

Evaluation and experiences from the Vindpilot project at Dragaliden and Gabrielsberget

Helena Karlsson – project leader/developer
Svevind AB

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The Vindpilot projects of Svevind

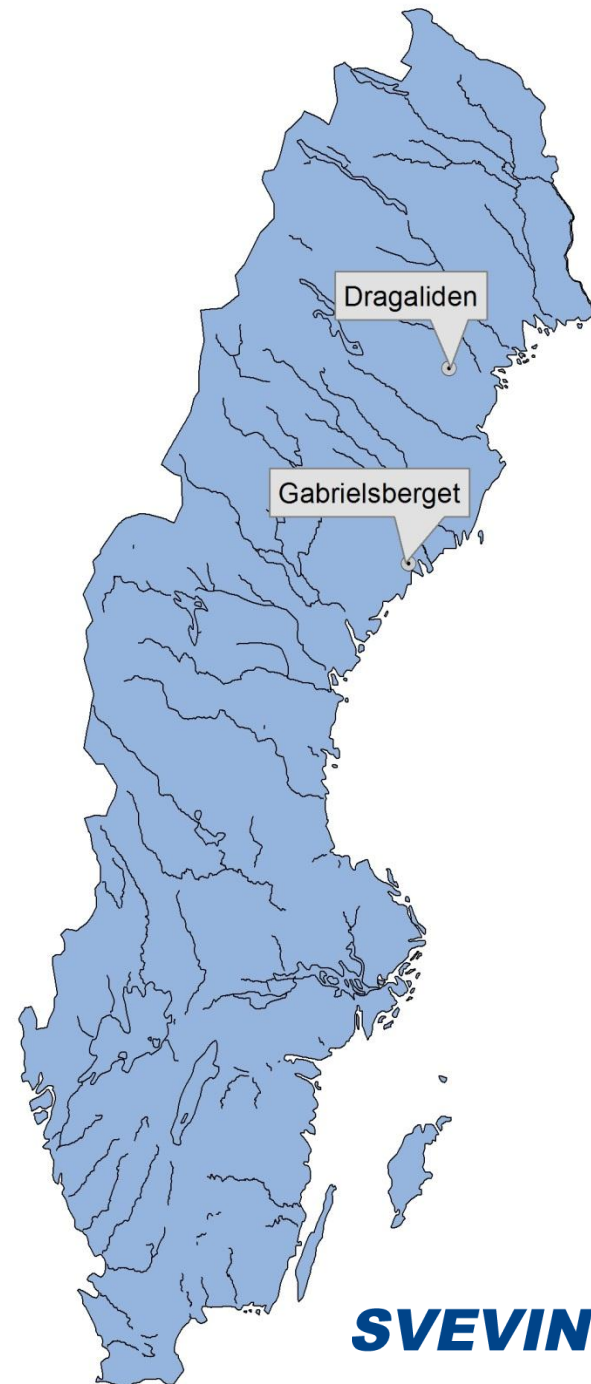
Dragaliden (app. 380 meters above sea level)

- 12 turbines of which 2 have a total height of 179 meters (the rest: 149 meters)
- Enercon E-82
- Installed power 24 MW
- All 12 in operation since December of 2010

Gabrielsberget syd (app. 200 meters above sea level)

- 20 turbines with a total height of 149 meters
- Enercon E-82
- Installed power 46 MW
- All in operation since March of 2011

