitive point: Norwegian - User defined (1089)-AD

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1090)-AE

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1091)-AF

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1092)-AG

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1093)-AH

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1094)-AI

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1095)-AJ

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1096)-AK

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1097)-AL

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1098)-AM

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1099)-AN

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

Licensed user:

Meventus AS

Konsgård Allé 59

NO-4632 Kristiansand

+47 3860 7115

Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

NSA: Noise sensitive point: Norwegian - User defined (1100)-AO

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1101)-AP

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1102)-AQ

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1103)-AR

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1104)-AS

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1105)-AT

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1106)-AU

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1107)-AV

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1108)-AW

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1109)-AX

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1110)-AY

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

Licensed user:

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+47 3860 7115

Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

NSA: Noise sensitive point: Norwegian - User defined (1111)-AZ

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1112)-BA

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1113)-BB

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1114)-BC

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1115)-BD

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1116)-BE

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1117)-BF

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1118)-BG

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1119)-BH

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1120)-BI

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1121)-BJ

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4$ dB.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

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Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 201803-47 x V136 4.2 MW, 90 m HH

NSA: Noise sensitive point: Norwegian - User defined (1122)-BK

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1123)-BL

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1124)-BM

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1125)-BN

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1126)-BO

Predefined calculation standard:

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

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - User defined (1127)-BP

Predefined calculation standard:

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

Distance demand: 0.0 m

Project:

Guleslettene

Description:

Note 1: The results are given as $L_{ref} \sim L_{den} - 6.4 \text{ dB}$.

Note 2: Noise limit L_{den} is 45 dB, which equals a L_{ref} limit of 38.6 dB

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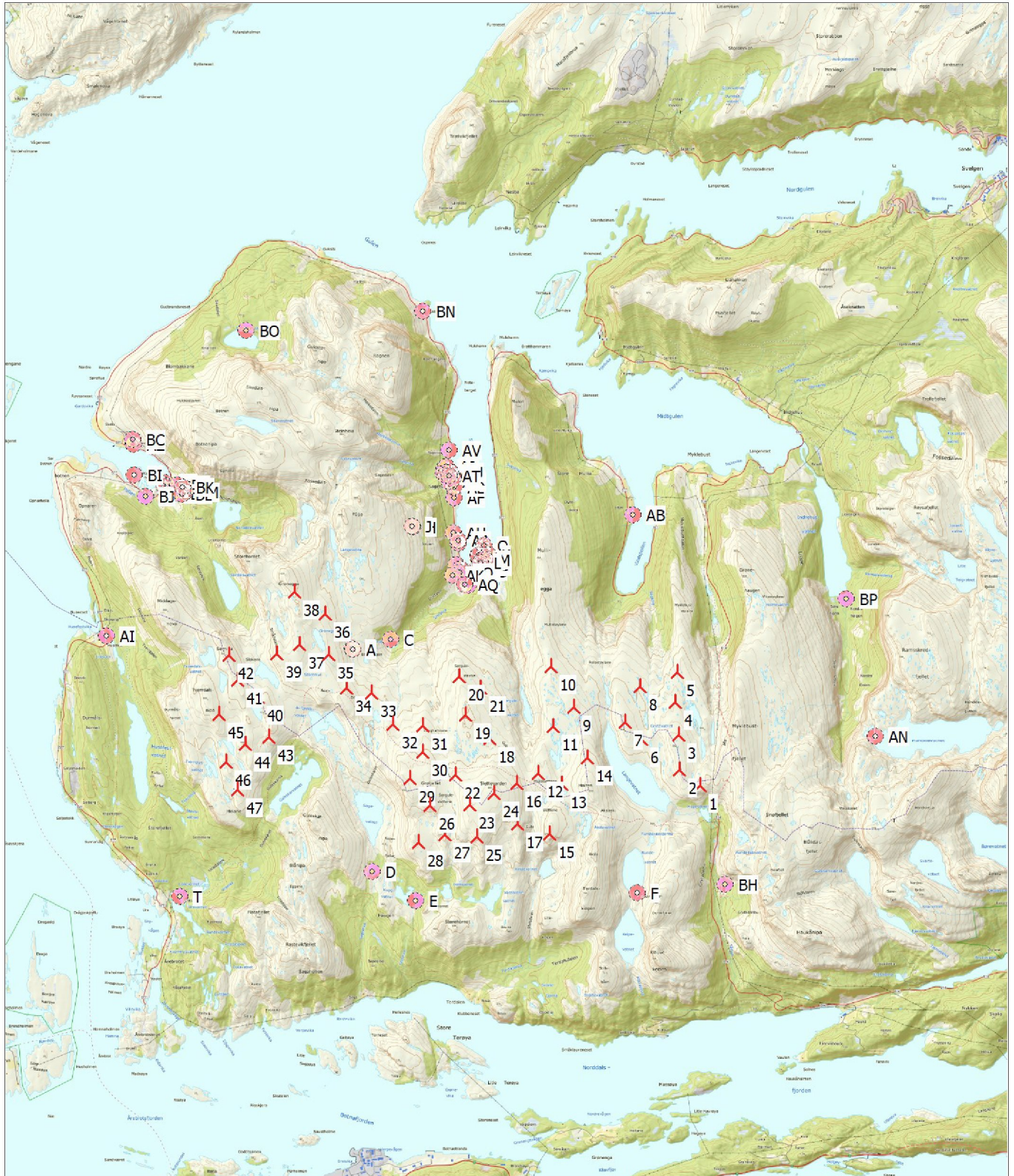
Kyle Brennan / kyle@meventus.com

