Øvre Pasvik
nasjonalparkstyre/
Báhčaveaji
álbmotmeahccestivra

Saksbehandler Rolf Erik Schaanning Kollstrøm **Vår ref.** **Dato** June 10 th 2024

Øvre Pasvik National Park –

International Dark sky designation Application Package

November 2021 – final version June 10 th 2024

Figure 1 Aurora Borealis can be seen quite often in the Øvre Pasvik National Park from late August to late April. Photo by Erik Lindseth.

1. Content

2. Motivation

The Øvre Pasvik National Park Board see a Dark Sky approval and support as an important step in our ongoing work in preserving our unique nature and the qualities for outdoor life for future generations to come.

3. International challenge

Living on the border of Russia we are heavily influenced by the terrible war in Ucraine.
We have for the last 35 year developed a close relationship with Russian people and public institutions. All cooperation with the Russian authorities has now been put on hold. We hope that the cooperation can be resumed one day…For the time being we have agreed with our Finnish partners to strengthen the cooperation across our common borders. And we have already presented the Dark Sky concept to them and received great interest.

The Pasvik-Inari Trilateral Park has been certified as EUROPARC transboundary park since 2008. We had originally envisioned bringing the venture on Dark Sky into our trilateral cooperation with Russia and Finland.

4. Introduction Letter: Øvre Pasvik National Park International Dark sky designation

Øvre Pasvik National Park (Norwegian: Øvre Pasvik nasjonalpark, Northern Sami: Báhčaveaji Álbmotmeahcci) is located in the Pasvik valley about 100 km south of the town of Kirkenes in the very far northeast of Norway, Sør-Varanger Municipality in Troms and Finnmark county.

The Øvre Pasvik National Park and the adjacent Øvre Pasvik Landscape Protected area are managed by the Øvre Pasvik National Park Board as a governmental body. The Board consists of local politicians who are appointed by the Sør-Varanger municipality (2 members), the Sami Parliament (1 member) and the Troms and Finnmark County authority (1 member).
The Board have an administrative resource in 1 national park manager with office at the Visitor centre at Svanhovd, Svanvik. The board is also serviced by the Nature Inspectorate with 2 rangers situated in Kirkenes.

Øvre Pasvik National Park is one of 47 National Parks in Norway. Proposals for a national park in Øvre Pasvik were first launched in 1936, but the park was not created until the 6th of February 1970. In 2003 it was extended from 66 km^2 to 119 km^2 together with the establishment of the Øvre Pasvik Landscape Protection area (54 km^2). Øvre Pasvik National Park is classified in category II National Park IUCN and Øvre Pasvik Landscape Protection Area is classified in category V Protected Landscape/ Seascape IUCN (International Union for Conservation of Nature).

As a Norwegian national park, larger natural areas that contain distinctive or representative ecosystems or landscapes and that are free from major natural encroachments can be protected. In national parks, no impact on the natural environment or cultural monuments must take place, and visitors are given an undisturbed experience of nature.
In Øvre Pasvik the largest remaining area of primeval pine forest in Norway is situated. The objectives of Øvre Pasvik National Park are to preserve a large, continuous forest area, which is essentially untouched in terms of technical intervention, preserving a forest ecosystem with a distinctive and varied biodiversity, ensuring the variety of nature types in the region and sites of cultural heritage.

Øvre Pasvik Landscape Protection Area extends East of the national park, including the Pasvik river, and is characterized by large and varied bogs and wetlands, interspersed with many small, forested islands. The plant life is protected. Landscape conservation areas in Norway are established to protect characteristic and beautiful natural or cultivated landscapes.

Protection of the general landscape is important here and activities that can change the nature of the landscape are usually prohibited. In Øvre Pasvik, the Landscape Protection area has a rich biodiversity, especially linked to parts of pine forests and the bird life, and distinct geological formations associated with the last ice age. The eastern border of the area is running along the Russia-Norway border which mostly lies in the river Pasvikelva.

The national park has its western border running along the Finland–Norway border. The two most prominent lakes are Ellenvatn and Ødevatn, both of which flow into tributaries of the river Pasvikelva. The fauna and flora are typical of the Siberian taiga, and include some species uncommon for Norway. The park is a habitat for the brown bear and also has a large population of moose; reindeer husbandry takes place during winter. There is no permanent settlement in the Øvre Pasvik National Park or in the Øvre Pasvik Landscape Protected area.

The emphasis on dark sky is not written into our current management plan (2009) nor the Visitors Strategy (2018). But when they are rewritten and revised, they will have a DarkSky component and DarkSky considerations. A revision of the management plan for the national park and landscape protected area will start within 3 years, with a finalized plan in 2028. The new management plan for Øvre Pasvik National Park and Øvre Pasvik Landscape Protection Area will include a strategy for visitor management.

Øvre Pasvik
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Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies. The establishment of the Visitor Point at Gjøken in the outskirts of the protected areas is a central part of our Visitor Strategy. This facility and was opened for the public the 17th of June 2023. In the designing of the outdoor lighting at Gjøken we have made sure that it does not affect the experience of the night sky, in accordance with the guidelines from DarkSky International.

The location Visitor Point Gjøken has facilities for gathering different sizes of groups as organized groups from the tourist entrepreneurs or as a private initiative. The outdoor facilities are open all year around for everybody. There are information boards and exhibitions which will tell the special local history and the use and management of the protected areas. We also provide information about the Dark Sky Location where people can learn more about the negative impact of light pollution. The new service house is available for organized groups from the summer of 2023.

The destination company Visit Kirkenes will be invited to provide special activities for tourists at the site.

Best regards

Rolf Erik Schaanning Kollstrøm
National Park manager

5. Nomination Letter by Bernt Nilsen

Nomination Letter

International Dark-Sky Association
5049 E Broadway Blvd, #105
Tucson, AZ 85711

Kirkenes, Norway, November 24 th 2021

Re IDSP Designation Øvre Pasvik National Park, Norway

To the IDA Board Members:

As a proud member of the International Dark-Sky Association since September 30, 2021 I am glad to nominate my closest National Park as the first Norwegian Park in the Dark-Sky movement.

I have had several meetings with the employees, members of the board and various partners of the Park discussing the meaning of the Dark Sky Concept.

I have been able to visit several of the approved parks in the USA, especially in the South West. As a photographer and amateur astronomist I strongly believe in the mission of the Dark-Sky Association.