- Next phase is Gabrielsberget nord (20 turbines) – in operation this summer

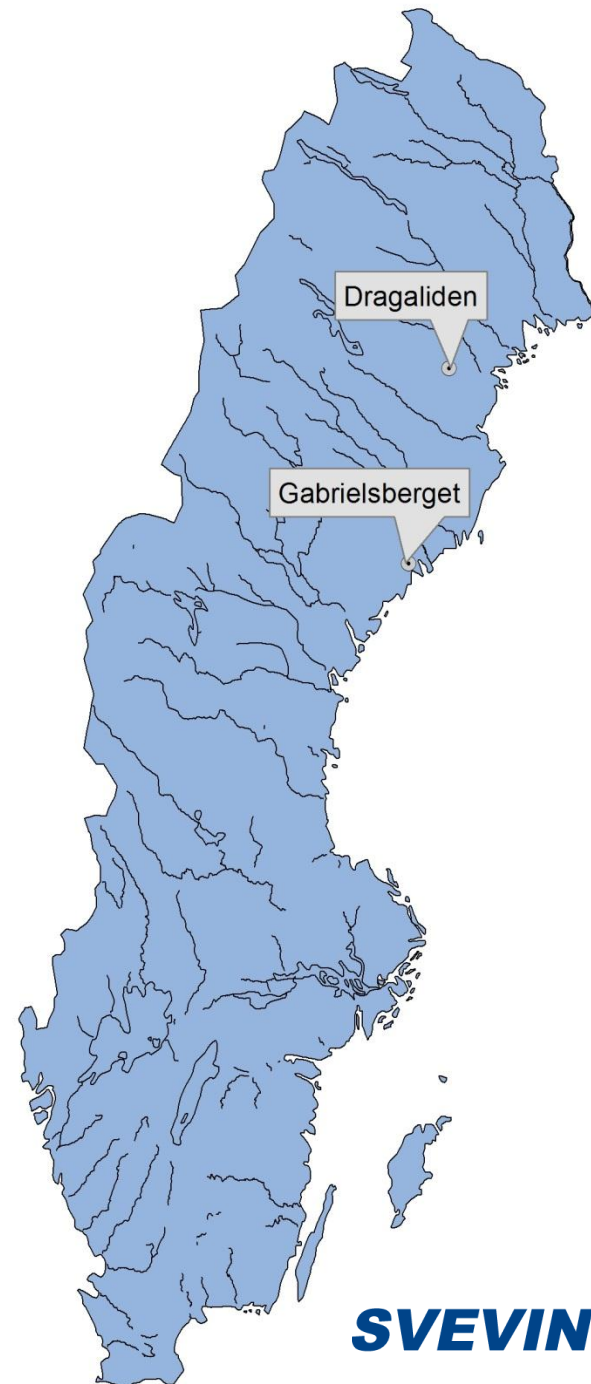


The Vindpilot project The Energy agency

Large scale wind power in the north of Sweden

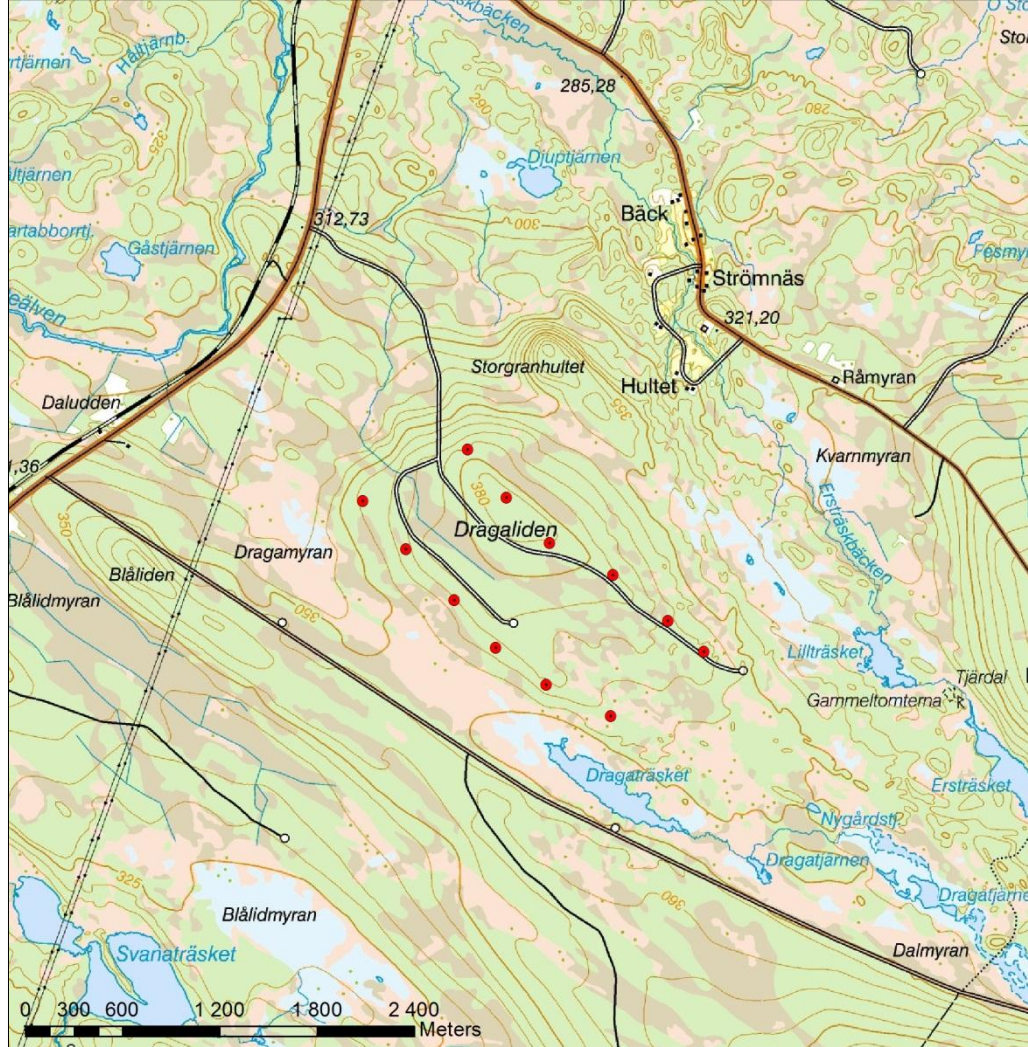
Svevind started the work in 2009 and just recently the final report was submitted.

The report can soon be downloaded on www.svevind.se.



Evaluation of the permit process

Final report in 2009



Forest effect on the production

Data of the production is reported to Vindstat

Driftuppföljning vindkraft

Hem

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Dm

Alla verk, sorterade på kapacitetsfaktor (föregående dygn)

Avläst 2011-03-14

[Förklaringar](#)