Calculated:

23.03.2018 11:59/3.1.633

NORD2000 -

Calculation: 201803-47 x V136 4.2 MW, 90 m HH



Map: Topografisk norgeskart 3, Print scale 1:100,000, Map center UTM (north)-WGS84 Zone: 32 East: 294,700 North: 6,846,900



New WTG



Noise sensitive area



SHADOW - Main Result

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH

Assumptions for shadow calculations

Maximum distance for influence

Calculate only when more than 20 % of sun is covered by the blade

Please look in WTG table

Minimum sun height over horizon for influence

3 °

Day step for calculation

1 days

Time step for calculation

1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Operational time

	0	1	2	3	4	5	6	7	8	9	10	11
139	233	235	118	45	22	30	70	165	291	453	779	

	12	13	14	15	16	17	18	19	20	21	22	23	Sum
1,517	1,124	612	311	155	93	93	73	71	78	127	166	7,000	

Idle start wind speed: Cut in wind speed from power curve

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

Height contours used: DTM Guleslettene 10x10m

Obstacles not used in calculation

Eye height: 1.5 m

Grid resolution: 10.0 m

All coordinates are in

UTM (north)-WGS84 Zone: 32

WTGs



▲ New WTG

● Shadow receptor

Easting	Northing	Z	Row data/Description	WTG type		Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
				Valid	Manufact. Type-generator				Calculation distance [m]	RPM [RPM]
		[m]								
1	298,334	6,843,450	587.4 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
2	297,984	6,843,752	583.2 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
3	298,001	6,844,367	582.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
4	297,969	6,844,963	538.8 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
5	298,039	6,845,489	515.9 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
6	297,340	6,844,333	517.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
7	297,054	6,844,657	541.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
8	297,369	6,845,275	491.6 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
9	296,156	6,844,978	561.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
10	295,796	6,845,731	541.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
11	295,766	6,844,654	554.2 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
12	295,455	6,843,835	583.3 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
13	295,860	6,843,617	581.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
14	296,347	6,844,061	613.9 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
15	295,594	6,842,741	641.3 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
16	295,060	6,843,680	617.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
17	295,031	6,842,955	602.1 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
18	294,619	6,844,504	578.6 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
19	294,205	6,844,951	602.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
20	294,138	6,845,650	561.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
21	294,507	6,845,419	535.7 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
22	293,964	6,843,891	623.4 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
23	294,195	6,843,349	680.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
24	294,640	6,843,526	692.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
25	294,291	6,842,767	663.6 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
26	293,473	6,843,375	640.2 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
27	293,713	6,842,844	599.7 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
28	293,235	6,842,732	562.4 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
29	293,145	6,843,875	639.0 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
30	293,400	6,844,339	601.1 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
31	293,437	6,844,802	561.8 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4
32	292,898	6,844,868	520.2 VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4