Locally I have had the pleasure of visiting the Øvre Pasvik National Park personally as well as with various guests and business partners. I have personally experienced its uniqueness with no electric lightning or modern infrastructure and a fantastic place to experience the night sky.

I am impressed by the quick adaptation of the DSA goals which the Øvre Pasvik National Park has shown and I am sure that they will meet the necessary requirements and serve as a prominent member for the years to come. I think the Park has a unique combination of variation of natural light over the seasons as well as an already established international cooperation on preservation challenges.

Yours Sincerely

Bernt Nilsen
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9900 Kirkenes
Norway
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Tel +47 9010 3456

6. Park Map

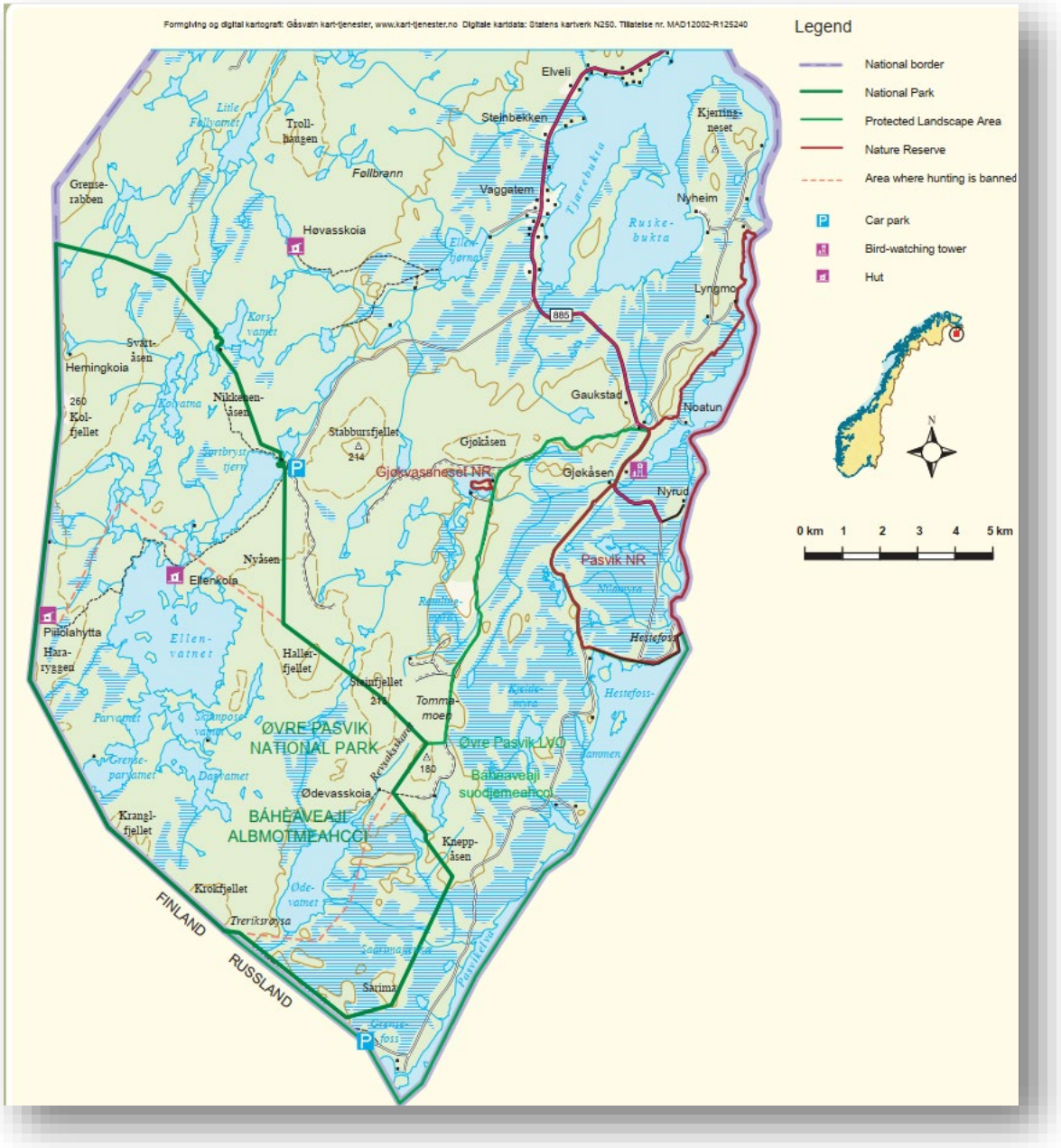


Figure 2 Øvre Pasvik National Park (Báhčaveaji Álbmotmeahcci) is in the Pasvik valley about 100 km south of the town of Kirkenes in the very far northeast of Norway, Sør-Varanger Municipality in Finnmark county.