Storlek kW	Typ	Namn	Nr	Status	Effekt (kW)	Vind (m/s)	Temp (grad)	Prod (tim)	Prod (kWh)	Prod (%)	Prod (*)	Fel (tim)	Tid
2000	Vestas	vaiervstad uorun	1222	-	235	3,0	7	24	13549	29	2,2	0	00:00
2000	Vestas	Topperyd 2	1366	-	1162	10,0	5	24	13778	29	2,2	0	00:00
2000	Vestas	Topperyd 4	1367	-	710	8,6	5	24	13819	29	2,2	0	00:00
2000	Enercon	Dragaliden 6	1076	-	394	5,5	22	13443	28	2,6	0	01:54	
2000	Vestas	Havsnäs F7	1300	-	617	6,9	-1	19	13373	28	2,1	2	00:00
2000	Vestas	Pelekulla 2	1361	-	446	7,2	6	24	13345	28	2,1	0	00:01
2000	Vestas	Havsnäs F8	1301	-	822	7,4	-2	20	13472	28	2,1	0	00:00
2000	Vestas	Havsnäs D12	1273	-	452	6,3	-2	20	13443	28	2,1	0	00:00
850	Vestas	Vallruns Lucia	692	-	390	9,2	-3	21	5606	27	2,6	0	11:03
2000	Vestas	Havsnäs D14	1275	-	506	6,6	-2	20	12838	27	2,0	0	00:00
2000	Vestas	Hörneå 11	1180	-	359	6,3	0	22	12772	27	2,0	0	00:00
1500	Vestas	Aapua 1	809	-	1520	11,5	-1	12	9773	27	1,9	0	00:59
1500	Vestas	Aapua 6	814	-	1517	12,7	-3	12	9751	27	1,9	0	00:59
2000	Vestas	Havsnäs D1	1262	-	704	7,1	-1	21	12740	27	2,0	0	00:00
1500	Vestas	Aapua 7	815	-	1434	10,9	-3	13	9564	27	1,8	0	00:59
2000	Vestas	Pelekulla 1	1360	-	530	7,4	6	24	13031	27	2,1	0	00:01
1500	Vestas	Aapua 2	810	-	1521	11,9	-1	13	9667	27	1,8	0	00:59
2000	Vestas	Topperyd 1	1365	-	1040	9,6	5	24	13126	27	2,1	0	00:00
1500	Vestas	Aapua 3	811	-	1512	11,9	-3	12	9552	27	1,8	0	00:59
2000	Enercon	Dragaliden 3	1073	-	363	5,5	22	13178	27	2,5	0	01:54	
2000	Vestas	Bliekevare 13	1350	-	150	5,0	-3	20	12270	26	1,9	0	00:00
1800	Vestas	Havsnäs D15	1276	-	618	7,0	-2	19	11393	26	1,8	0	00:00
2000	Vestas	Havsnäs D11	1272	-	385	6,0	-2	20	12577	26	2,0	0	00:00
2000	Vestas	Havsnäs F6	1299	-	992	7,9	-1	20	11984	25	1,9	0	00:00
2000	Vestas	Havsnäs F9	1302	-	268	5,1	-1	20	11832	25	1,9	0	00:00
2000	Vestas	Havsnäs F3	1296	-	712	7,2	-1	19	12069	25	1,9	0	00:00
2000	Vestas	Hörneå 10	1179	-	254	5,8	0	21	11439	24	1,8	0	00:00
850	Vestas	Ostest-kröket	804	-	469	9,5	-6	22	4885	24	2,3	0	06:30
2000	Vestas	Källeberg vindpark 4	1316	-	359	6,1	6	23	11366	24	1,8	0	00:59
2000	Enercon	Dragaliden 4	1074	-	322	5,0	22	11367	24	2,2	0	01:54	
2000	Vestas	Havsnäs F10	1303	-	456	5,9	-1	18	11287	24	1,8	0	00:00
2000	Vestas	Havsnäs F11	1304	-	803	7,6	-1	18	11560	24	1,8	0	00:00
2000	Enercon	Dragaliden 5	1075	-	270	4,7	22	11398	24	2,2	0	01:54	
2000	Enercon	Dragaliden 1	1071	-	465	6,0	21	11369	24	2,2	0	01:54	
2000	Vestas	Havsnäs D6	1267	-	696	7,5	-2	20	11648	24	1,8	0	00:00
2000	Vestas	Hörneå 8	1177	-	190	5,1	0	21	11547	24	1,8	0	00:00
2000	Vestas	Havsnäs F4	1297	-	553	6,6	-1	19	10924	23	1,7	0	00:00
2000	Vestas	Bliekevare 14	1351	-	143	4,9	-2	20	10926	23	1,7	0	00:00
2000	Vestas	Havsnäs E1	1283	-	397	6,2	-2	20	11029	23	1,7	0	00:00
2000	Vestas	Källeberg vindpark 2	1314	-	411	6,2	5	24	11030	23	1,7	0	00:59
2000	Vestas	Hörneå 9	1178	-	195	5,6	1	21	10958	23	1,7	0	00:00
2000	Enercon	Dragaliden 2	1072	-	439	6,1	22	10876	23	2,1	0	01:54	
1500	Vestas	Offerdal Råshön 1	777	-	654	8,1	-2	20	8141	23	1,5	0	02:38
2000	Vestas	Bliekevare 15	1352	-	178	5,0	-3	18	10741	22	1,7	0	00:00
2000	Enercon	Dragaliden 8	1078	-	416	5,7	21	10751	22	2,0	0	01:54	
2000	Enercon	Dragaliden 9	1079	-	380	5,5	21	10398	22	2,0	0	01:54	
2000	Vestas	Havsnäs F5	1298	-	692	7,4	-1	19	10575	22	1,7	0	00:00
1500	Vestas	Offerdal Råshön 7	783	-	1416	11,2	-1	20	7862	22	1,5	0	02:41
2000	Enercon	Dragaliden 7	1077	-	411	5,8	22	10330	22	2,0	0	01:54	
3000	Vestas	Holmsund 2	867	-	206	4,7	0	22	16044	22	2,5	0	00:00
2000	Vestas	Källeberg vindpark 1	1313	-	321	5,9	5	23	10235	21	1,6	0	00:59
1500	Vestas	Offerdal Råshön 2	778	-	891	8,4	-2	20	7585	21	1,4	0	02:38
2000	Vestas	Havsnäs E7	1289	-	370	5,7	-1	20	10110	21	1,6	0	00:00
2000	Vestas	Havsnäs D3	1264	-	416	6,3	-1	20	10173	21	1,6	0	00:00
2000	Vestas	Källeberg vindpark 5	1317	-	460	6,6	5	23	9924	21	1,6	0	00:59
2000	Enercon	Dragaliden 10	1080	-	203	4,2	22	9535	20	1,8	0	01:54	
2000	Enercon	Dragaliden 11	1081	-	174	4,1	21	9802	20	1,9	0	01:54	
2000	Enercon	Dragaliden 12	1082	-	287	5,0	21	9836	20	1,9	0	01:54	
2000	Vestas	Havsnäs D9	1270	-	523	7,0	-2	19	9728	20	1,5	0	00:00