To be continued on next page...



SHADOW - Main Result

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH

...continued from previous page

	Easting	Northing	Z	Row data/Description	WTG type		Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
													Calculation distance [m]	RPM [RPM]
			[m]											
33	292,554	6,845,451	500.5	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
34	292,112	6,845,561	544.8	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
35	291,825	6,846,184	540.0	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
36	291,810	6,846,911	528.0	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
37	291,313	6,846,391	570.6	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
38	291,277	6,847,334	601.0	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
39	290,899	6,846,255	559.8	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
40	290,519	6,845,497	500.8	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
41	290,167	6,845,825	529.5	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
42	290,038	6,846,283	549.9	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
43	290,662	6,844,772	486.2	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
44	290,233	6,844,669	504.6	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
45	289,799	6,845,237	493.9	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
46	289,873	6,844,369	440.0	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			
47	290,054	6,843,869	447.6	VESTAS V136-4.2-Gulesletten 4200 136.0 ... Yes	VESTAS	V136-4.2-Gulesletten-4,200	4,200	136.0	90.0	1,803	10.4			

Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Height a.g.l.	Degrees from south cw	Slope of window	Direction mode
			[m]	[m]	[m]	[m]	[°]	[°]	
A	292,260	6,846,248	440.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
B	292,259	6,846,251	439.9	2.0	2.0	2.0	0.0	90.0	"Green house mode"
C	292,952	6,846,377	289.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
D	292,377	6,842,261	340.3	2.0	2.0	2.0	0.0	90.0	"Green house mode"
E	293,123	6,841,693	335.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
F	297,092	6,841,586	460.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
G	294,720	6,847,930	7.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
H	293,464	6,848,370	365.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
I	294,741	6,847,877	1.9	2.0	2.0	2.0	0.0	90.0	"Green house mode"
J	293,457	6,848,376	365.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
K	294,794	6,847,783	1.1	2.0	2.0	2.0	0.0	90.0	"Green house mode"
L	294,642	6,847,663	22.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
M	294,739	6,847,707	9.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
N	294,606	6,847,785	2.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
O	294,742	6,847,612	15.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
P	294,683	6,847,689	19.7	2.0	2.0	2.0	0.0	90.0	"Green house mode"
Q	294,720	6,847,962	2.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
R	294,665	6,847,830	2.5	2.0	2.0	2.0	0.0	90.0	"Green house mode"
S	294,663	6,847,609	33.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
T	288,899	6,842,024	20.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
U	294,656	6,847,579	35.2	2.0	2.0	2.0	0.0	90.0	"Green house mode"
V	294,265	6,848,029	4.1	2.0	2.0	2.0	0.0	90.0	"Green house mode"
W	294,627	6,847,629	19.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
X	294,210	6,847,651	16.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
Y	294,630	6,847,833	0.7	2.0	2.0	2.0	0.0	90.0	"Green house mode"
Z	294,607	6,847,562	25.2	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AA	294,267	6,848,074	1.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AB	297,422	6,848,342	1.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AC	294,610	6,847,594	16.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AD	294,289	6,847,480	4.1	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AE	294,280	6,847,559	4.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AF	294,244	6,848,839	7.2	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AG	294,521	6,847,508	0.3	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AH	294,184	6,848,219	18.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AI	287,872	6,846,749	19.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AJ	294,131	6,849,405	3.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AK	294,129	6,847,457	35.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AL	294,256	6,849,036	11.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AM	294,091	6,849,378	10.5	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AN	301,527	6,844,141	498.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AO	294,255	6,847,497	5.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AP	294,403	6,847,268	12.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AQ	294,341	6,847,280	9.8	2.0	2.0	2.0	0.0	90.0	"Green house mode"

To be continued on next page...