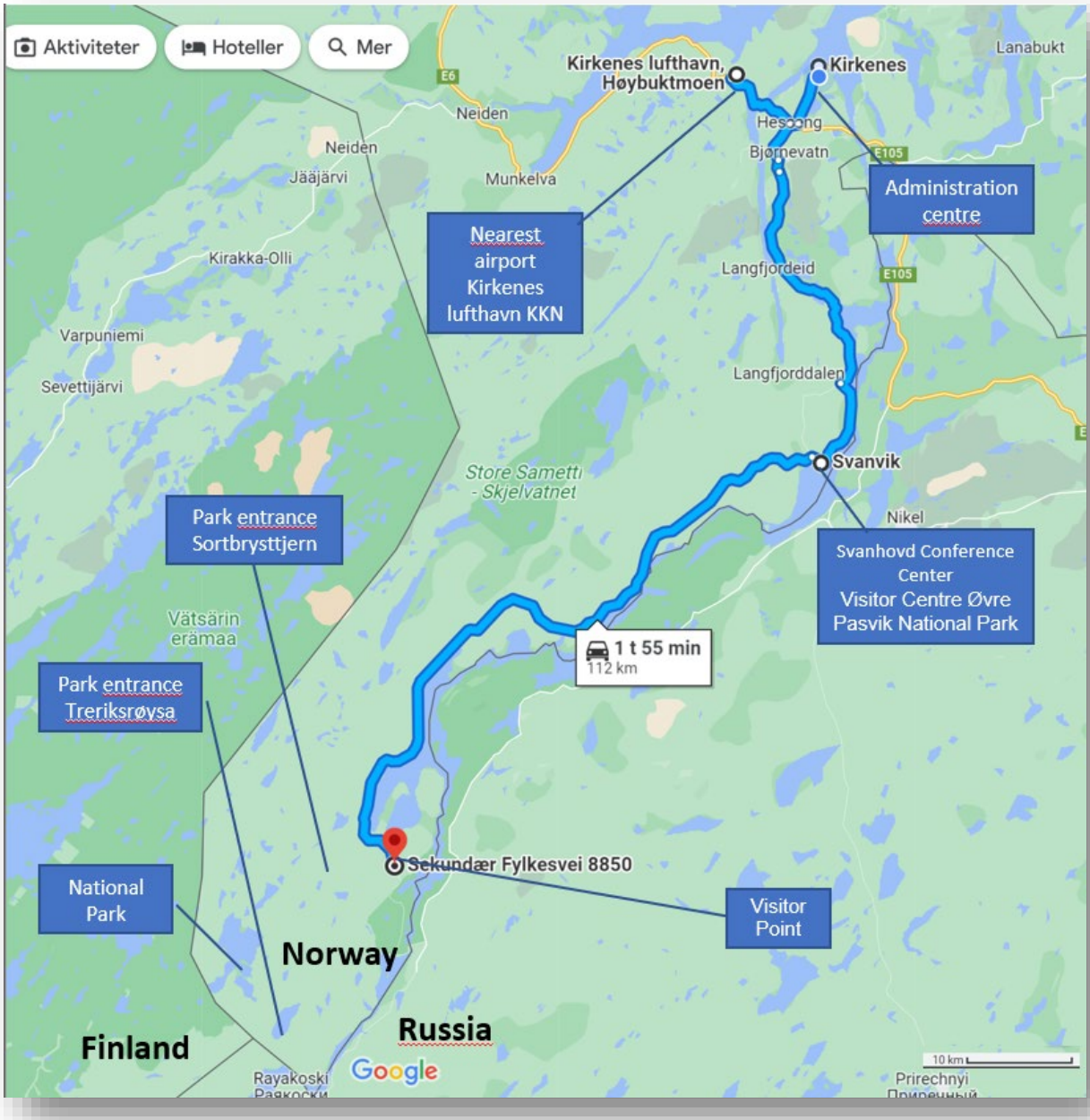


Figure 3 The map shows the local area, nearest city and airport and park service points.

7. Pasvik-Inari Trilateral Park

Øvre Pasvik is part of Pasvik–Inari Trilateral Park. This Trilateral Park is certified by the Europarc Federation as a Transboundary park, along with the adjacent Øvre Pasvik Landscape Protection Area, the joint Norwegian and Russian Pasvik Nature Reserve/Zapovednik, and Finland's Vätsäri Wilderness Area.

Pasvik-Inari Trilateral Park is a unique cooperation for the benefit of nature and people. Through transboundary cooperation we cherish nature and raise awareness on biodiversity conservation and living cultural heritage. We promote sustainable development in the joint border area of Finland, Norway and Russia, as well as human health and wellbeing.

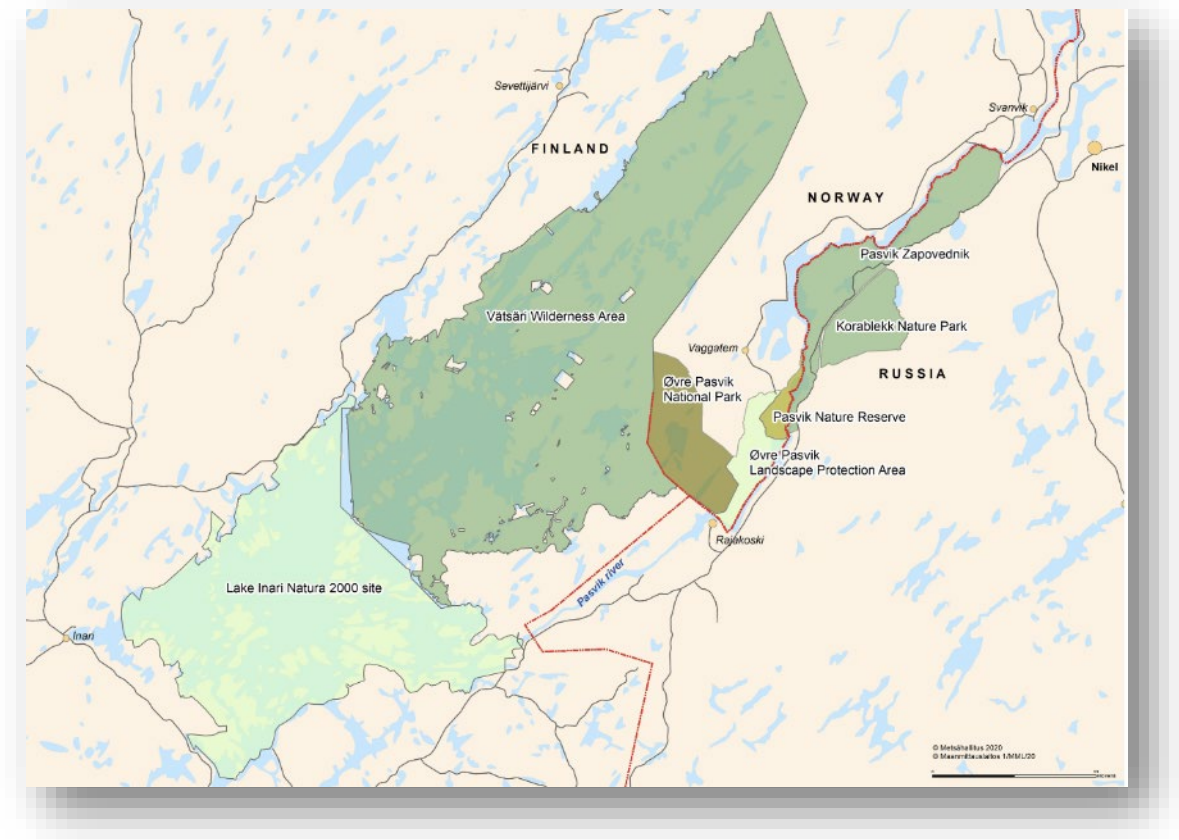


Figure 4 The map shows the Pasvik-Inari Trilateral Park covering areas in Norway, Russia and Finland.