Solutions for treating damaged land

Revegetation on crane platforms

Continues with solutions that accelerate the natural revegetation



Effects on reindeers

Annual reports – conclusions after 2 years in operation

SVEVIND enetjärn

Vindkraft på Gabrielsberget

Uppföljning av konsekvenserna för rennäringen
Första årets resultat



2009-05-13

SVEVIND enetjärn

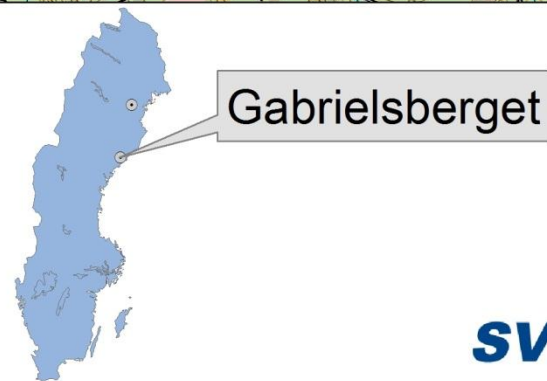
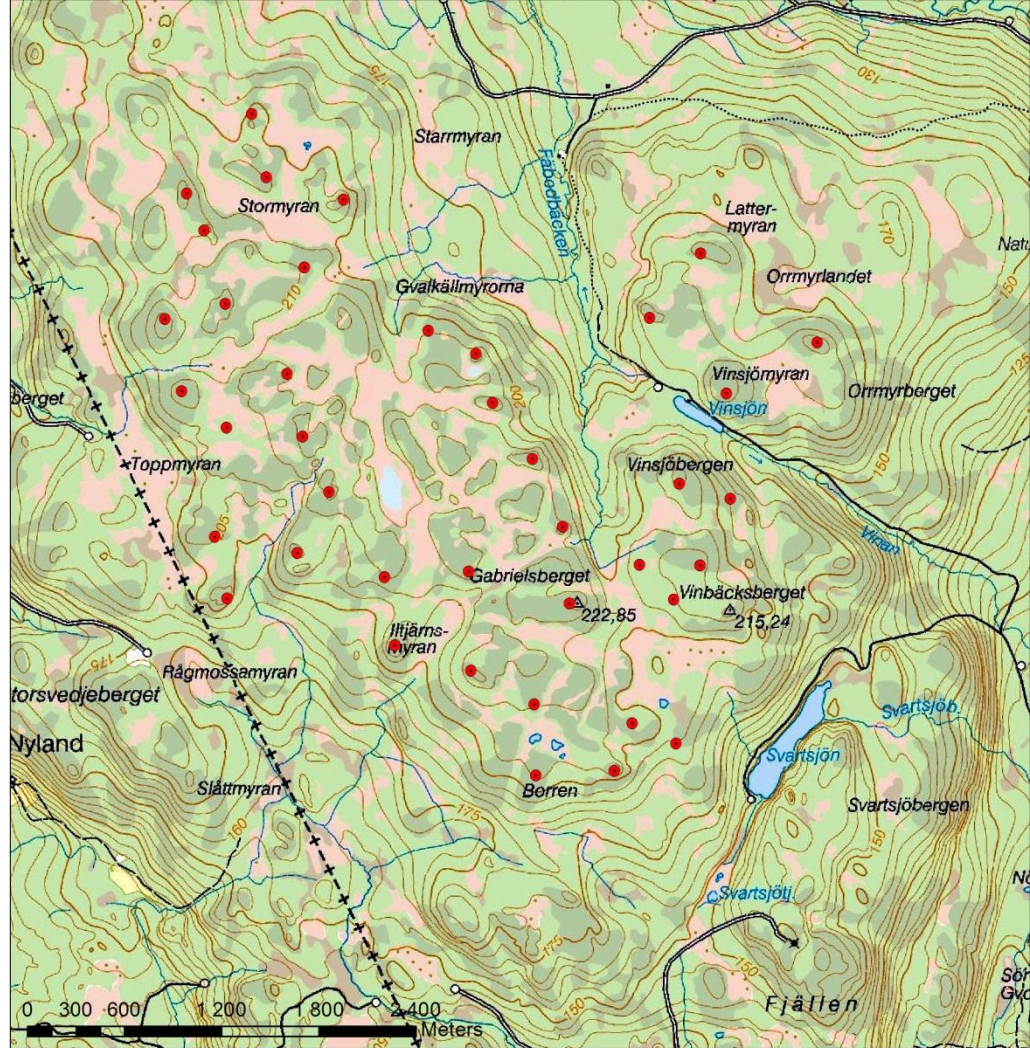
Vindkraft på Gabrielsberget