Project:

Guleslettene

Licensed user:

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NO-4632 Kristiansand

+47 3860 7115

Data / data@meventus.com

Calculated:

22.03.2018 16:36/3.1.633



SHADOW - Main Result

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH

...continued from previous page

No.	Easting	Northing	Z	Width	Height	Height a.g.l.	Degrees from south cw	Slope of window	Direction mode
			[m]	[m]	[m]	[m]	[°]	[°]	
AR	294,234	6,849,170	13.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AS	294,231	6,849,257	5.1	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AT	294,174	6,849,245	12.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AU	294,206	6,849,305	1.9	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AV	294,202	6,849,704	4.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AW	294,169	6,849,140	14.9	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AX	294,110	6,849,264	8.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AY	294,074	6,849,286	8.6	2.0	2.0	2.0	0.0	90.0	"Green house mode"
AZ	288,559	6,850,149	17.5	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BA	289,303	6,849,369	7.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BB	289,124	6,849,228	9.3	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BC	288,563	6,850,239	34.5	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BD	289,189	6,849,210	12.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BE	289,095	6,849,418	4.5	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BF	289,065	6,849,357	4.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BG	289,073	6,849,386	3.3	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BH	298,677	6,841,656	304.7	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BI	288,542	6,849,600	9.4	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BJ	288,728	6,849,208	15.2	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BK	289,401	6,849,333	10.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BL	289,376	6,849,205	10.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BM	289,428	6,849,234	14.7	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BN	293,874	6,852,214	13.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BO	290,703	6,852,062	192.7	2.0	2.0	2.0	0.0	90.0	"Green house mode"
BP	301,148	6,846,630	3.0	2.0	2.0	2.0	0.0	90.0	"Green house mode"

Calculation Results

Shadow receptor

No.	Shadow, worst case		Shadow, expected values	
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	198:47	208	1:41	45:10
B	197:13	205	1:41	44:55
C	47:41	125	0:37	11:49
D	12:59	44	0:22	2:35
E	0:00	0	0:00	0:00
F	0:00	0	0:00	0:00
G	0:00	0	0:00	0:00
H	0:00	0	0:00	0:00
I	0:00	0	0:00	0:00
J	0:00	0	0:00	0:00
K	0:00	0	0:00	0:00
L	0:00	0	0:00	0:00
M	0:00	0	0:00	0:00
N	0:00	0	0:00	0:00
O	0:00	0	0:00	0:00
P	0:00	0	0:00	0:00
Q	0:00	0	0:00	0:00
R	0:00	0	0:00	0:00
S	0:00	0	0:00	0:00
T	0:00	0	0:00	0:00
U	0:00	0	0:00	0:00
V	0:00	0	0:00	0:00
W	0:00	0	0:00	0:00
X	0:00	0	0:00	0:00
Y	0:00	0	0:00	0:00
Z	0:00	0	0:00	0:00
AA	0:00	0	0:00	0:00
AB	0:00	0	0:00	0:00
AC	0:00	0	0:00	0:00
AD	0:00	0	0:00	0:00
AE	0:00	0	0:00	0:00
AF	0:00	0	0:00	0:00

To be continued on next page...