8. The Pasvik-Inari-Pechenga area

The Pasvik area and the surrounding wilderness areas are located at the north-western end of the taiga, the vast coniferous forest belt that stretches to Siberia. In the north of the area, the mountain birch forest takes over. The lush valley of the Pasvik river stretches from the largest lake of Finnish Lapland, Lake Inari, towards the Barents Sea, along the borders of Finland, Norway and Russia. The Lake Inari area and Pasvik valley are known for their great natural and cultural values. The Pasvik river and the surrounding wilderness comprise a unique nature system where the European, Eastern and Arctic species meet. Some of these species reach here the ultimate limits of their distribution. The valley also forms a diverse habitat for various plant and animal species.

9. Location above the Arctic Circle

The Park is located above the Arctic Circle which gives us very special sun and light conditions over the seasons as seen in the Sun Graph below.

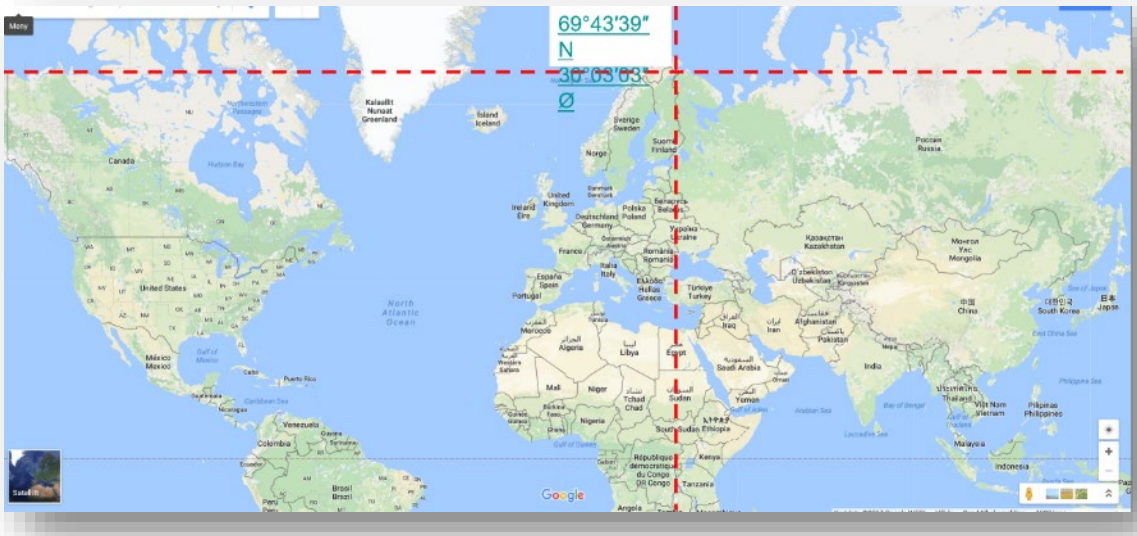


Figure 5 The illustration shows the location of the town of Kirkenes, www.google.com/maps.

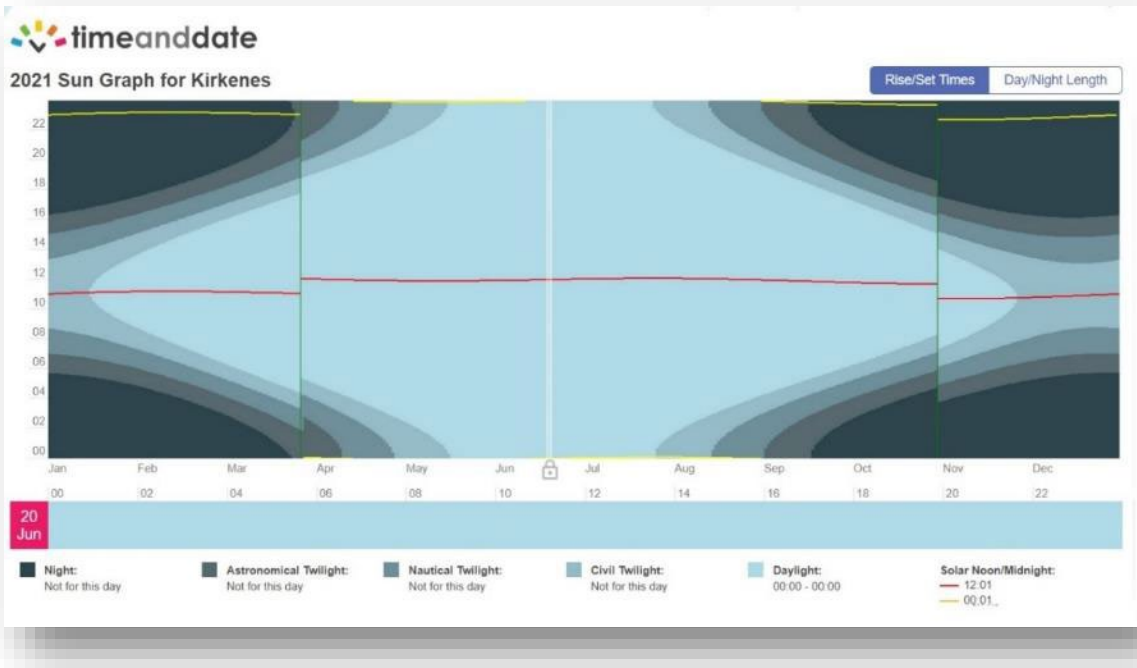


Figure 6 The illustration of the sun graph for Kirkenes shows the large variation of sun light throughout the year. Timeanddate.com.

10. Not just DarkSky but also BrightSky benefits

Our location at 69 degrees gives us some special possibilities. In wintertime you can enjoy the starry skies mid-day as we do not see the sun for two months. In summer we have two months with Midnight Sun also known as the BrightSky season. This is of great interest to many people and give people an added experience or awareness independent of time of year of their visit.

Figure 7 We have the Midnight Sun for two months in summer. Photo by Bernt Nilsen.

These light conditions have been utilised by scientists for hundreds of years. The Norwegian physics professor Kristian Olaf Bernhard Birkeland built an observation tower in 1899 to observe Aurora Borealis a bit further west in Finnmark county.