Uppföljning av konsekvenserna för rennäringen
Andra årets resultat



2010-06-10

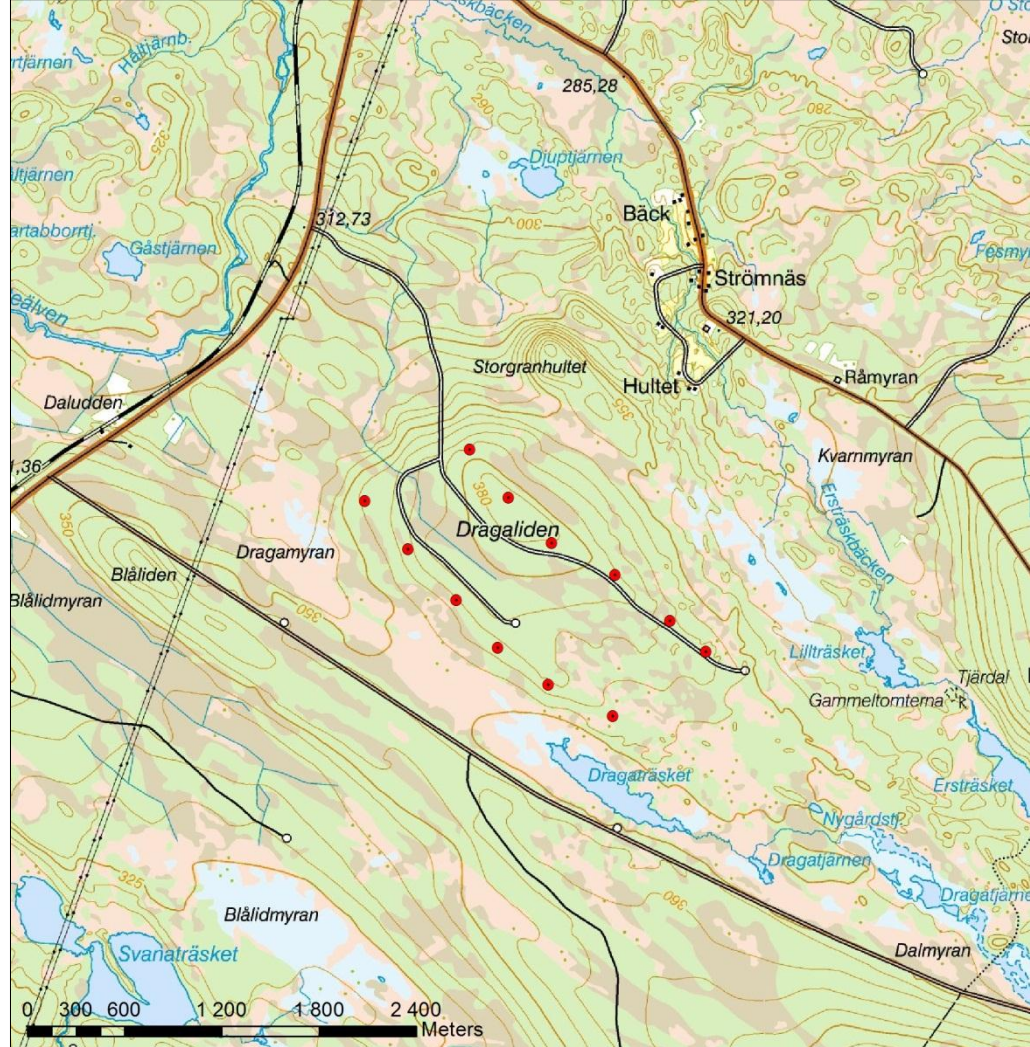
Energimyndigheten



High intensity obstacle lights (100 000 cd white) - Dragaliden

Difficulties:

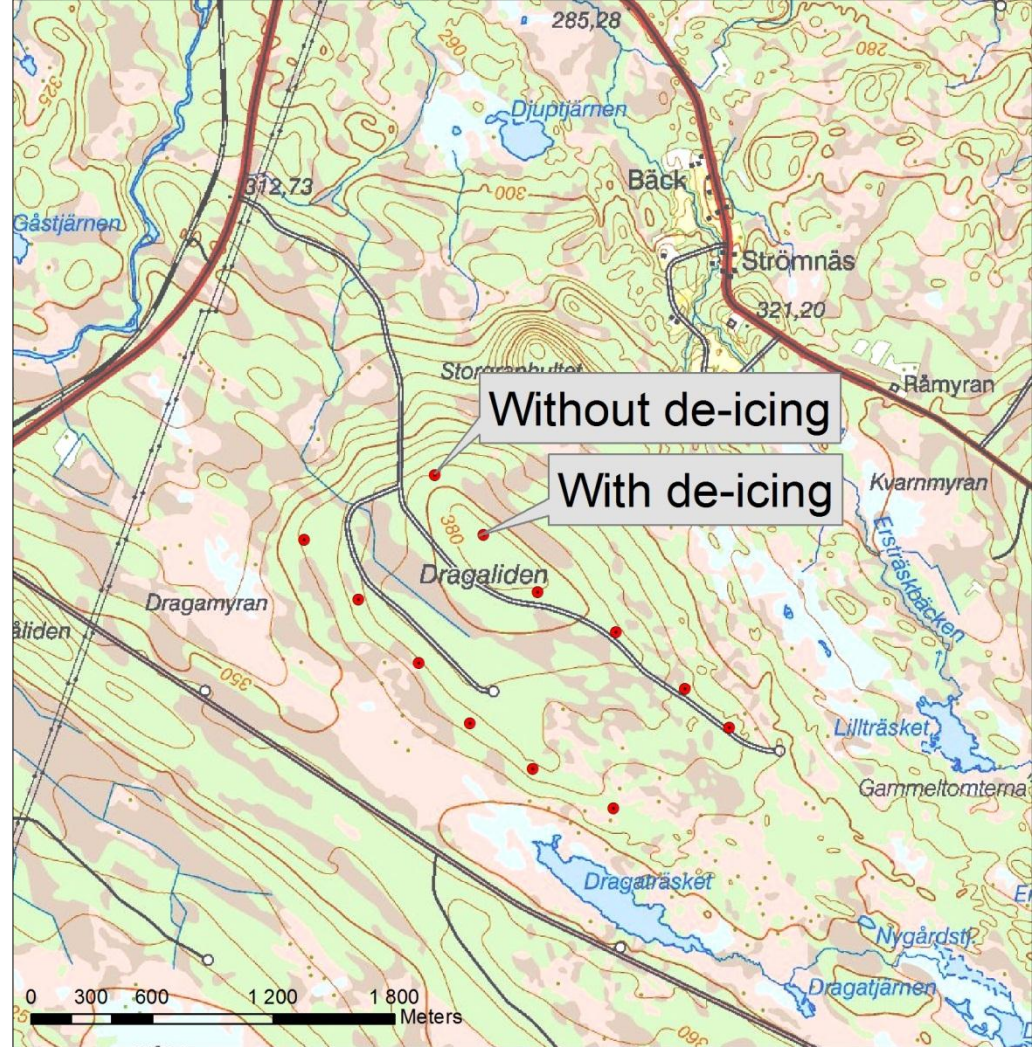
- Ice and snow
- The stray light – disturbance for locals (the disturbance was evaluated in the final report)