Project:

Guleslettene

Licensed user:

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NO-4632 Kristiansand

+47 3860 7115

Data / data@meventus.com

Calculated:

22.03.2018 16:36/3.1.633



SHADOW - Main Result

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH

...continued from previous page

No.	Shadow, worst case			Shadow, expected values	
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]	
AG	0:00	0	0:00	0:00	
AH	0:00	0	0:00	0:00	
AI	0:00	0	0:00	0:00	
AJ	0:00	0	0:00	0:00	
AK	0:00	0	0:00	0:00	
AL	0:00	0	0:00	0:00	
AM	0:00	0	0:00	0:00	
AN	0:00	0	0:00	0:00	
AO	0:00	0	0:00	0:00	
AP	0:00	0	0:00	0:00	
AQ	0:00	0	0:00	0:00	
AR	0:00	0	0:00	0:00	
AS	0:00	0	0:00	0:00	
AT	0:00	0	0:00	0:00	
AU	0:00	0	0:00	0:00	
AV	0:00	0	0:00	0:00	
AW	0:00	0	0:00	0:00	
AX	0:00	0	0:00	0:00	
AY	0:00	0	0:00	0:00	
AZ	0:00	0	0:00	0:00	
BA	0:00	0	0:00	0:00	
BB	0:00	0	0:00	0:00	
BC	0:00	0	0:00	0:00	
BD	0:00	0	0:00	0:00	
BE	0:00	0	0:00	0:00	
BF	0:00	0	0:00	0:00	
BG	0:00	0	0:00	0:00	
BH	0:00	0	0:00	0:00	
BI	0:00	0	0:00	0:00	
BJ	0:00	0	0:00	0:00	
BK	0:00	0	0:00	0:00	
BL	0:00	0	0:00	0:00	
BM	0:00	0	0:00	0:00	
BN	0:00	0	0:00	0:00	
BO	0:00	0	0:00	0:00	
BP	0:00	0	0:00	0:00	

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5362)	0:00	0:00
2	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5363)	0:00	0:00
3	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5364)	0:00	0:00
4	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5365)	0:00	0:00
5	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5366)	0:00	0:00
6	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5367)	0:00	0:00
7	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5368)	0:00	0:00
8	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5369)	0:00	0:00
9	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5370)	0:00	0:00
10	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5371)	0:00	0:00
11	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5372)	0:00	0:00
12	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5373)	0:00	0:00
13	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5374)	0:00	0:00
14	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5375)	0:00	0:00
15	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5376)	0:00	0:00
16	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5377)	0:00	0:00
17	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5378)	0:00	0:00
18	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5379)	0:00	0:00
19	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5380)	0:00	0:00
20	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5381)	7:54	1:40
21	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5382)	0:00	0:00
22	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5383)	0:00	0:00
23	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5384)	0:00	0:00

To be continued on next page...

Project:

Gulesletten

Licensed user:

Meventus AS

Kongsgård Allé 59

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Data / data@meventus.com

Calculated:

22.03.2018 16:36/3.1.633



SHADOW - Main Result

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH

...continued from previous page

No.	Name	Worst case [h/year]	Expected [h/year]
24	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5385)	0:00	0:00
25	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5386)	0:00	0:00
26	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5387)	0:00	0:00
27	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5388)	12:59	2:35
28	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5389)	0:00	0:00
29	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5390)	0:00	0:00
30	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5391)	0:00	0:00
31	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5392)	0:00	0:00
32	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5393)	12:00	3:45
33	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5394)	47:58	15:24
34	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5395)	48:29	15:25
35	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5396)	104:07	17:01
36	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5397)	0:00	0:00
37	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5398)	22:29	3:32
38	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5399)	0:00	0:00
39	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5400)	0:00	0:00
40	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5401)	0:00	0:00
41	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5402)	0:00	0:00
42	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5403)	0:00	0:00
43	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5404)	0:00	0:00
44	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5405)	0:00	0:00
45	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5406)	0:00	0:00
46	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5407)	0:00	0:00
47	VESTAS V136-4.2-Gulesletten 4200 136.0 !O! hub: 90.0 m (TOT: 158.0 m) (5408)	0:00	0:00