In 1769 the Austrian Emperor sent Maximilian Hell to Vardø to observe the expected Venus Passage with excellent results.

(https://munin.uit.no/bitstream/handle/10037/28979/article.pdf?sequence=2&isAllowed=y).

11. Cleaner skies

Yet another benefit of our northern location is the reduced light pollution in the sky itself compared to locations further south. Especially for photographers the ever-increasing passage of airplanes and satellites above are frustrating.

Below is an example of from personal experience at the Stephen C. Foster State Park illustrating the problem of heavy air traffic.

The aim for most photographers is to get a “clean” photo without the light trails from passing air traffic or satellites.

Figure 8 Result from a 30 min exposure showing lights from passing air planes over ***Stephen C. Foster State Park, Georgia, USA****. Photo Bernt Nilsen.*

Figure 9 Same picture after removing light trails from passing airplanes. Stephen Foster State Park, Georgia, USA. Photo Bernt Nilsen.

This screenshot from flightradar24.com illustrates the problem of a crowded night sky over large parts of the world.

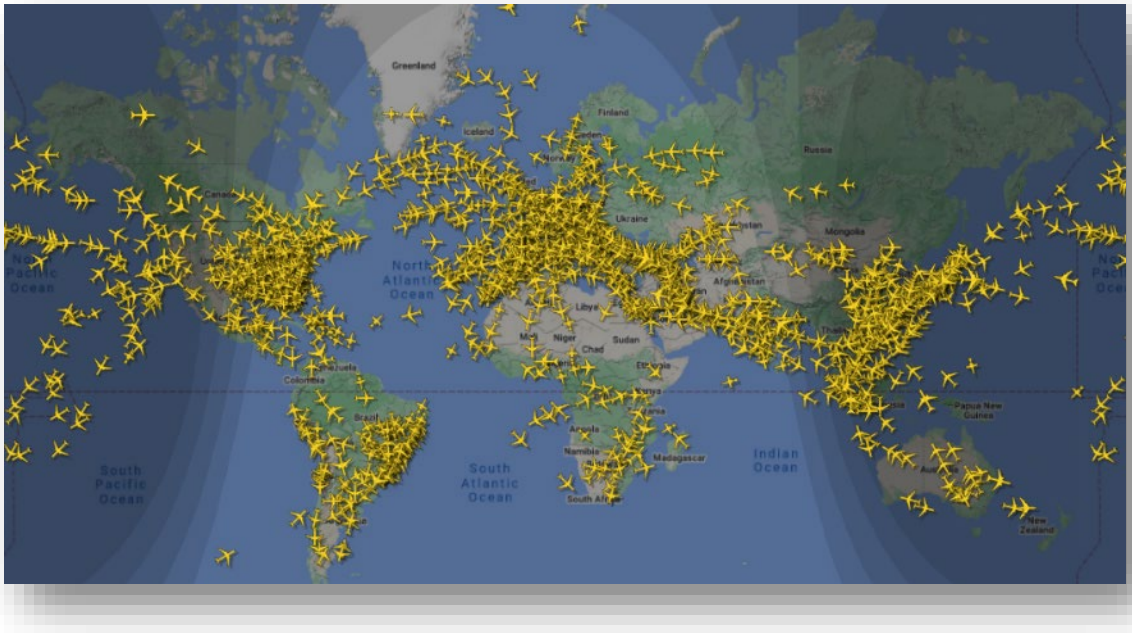


Figure 10 Typical concentration of air traffic, screenshot from www.flightradar24.com.

In addition to light pollution from air lines an increasing number of satellites are now circling over our heads. Latest number shows around 10.000 satellites at various heights. Due to the population density around equator the problem is fortunately less obvious for us living above 60 degrees North.

