

Project Pegasus - Summary of Parts of the Environmental Impact Assessment

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Glossary

Abbreviation or Term	Definition
BJL	Björnlandhöjden
EED	E.ON Energidistribution AB
EIA	Environmental Impact Assessment
EPFI	Equator Principles Financial Institutions
Eps	Equator Principles
HAS	Hästkullen
IAC	Interarray cable
LV	Low voltage
M	million
MMD	Environmental court
MMÖD	Upper environmental court
MPD	County environmental board
MV	Medium voltage
OHL	Overhead line
PO	Power Output
SCA	Svenska Cellulosa Aktiebolaget
VDR	Virtual Data Room
WTG	Wind Turbine Generator

1 Introduction

The Pegasus wind farms (the Project) is located in Sweden. The Project Developer is E.ON SE, and the Project consists of the following two wind farms:

- 41 wind turbine generators (WTGs) in Björnlandhöjden (BJL).
- 73 WTGs in Hästkullen (HAS).

Both sites are currently in the pre-construction stage. BJL and HAS are located 15 km and 25 km southwest of Kramfors respectively, in Västernorrland County, Sweden. The total planned capacity will be 474.2 MW (167.3 MW at BJL and 306.9 MW at HAS). This total capacity is based on installation of a mix of different Nordex WTGs.

This short memo summarizes certain parts of the environmental impact assessments (EIA) provided for the Project.

2 Forestry and Hunting

2.1 Hästkullen

The area which is used for the Project is about 5% of the forest area, and does not affect the grounds for forestry or hunting. Hunting is expected to be affected during construction, but the construction time is limited in time and also to a certain part of the area at a time.

2.2 Björnlandhöjden

The area which is used for the Project is about 5% of the forest area, and does not affect the grounds for forestry or hunting. Hunting is expected to be affected during construction, but the construction time is limited in time and also to a certain part of the area at a time.

3 Outdoor Life

3.1 Hästkullen

The area does not show any special value for outdoor life than any other outdoor area. The main use for outdoor life is a scooter trail leading along the Project area and sport fishing opportunities close to the site. The accommodation for fishermen is situated further away from the Project. During the construction phase noise and transport will affect the use of the area. For the operational phase the impact for sport fishing will be mainly the visibility of the WTGs.

3.2 Björnlandhöjden

There is outdoor life in the area which will be negatively affected by the increased noise level. The visual impact for visitors in the area is given as they approach the site. For fishing activities the noise and visual impact cannot be avoided in such extent as for the scooter trails which can be moved. The impact on outdoor activities is regarded to have a medium impact since.

4 Reindeer Husbandry

4.1 Hästkullen

The Hästkullen Project area is **only to a minor degree in the North-West** falling together with national areas assigned to reindeer herding. **The distance to the next migration route is about 3 km.** The dialogue with the neighbouring Sami villages resulted in the information that the area is not used for reindeer herding. **Since the area was not used during decades, and the potential reindeer winter food in the area is expected to be limited, the impact on reindeer herding is deemed to be minor.**

4.2 Björnlandhöjden

The Björnlandhöjden Project area is **not situated on any national area** assigned to reindeer herding. The distance **to the next herding area is about 10 km** and the distance to the next migration route even more. The dialogue with the neighbouring Sami villages resulted in the information that the area is not used for reindeer herding. SCA did not record any use during the last decades and the winter food for reindeer is expected to be limited. SCA continues the dialogue with the neighbouring Sami villages, but the impact on reindeer herding is deemed to be minor.

5 Risks for Accidents

5.1 Hästkullen

There is a risk of injury through ice falling from the WTGs. The probability of being hit by ice falling of the WTGs and hurting someone is very low. The Project has enough distance to houses, and the risk is limited to persons visiting the area at winter time. Visitor numbers to the wind farm in winter time are expected to be seldom, because there is no reason such as skiing to visit, and service technicians will follow the safety rules set up to minimise the risk of injury by ice-cast. Should someone be hit by falling ice or other parts of the WTGs this would have a very high health impact.

There is a risk of oil leakage from the lubricated parts of the WTGs. There are oil buffer zones and service routines to tackle leakage, so the risk of oil emission to the environment is regarded to be very low.