Technique to prevent and remove built up ice - Dragaliden

Tests were carried out 2009-2010 – one turbine with and one without de-icing system

The result:
54 % gained energy with the de-icing system

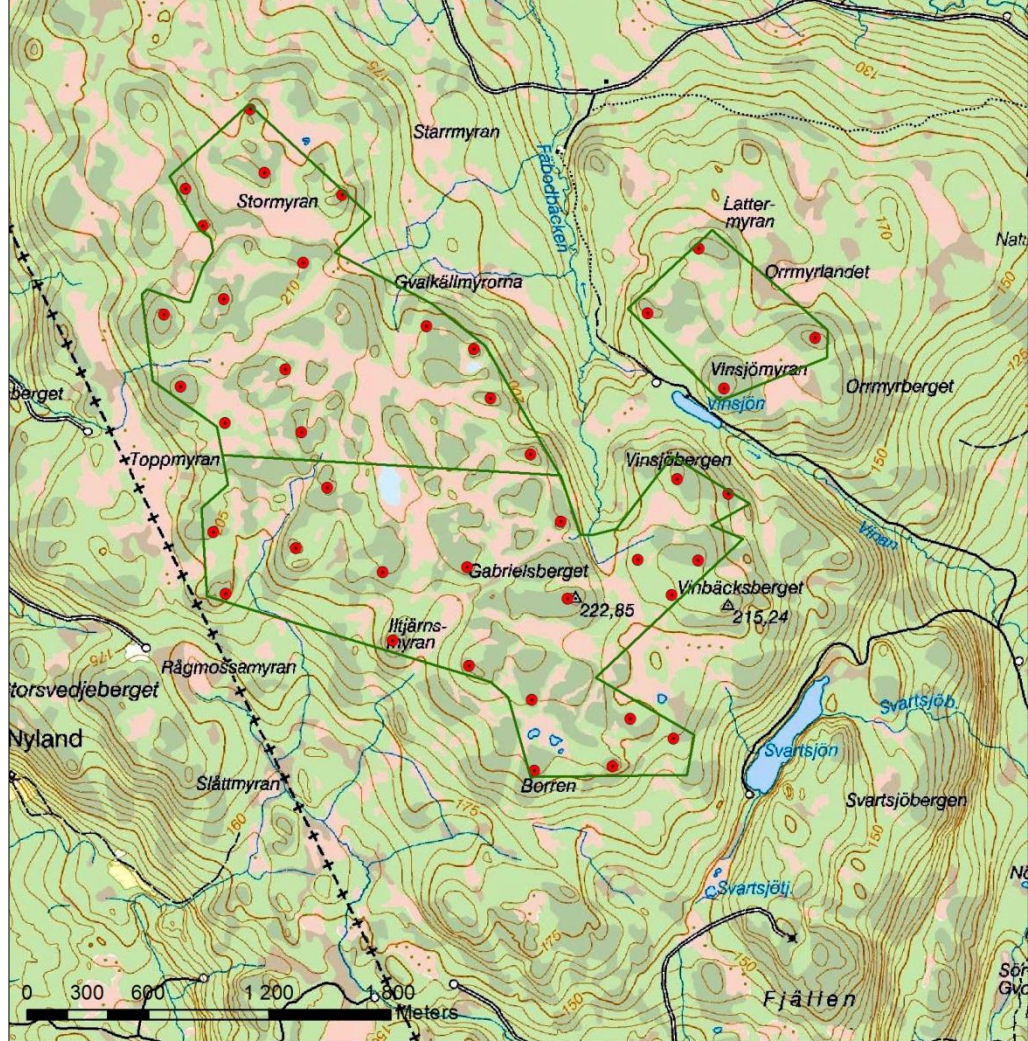


Icing at Gabrielsberget

Has not gone through a whole winter season yet – no results so far!