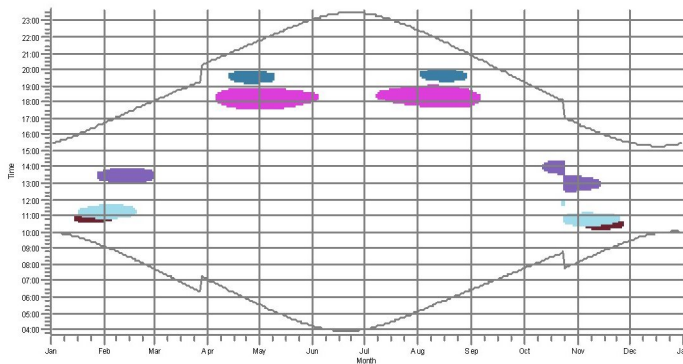
Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.



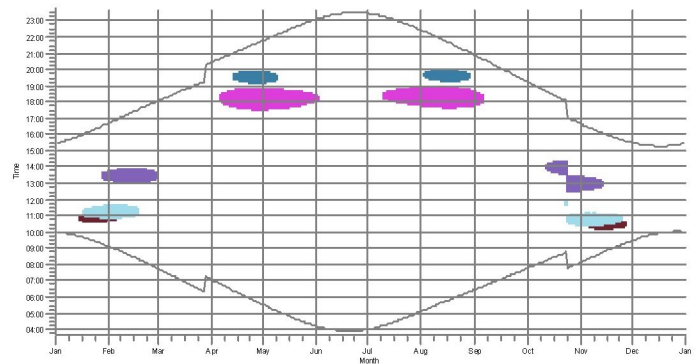
SHADOW - Calendar, graphical

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH

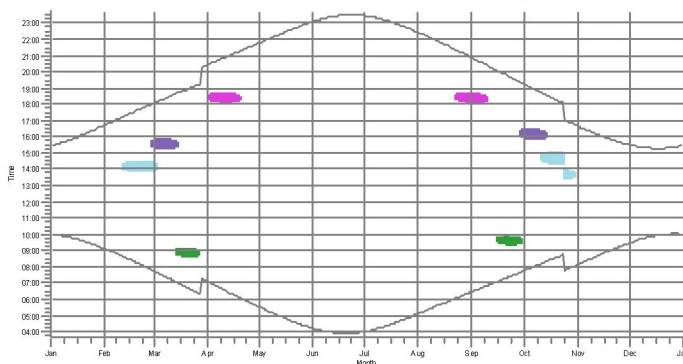
A: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 0.0° (87)



B: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 0.0° (88)



C: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 0.0° (89)



WTGs

20: VESTAS V136-4.2-Gulesletten 4200 136.0 IOI hub: 90.0 m (TOT: 158.0 m) (5381)
32: VESTAS V136-4.2-Gulesletten 4200 136.0 IOI hub: 90.0 m (TOT: 158.0 m) (5393)

33: VESTAS V136-4.2-Gulesletten 4200 136.0 IOI hub: 90.0 m (TOT: 158.0 m) (5394)
34: VESTAS V136-4.2-Gulesletten 4200 136.0 IOI hub: 90.0 m (TOT: 158.0 m) (5395)

35: VESTAS V136-4.2-Gulesletten 4200 136.0 IOI hub: 90.0 m (TOT: 158.0 m) (5396)
37: VESTAS V136-4.2-Gulesletten 4200 136.0 IOI hub: 90.0 m (TOT: 158.0 m) (5398)