5.2 Björnlandhöjden

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6 Visual Impact on the Landscape

6.1 Hästkullen

The photomontage and visibility analysis shows that the wind farm extending to 14 km in length and 2 to 5 km in width will be visible from all directions. This will noticeably change the landscape. Especially the long side of the wind farm is dominating the landscape even in medium distance (4 to 8 km distance). The landscape with wide forests and swamps is regarded to be suitable to accommodate visual impact of large wind farms, but the long sides of the wind farm placed on the heights along the valley make the wind farm visible over a long distance and the visual impact quite fragmented. Because the terrain is hilly and agricultural use is blended with forestry, the view on the wind farm is often covered. Thus the visual impact for the town of Viksjö and most of the area is regarded to be medium while the visual impact on the landscape from certain open spaces and viewpoints in the area along the river Mjällån is significant.

6.2 Björnlandhöjden

A wind farm with up to 55 WTGs will have a certain impact on the landscape. The planned layout of the wind farm will be visible from the valley of Lutmyrån and along the lake Viksjö in the area, but give the impression of a group of WTGs. Thus it will to a certain extent act as a landmark and be positive for orientation in the area. In the slightly hilly terrain, and predominant forestry in the area the wind farm visibility from most of the places will be low and impact is regarded to be low. For the recreation and outdoor use the visual impact can be disturbing to a certain extent. Altogether the impact on the landscape is regarded to be low. Along the valley of Lutmyrån, Habborn and Viksjö Lake the visual impact is medium.

7 Noise

7.1 Hästkullen

Exact values for noise emission can be calculated in a later planning stage when a decision about the turbines to be used is made. The emission limits defined by authorities is 40 dB(A) for residential areas and a limit of 35 dB(A) in assigned low noise outdoor activity areas. The Project is not situated in such low noise area. The impact of noise on residential areas is expected to be low.

7.2 Björnlandhöjden

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8 Shadowing and Reflections

8.1 Hästkullen

The rotor blades can cast moving shadow during sunshine and up to a distance of about 1.5 km. The closest housing is situated 1.5 km which, altogether makes problems with shadow casting unlikely, which is also supported by precautionary preliminary calculations. The impact is regarded to be minor.

8.2 Björnlandhöjden

The rotor blades can cast moving shadow during sunshine and up to a distance of about 1.5 km. The closest housing is situated 1.4 km which, altogether makes problems with shadow casting unlikely, which is also supported by precautionary preliminary calculations. The impact is regarded to be minor.

9 Visual Impact on Residential Areas

9.1 Hästkullen

The wind farm will be visible from a few houses. The perception of wind power will be highly individual, and the number of houses affected is limited. Thus the total impact is regarded to be low.

9.2 Björnlandhöjden

The wind farm will be visible from a few houses. The perception of wind power will be highly individual, and the number of houses affected is limited. Thus the total impact is regarded to be low.

10 Water and Ground Protection

10.1 Hästkullen

A risk for the local Hydrogeology will occur mainly in the construction phase of the wind farm, during construction of roads, foundations with the assembly spots as well as the burying of underground power cables between the WTGs and the substations. By obeying the safety rules from technical operation with the necessary precaution there should be no risk of emissions or disturbing the hydrological balance. **There is no risk that the environmental quality standards will not be achieved.**

10.2 Björnlandhöjden

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11 Especially Sensitive Areas

11.1 Hästkullen

An evaluation of the especially sensitive areas does show that the Project is **not situated in an area with special protection such as national area of interest or Natura 2000**. Also the watersheds of Ljustorpsån-Mjällån and Vällingsjön will not be affected.

11.2 Björnlandhöjden

There is a **distance of 3 km to the closest national area of interest**, which is even divided from the Project by the river Lutmyrån, so that the hydrology is not affected. The natural sensitive protected areas within the project area are exempted from the project area, but interconnected via hydrological balance. The protected areas is deemed to be quite insensitive to changes in the water balance and there are no changes expected from the planned establishment of the Project. Also the water balance of the neighboring Natura 2000 area is not affected, because it is divided from the water balance of the Project via Rislandsån, lake Stor-Habborn and Lutmyrån.

12 Natural Values

12.1 Hästkullen

Wariness and precaution regarding hydrology and natural values are working together to protect water and natural values from negative impacts.