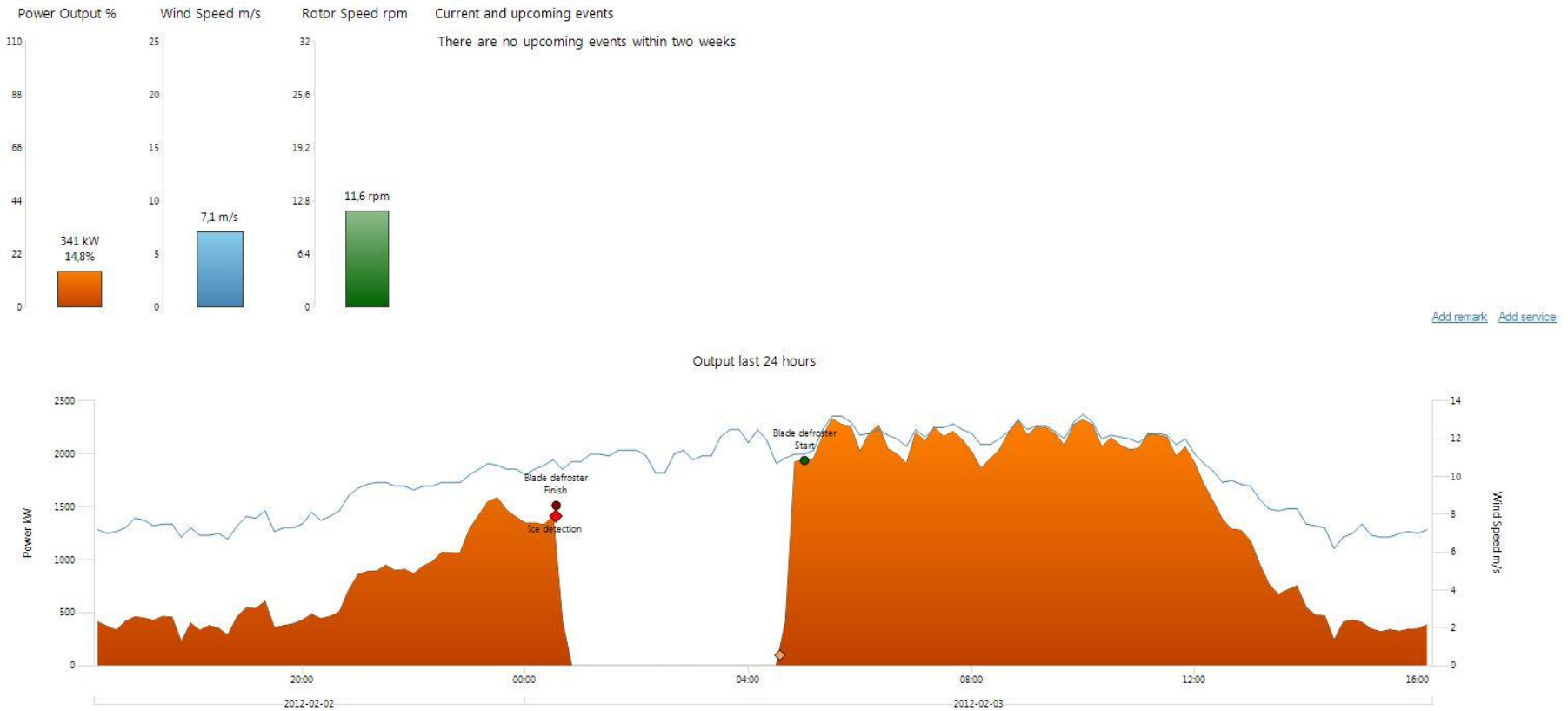
The plan is to look at ice throws at one of the turbines for a limited period in time