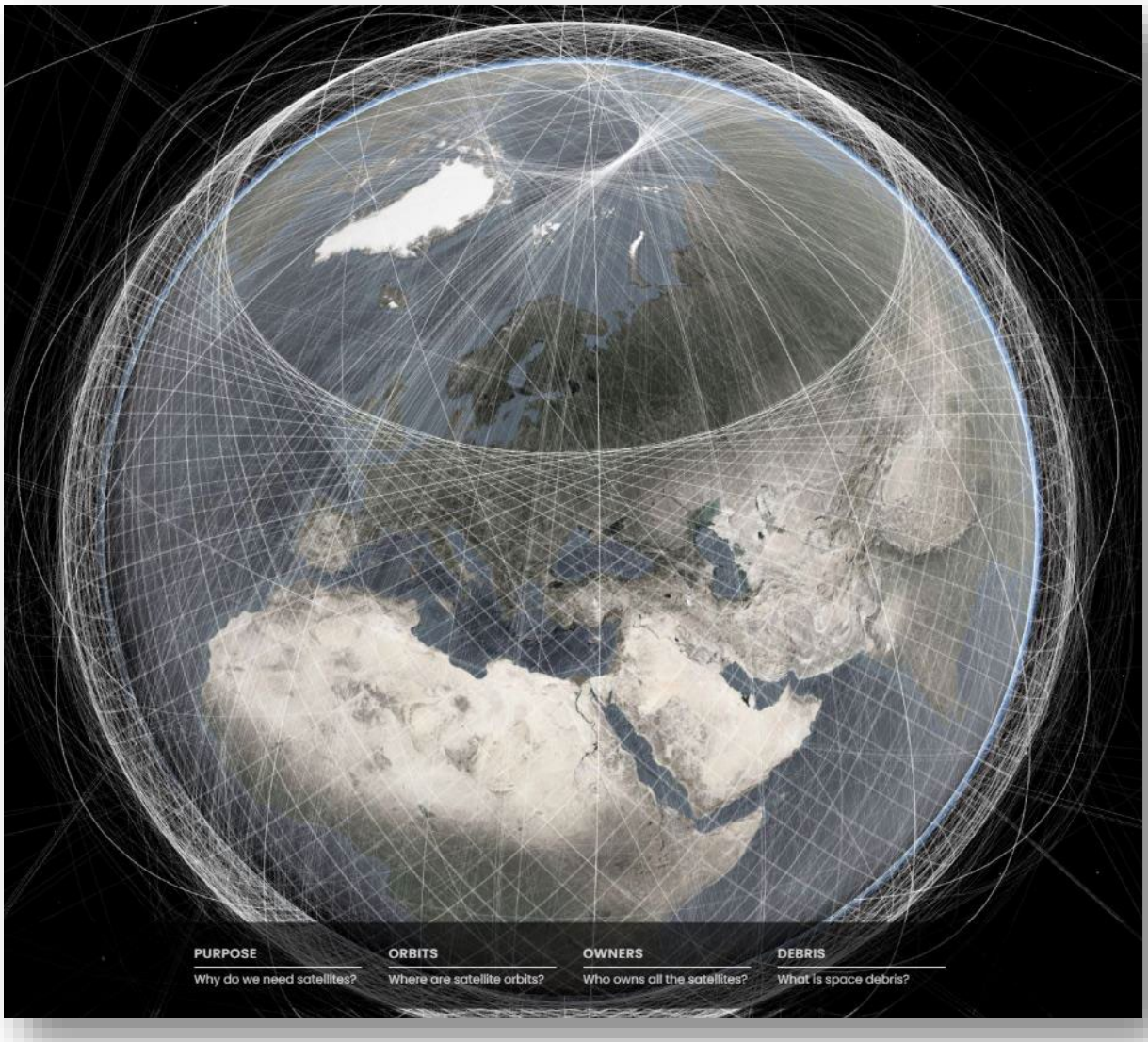


Figure 11 Satellite density from geoxc-apps.bd.esri.com/space/satellite-explorer/

12. Climate

Øvre Pasvik National Park has typically a continental climate with low temperatures in wintertime and high temperatures in summertime. But even though the park is located inland approximately 100 km from the sea the climate is still influenced by the North Atlantic Current giving higher temperatures than other similar national parks at the same latitude in the

Northern Hemisphere. The minimum temperature during the last 10 years was -39,4°C / -38.9°F (20th January 2014). The maximum temperature during summertime is 32,1°C / 89.8°F (18th July 2018). Annual mean precipitation is around 460 mm where about 1/3 occur in wintertime and 2/3 occur in summertime. So, there are relatively dry conditions during winter. Maximum snow depth is only between 50 and 80 cm.

There are 60 days of Midnight sun and 50 days when the Sun is beneath the horizon (polar night) per year.

Low temperatures and cold conditions typically occur during wintertime with stable atmosphere, inversion, calm/ no wind and clear sky. During these cold events there is no absorption of outgoing longwave radiation by clouds or aerosols. Hence these conditions are also ideal for observing aurora borealis and other celestial phenomena.

13. Inhabitants

Since prehistoric times, the Pasvik river valley and Lake Inari area has been the meeting place of different cultures. Through the centuries, a multi-cultural population has formed in the area. The Skolt Sámi and Inari Sámi are the indigenous people of the Pasvik and Inari areas. Before the Middle Ages, Finnish, Norwegian and Russian traders had vivid contacts with the Sámi population living in the area. At first, the traders had also a right to collect taxes from Sámi people, but eventually taxation was totally organised by states of Sweden-Finland, Denmark-Norway and Russia. From the 17th century onwards, the laws and acts were made in each country to promote the spreading of peasant settlement northward. Also, the immigration of Finns to the Norwegian Pasvik valley and Varangerfjord area further north, began in earnest between 1850- 1870. Inari Sámi have lived in Finland within one municipality surrounding Lake Inari, throughout the historic era. Other Sámi groups and Finns have settled in the Inari region later. According to historic and remembered information as well as place names, the original living area of Inari Sámi was once more extensive. The traditional living area of Skolt Sámi in the Kola Peninsula has extended from Neiden to Pechenga (Petsamo) and to Tuuloma Lapland. The setting of boundaries between three empires has many times brought difficulties to the Sámi way of life. An enormous change for Skolt Sámi was caused after the Second World War, when Finland lost the area of Petsamo. As a result, Skolt Sámi lost their native land, and they were resettled in the Finnish villages of Sevettijärvi and Nellim with the help of the Finnish Government in 1949. Skolt Sámi are Orthodox in religion. Most Skolt Sámi live in the so-called Skolt Sámi area, which is situated in the eastern parts of the municipality of Inari and to the south, south-east and north-east of Lake Inari. In Russia, most of them have been colonised by the state around Lovozero. In Norway, Skolt Sámi live around Neiden and Pasvik, but most of them are blended into the majority population.
Northern Sámi – also called as the reindeer or fell Sámi – have traditionally lived a nomadic life, wandering with the reindeer herds. Reindeer economy spread to Lapland in the 17th century. The reindeer Sámi of Varanger area had their winter pastures in the surroundings of Lake Inari. In 1852, the closing of the border between Norway and Finland caused dramatic changes to the migrant way of life. Since the 1860s, many reindeer Sámi moved to the Finnish side of the border with their herds and gradually multiplied the number of reindeer in Utsjoki and Inari.

At present Inari Sámi, Skolt Sámi and also Northern Sámi are living in four different countries: Finland, Norway, Sweden and Russia. Sámi have the status of indigenous people in Norway.

In Finland, the Sámi have a self-government body, the Sámi Parliament (Sámediggi) since 1996, the existence of which was certified by the Act of the Sámi Parliament (974/95). In Norway, there is also a Sámi Parliament (Sámediggi), established in 1989 by the Act of the Sámi Parliament based on Sámi rights.

14. Nature monitoring and research activities

Cooperation in nature monitoring has long traditions in Pasvik-Inari area. Several joint monitoring projects have been conducted. During the recent decades the monitoring work intensified, and harmonised monitoring systems were tested for several species/groups. In addition, information has been exchanged between the partners about past and present research and monitoring activities. Fauna research and monitoring on the Norwegian side of the Pasvik river and Pasvik Zapovednik has also a long history. Mammalian studies focusing on brown bear, elk (moose), muskrat (invasive species) and small mammals (mice, voles and shrews), have persisted since the 1990s. Harmonised trilateral brown bear (Ursus arctos) monitoring, using non-invasive technology (hair-snares) has been going on since 2007, and is repeated every fourth year. The brown bear monitoring in 2023 was a bilateral cooperation between Norway and Finland. Annual water bird registration has been ongoing since 1996. Since 2015/2016 annual harmonised bird ringing has been implemented in the areas. Golden eagle (Aquila chrysaetos), is annually monitored in Finland, system also includes the search for new territories. In Norway the Golden eagle is part of national monitoring system. Golden Eagle in Russian side has been monitored according to a Scandinavian approach and within Russia according to Russian methods. Research and monitoring of the freshwater pearl mussel in specific tributaries of the Pasvik river, have been carried out since 1997-1998. The species is included in the national monitoring program for endangered species in Norway and in Russia. Phenology and growing season studies both from satellite images and in field studies have persisted since 1990, in the transboundary area and for over 60 years on the Russian side in the Kola Peninsula and 25-years in Pasvik Zapovednik. The terminology of phenological phases of plants has been unified within Russian and European approaches. Environmental monitoring with focus on pollution from Russian industry has been ongoing since early 1990s. The Pasvik programme is a good example of such cross-border environmental cooperation.