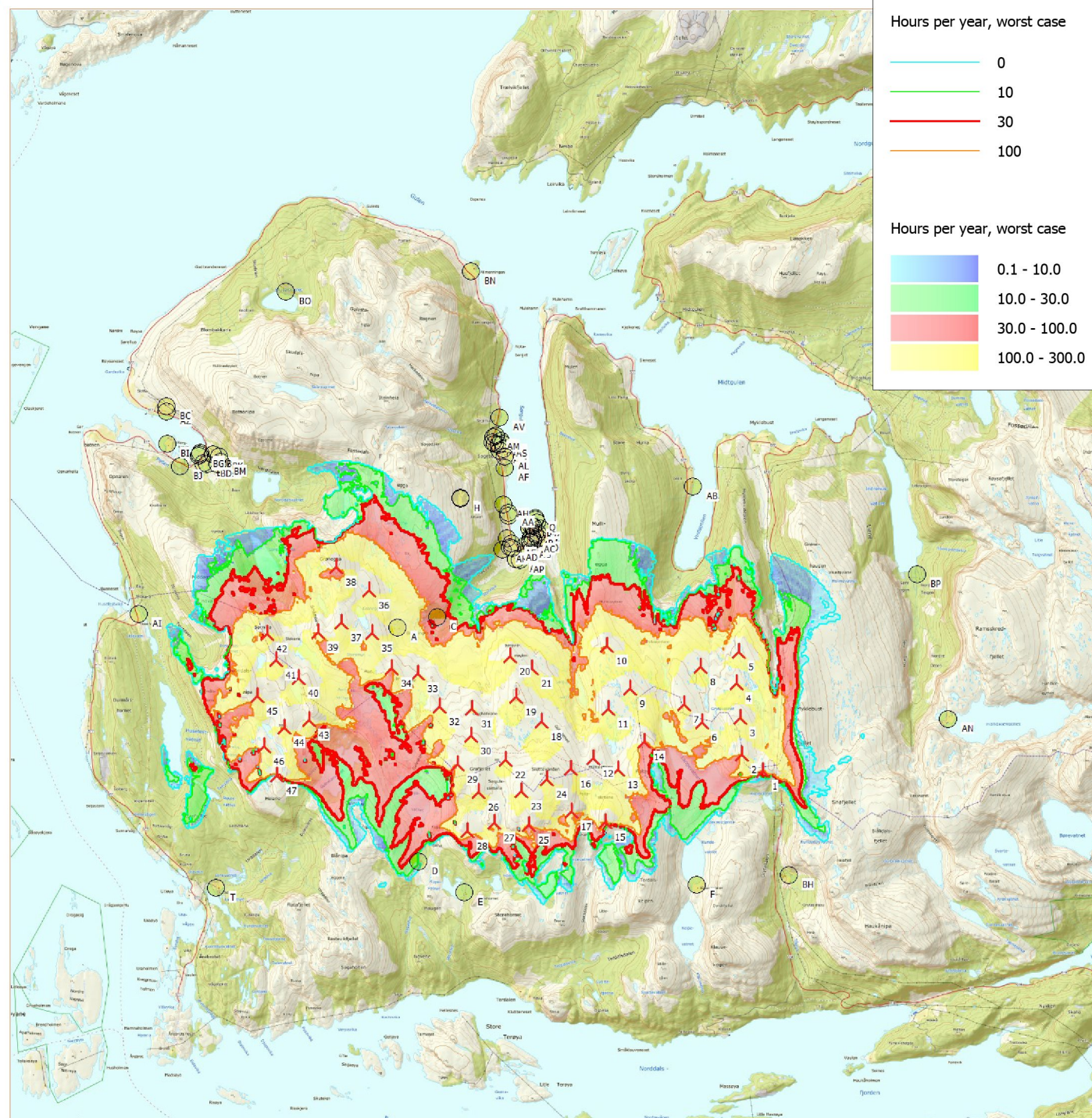
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22.03.2018 16:36/3.1.633



SHADOW - Map

Calculation: 201803 - 47 x V136 4.2MW, 90 m HH



0 1 2 3 4 km

Map: Topografisk norgeskart 3 , Print scale 1:100,000, Map center UTM (north)-WGS84 Zone: 32 East: 294,660 North: 6,846,900

 New WTG  Shadow receptor

Flicker map level: DTM Guleslettene 10x10m