Result may tell the risk in this area

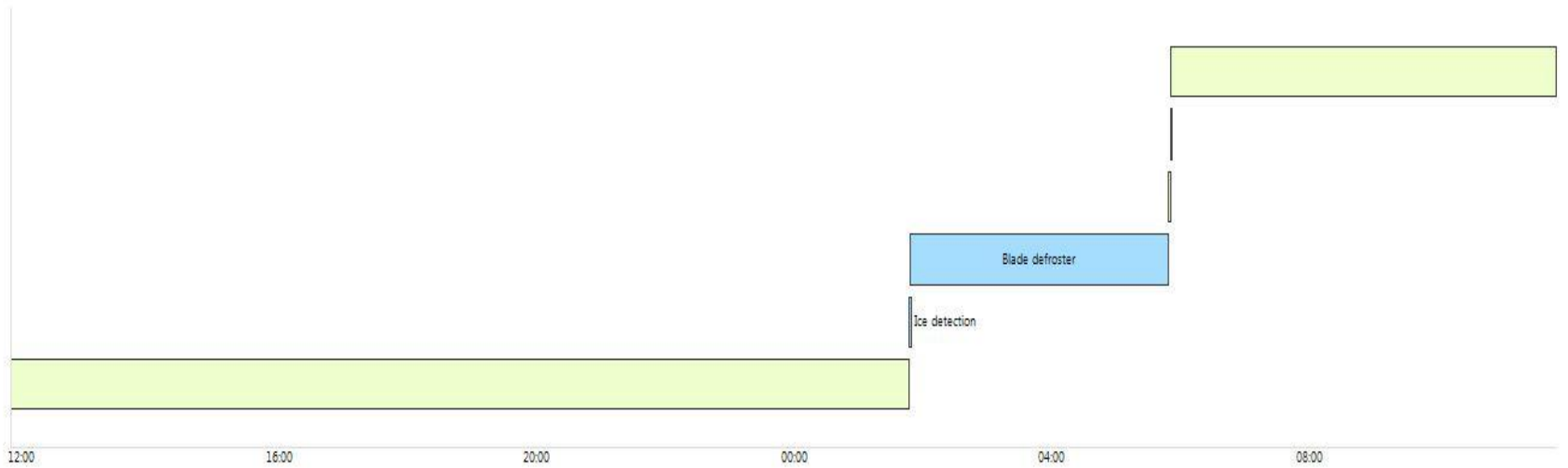
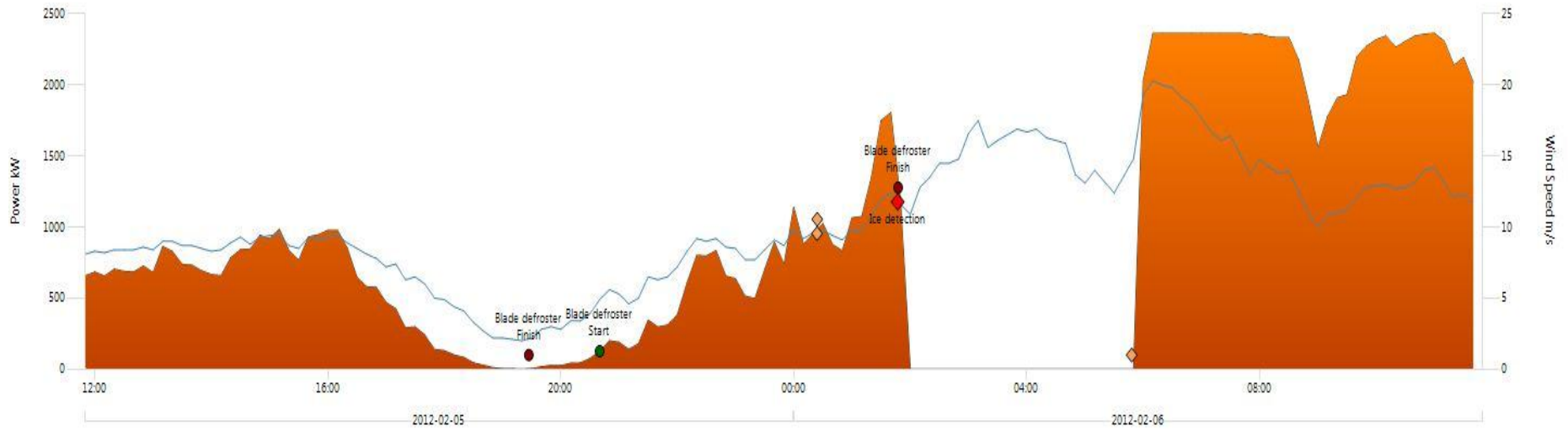


Example of field of application

Wind farm management - monitoring during operation



Output last 24 hours



The Vindpilot projects of Svevind

Several of the projects continue during the running phase and more reports is going to be finished.

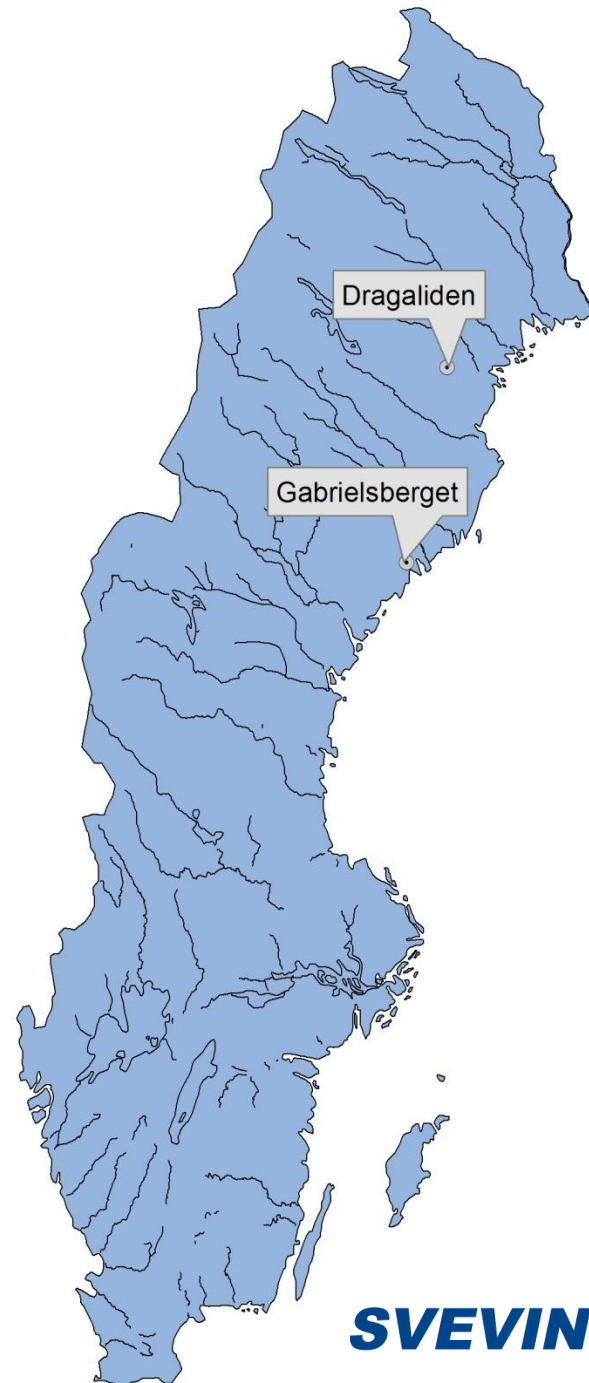
For exempel:

Effects on the local society (GB and DL)

Effects on the reindeers and for sami villages (GB)

Effects for hunting closeby the wind farm (GB)

Effects on birds (GB)



Thanks for your attention!

www.svevind.se

helena.karlsson@svevind.se

090-349 49 39