15. Habitats, biotopes and landscape mappings

Valuable forest habitats and red listed fungi has been mapped in Norway in Øvre Pasvik area. Study on landscape mapping in Pasvik Nature reserve and satellite mapping. Surveys on N2000 directive's species and habitats are made regularly in Lake Inari area in Vätsäri. Registration of CMTs (Culturally modified tree) in Øvre Pasvik National Park and Øvre Pasvik Landscape Protection Area was completed in 2017. There were found approximately 250 dead and living pine trees with traces of Sami bark takings, mainly for food purposes. The white pine inner bark was an important part of the everyday diet for the Skolt Sami people. A

dendrochronology sample of one bark taking showed that the bark was harvested in the year of 1890 from a pine which germinated in 1685.

Rare species are monitored on each side in the protected areas, a joint database is existing and updated regularly, scientific-popular information is published in brochure (Rare species, 2016). Also, partners cooperate with Red Book of Barents region regional and national lists.

16. Environmental education and enlightenment

Pasvik Zapovednik runs the Rajakoski Nature (Ecological) School, they arrange events and annual youth camps since 2000. Øvre Pasvik National Park Board has annually since 2015 arranges the event “meet the researcher” for local schools and inhabitants, focusing on ringing of birds and the value of pristine pine forests. Stakeholders of the trilateral park, NIBIO in Norway runs the school network called “Phenology of the North Calotte17” and they also arrange annual teacher and school camps. Visitor and nature centres are also run in each country. Sámi museum and Northern Lapland Nature Centre Siida in Finland, Øvre Pasvik National Park Centre in Norway and Pasvik Zapovednik visitor centre in Russia. Cooperation with Russia has been suspended for the time being because of the war in Ukrain.

17. Nature based tourism – sustainable nature tourism

The Pasvik-Inari trilateral park area has not been developed much for tourism. However, some nature tourism facilities exist in each country. Also, several nature tourism entrepreneurs operate in each country, many of them have contacts across the borders.

The importance of the national parks, hiking areas and wilderness areas as a source for emotional and economic well-being is increasing. The areas are important for recreational use for local inhabitants and travellers who come from a distance. Both national and international tourism is increasing. This not only creates opportunities for economic development of the area but also creates new demands in terms of sustainability. Tourism is not a modern phenomenon, but due to the growing interest in travelling it has become one of the most important branches of industry in the world. Growing tourism industry operates on several levels which also makes the concept of tourism complex. Principles of sustainable nature tourism in Pasvik-Inari area have been compiled in 2006-2008. Visitor management is becoming more and more important area of work.

Øvre Pasvik National Park Board has developed its own strategy for visitor management in dialogue with various stakeholders (2018-19). To learn more about the visitors who come to our area, a trilateral visitor survey was carried out in 2018.

Strategy for visitor management in Øvre Pasvik National Park and Øvre Pasvik Landscape Protection Area

Summary

The national focus on branding and visitor management for the Norwegian National parks is expected to increase the number of visitors. Locally, we experience an increase in visitors to Øvre Pasvik National Park, and especially to Treriksrøysa. This visitor management strategy is needed to avoid wear and tear on the conservation values and to safeguard reindeer husbandry while also providing visitors with good experiences and stimulating local value creation.
The visitor strategy has been the subject of several meetings with the National Park Board's Advisory Committee and local tourism companies.

The National Park Board will provide visitors with good information via the National Park Board's websites, along the road network, at the Visitor Centre for Øvre Pasvik National Park and via local tourism operators. In partnership with the Visitor Centre, the National Park Board will establish service functions for visitors at the new information point at Gjøkhotellet.

18. Nature tourism, visitor numbers and facilities

Annually there are approx. 2000 visitors to the Øvre Pasvik National Park with surroundings. The most popular hike is the route to the Tripoint border at Treriksrøysa-Muotkavarra. From May to October, it may be 1500 visitors at this location. In the same period there are around 500 visitors hiking on the path from start point Sortbrysttjern towards the open cabins in the national parks. Canoeing is quite popular in the national park and the landscape protection area with approx. 40-50 canoes-kayaks per year. There is a bird hide at the Pasvik river shore in Pasvik Nature Reserve at Gjøkbukta. You may also visit a real bear den at this site (marked path). Øvre Pasvik National Park is easily reached via the gravel road to Sortbrysttjern. At Sortbrysttjern there is a parking lot with an open shelter and fireplace, information boards and a lavatory. From here, there the Piilola Wilderness trail starts. Along the wilderness trail there is Ellenvannskoia, an open cabin available for overnight stays. The path continues to the Piilola gate between Norway and Finland. Near the border on Norwegian side there is another cabin available for overnight stays (the Piilola cabin). Another way to reach the National Park is by the gravel road to Grensefoss, which goes through Øvre Pasvik Landscape Protection Area. At Grensefoss, there is also an open shelter and fireplace, information boards and a lavatory. The tripoint border mark, Treriksrøysa, at Muotkavaara is only five kilometres away along a marked trail established for border patrolling purposes, but available for everyone to hike on. In winter, a snowmobile track goes through the landscape protection area all the way to Tripoint-Treriksrøysa.