A natural value evaluation of the area was conducted by SCA similar to the ones conducted for forestry operations. The natural values classed high natural value are excluded from construction of WTGs. Also most of the areas of natural value are excluded from construction, amounting to about 9% of the project area. In high natural value areas, there will also be no road construction. The county assigned key biotopes as well as the areas assigned for protection or future protection are taken into account. The preliminary planning shows that, even under those limitations up to 100 WTGs including infrastructure can be placed in the remaining area, so that the impact on natural values is regarded to be low.

12.2 Björnlandhöjden

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A natural value evaluation of the area was conducted by SCA similar to the ones conducted for forestry operations. The natural values classed high natural value are excluded from construction of WTGs. Also most of the areas of natural value are excluded from construction, amounting to about 15% of the project area. In high natural value areas and natural value areas, there will also be no road construction. The county assigned key biotopes as well as the areas assigned for protection or future protection are taken into account. The preliminary planning shows that, even under those limitations up to 55 WTGs including infrastructure can be placed in the remaining area, so that the impact on natural values is regarded to be low.

The natural values in the Project area will be affected to the extent that visitors will not be able to enjoy the natural values in the same silence as before, but the higher noise level will not negatively affect the natural values itself.

13 Birds

13.1 Hästkullen

The bird investigations in the area show that a certain precaution regarding the bird population must be taken, even if the number of birds and bats killed by collision with wind power is small compared to the kills by other human activity. The precautions will mainly be the exception of the key biotopes, the old grown forests and the wetlands from the placement of WTGs and infrastructure. The layout is in such way, that a safety distance of 2 km can be held to the respective areas. It is noted that the risk of conflict with individuals of the golden eagle is given for any wind power project in the north of Sweden, and that the safety distance of 2-3 km from the habitat of a minimum of 5 grey eagles, as used in this case, is elaborated together with the Swedish Ornithological Society and also supported by outcomes of legal trials regarding this topic.

13.2 Björnlandhöjden

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14 Bats

14.1 Hästkullen

The project area is deemed not to provide for a suitable biotope for bats. Biotope investigations show that the existence of exotic bats sticking out of the standard species found throughout the country are unlikely. The risk of the project regarding the impact on bat population is regarded to be low.

14.2 Björnlandhöjden

The project area is deemed not to provide for a suitable biotope for bats. Biotope investigations show that the existence of exotic bats sticking out of the standard species found throughout the country are unlikely. The risk of the project regarding the impact on bat population is regarded to be low.

15 Other Fauna

15.1 Hästkullen

The area for the Project is already today mainly covered by commercial timberland with existing timber roads and frequented use of the area by the population including fishing and use by scooter during winter. During construction the fauna will probably be disturbed by the activities, but during operation it is expected to find the same fauna as before. The impact on other fauna is regarded to be minor.

15.2 Björnlandhöjden

The area for the Project is already today mainly covered by commercial timberland with existing timber roads and frequented use of the area by the population including fishing and use by scooter during winter. During construction the fauna will probably be disturbed by the activities, but during operation it is expected to find the same fauna as before. The impact on other fauna is regarded to be minor.

16 Cultural Environment

16.1 Hästkullen

There is one site, Käckelbäcksmön where two to three WTGs are visible. This is regarded to be a marginal effect on the landscape around the site. With the preliminary layout the cultural environment is only marginally affected if affected at all. **It is assumed that the wind farm with up to 100 WTG can be constructed without affecting any cultural history remains.**

16.2 Björnlandhöjden

With the preliminary layout the cultural environment is only marginally affected if affected at all. **It is assumed that the wind farm with up to 55 WTG can be constructed without affecting any cultural history remains.**

17 Transport

17.1 Hästkullen

The emission of the transport during construction of the Project is regarded to be low. During operation of the Project the emission to the air is very low for wind power compared with fuel based power production.

17.2 Björnlandhöjden

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18 Cumulative Impact

18.1 Hästkullen

The cumulative visual impact on landscape is regarded to be already taken into account by local authorities during the definition of areas for wind power development.

For other impacts the distance to neighbouring projects is assumed to be long enough **to prevent accumulated noise levels or shadow flicker.**

18.2 Björnlandhöjden

The cumulative visual impact on landscape is regarded to be already taken into account by local authorities during the definition of areas for wind power development.

For other impacts the distance to neighbouring projects is assumed to be long enough to prevent accumulated noise levels or shadow flicker.