19. Flora and fauna

The Pasvik-Inari area lies between vegetation zones where both eastern and southern influences affect the vegetation. Examples of the eastern influences are Siberian spruce

(Picea abies spp. obovata), and red cotton grass (Eriophorum russeolum), which are less common elsewhere in Norway. Special vegetation grows on the shores of the springs and ponds and on the rims of the swamps. On the wetlands in the Pasvik river surroundings, one may find interesting sedge species like Lapland sedge (Carex lapponica) and weak sedge (Carex laxa). Orchids are typical wetland species. The most typical orchids on bogs are spring's early purple orchid (Dactylorhiza maculata) and the southern creeping lady's tresses (Goodyera repens). The Pasvik river and the surrounding wetlands comprise an important habitat for several bird species. The rich bird fauna is concentrated on the wetlands near the Pasvik river. The core of the Pasvik Nature Reserve is Lake Höyhenjärvi (Fjærvann), the most untouched area of the Pasvik river. The ice melts early in the spring and the lake freezes late in the autumn. This is an important resting place for several migratory birds. Also nesting birds, such as ducks and waders, are abundant. Several eastern species nests in the forests, for example the Siberian tit (Parus cinctus), the Siberian jay (Perisoreus infaustus) and the waxwing (Bombycilla garrulus). The pine grosbeak (Pinicola enucleator), the brambling (Fringilla montifringilla) and the three-toed woodpecker (Picoides tridactylus) are also rather common. The most abundant grouses are capercaillie (Tetrao urogallus) and willow grouse (Lagopus lagopus). The abundance of many predators, such as the most typical bird of prey, the rough-legged buzzard (Buteo lagopus), depends on the abundance of voles. Vole stock varies periodically, and if the voles are few, the buzzards do not nest. Efforts are made in all three countries to find the nesting territories of the rare golden eagle (Aquila chrysaetos). The fauna has changed over the years. Beaver (Castor fiber) was pursued as a valuable trade commodity and is therefore extinct today. Before the Second World War, wolf (Canis lupus) was common but today only some wandering individuals cross the area yearly. The elk population (Alces alces) has grown due to loggings. The brown bear (Ursus arctos) population is viable. The brown bear population in Pasvik-Inari area is part of a greater Russian and Finnish bear population. One third of Norwegian bears live in Pasvik and research and monitoring on the species is centralised in Øvre Pasvik. Wolverine (Gulo gulo) used to be abundant, but despite protection it is a rare visitor today and does not reproduce regularly in the area. A wolf or a lynx (Lynx lynx) is seldom seen. Most abundant predators are fox (Vulpes vulpes), stoat (Mustela erminea) and pine marten (Martes martes). Invasive species, as Mink (Mustela vison) familiarised in the Pasvik river surroundings and occasional visits of the more southern species racoon dog (Nyctereutes procyonoides) has been observed.

20. Reindeer husbandry

Reindeer (Rangifer tarandus) husbandry is one of the main sources of traditional Sami livelihood in the north. Øvre Pasvik is part of Reinbeitedistrikt 5A/C. This reindeer grazing district has 5 families with a total of 2500 reindeers. The herds are grazing on different pastures depending on the season and availability of food. Øvre Pasvik is an important winter pasture with a grazing period from 15th October to 1st of May. Fences prevents the reindeer from wandering across the national borders. The reindeers have always been an important landscape former, first as wild reindeer and nowadays as semi-domestic. In the winter period the reindeers are vulnerable for disturbances and the national park management are in close dialogue with the reindeer herders to minimize and to steer traffic from visitors in the wintertime.

21. Øvre Pasvik Important Bird Area (IBA) - fairytale forest and bird-rich wetland

This bird-rich area includes one of the largest primeval forests in Norway, which extends into neighbouring Russia and Finland. If you go to Pasvik, you will definitely go home with a piece of the taiga in your heart, and many exciting bird observations in your notebook!

The landscape in the IBA is flat or slightly hilly, and mostly covered by boreal coniferous forest in the south. The coniferous forest in Pasvik is considered the westernmost part of the Siberian taiga, which gradually turns into birch forest further north. The forest is interrupted here and there by large, moist bogs and numerous small lakes. The large Pasvik River separates Norway from Russia and is an important area for waterfowl throughout the summer.

22. A taste of Siberia

Pasvik has long had an attraction for the bird enthusiast. The famous ornithologist Hans Thomas Lange Schaanning lived by Noatun, at the bird rich Fjærvannet (earlier Rensvann). In the book "Jægerliv nordpaa" (1916) he writes beautifully about his life in the wilderness: “Every morning the swans wake me up. After this, the Norse god Njård's home Noatun, could just as well have been located by Rensvann in Øvre Pasvik as in Aasgård. A more beautiful place for a place of worship for gods will be sought for a long time, and the Whooper Swans, these magnificent saga birds with their dazzling feather ham and the wide-toned song, will not be searched for in vain”.

The species selection in the IBA includes as many as 17 species associated with the boreal biome (boreal coniferous forest or taiga is one of the large biomes on land), of which 15 species are considered annual breeding birds. This is also the most important breeding area for Smew and the Little Gull in Norway. Cranes, Jacksnipe, Broad-billed sandpiper and Siberian jay are among the species you will be able to see in Pasvik, along with Northern hawk-owl, Bohemian waxwing, Pine grosbeak and Siberian tit. The favourable climate and location in Pasvik mean that a visit in the summer can reveal several eastern species. Among others Great grey owl nests in years with an abundance of small rodents. The Red-flanked bluetail is also registered nesting in Pasvik.

23. Brown Bear Monitoring

Since 2005, the population of the trans-border brown bear (Ursus arctos) in Trilateral Park PasvikInari-Pechenga (Norway-Finland-Russia) has been monitored by using genetic analyses of hair and faeces collected opportunistically in the field. A more systematic method using hair traps every fourth year was initiated in 2007 to collect brown bear hairs for genetic analysis. The method consists of 56 hair traps in Norway, Finland and Russia in a 5 x 5 km2 grid cell system (1400 km2). The project was repeated in 2011, 2015 and now in the season of 2019 with 58 squeres, using the same methodology as in 2007. In 2019, a total of 182 samples were collected, where 66 samples came from Finland, 59 samples from Norway,

and 57 samples from Russia. In the bear specific analysis, 144 (79,1 %) of the 182 hair samples were positive. A complete DNA profile could be determined for 136 samples. In total, 47 different bear individuals were detected (25 females and 22 males). Of these 47 bears, 24 of bears were detected in previous years, while 23 were previously unknown bears. In total, 20 bears were detected in Finland, 14 bears in Norway and 16 bears in Russia. When comparing the number of 47 bears with the results from the previous years of hair trapping projects (2007: 24 bears, 2011: 20 bears and 2015: 26 bears), we conclude that 2019 show a substantial increase and an almost doubling of the number of bears detected within the defined core area of 1400 km2 of the tri-lateral area of PasvikInari-Pechenga.

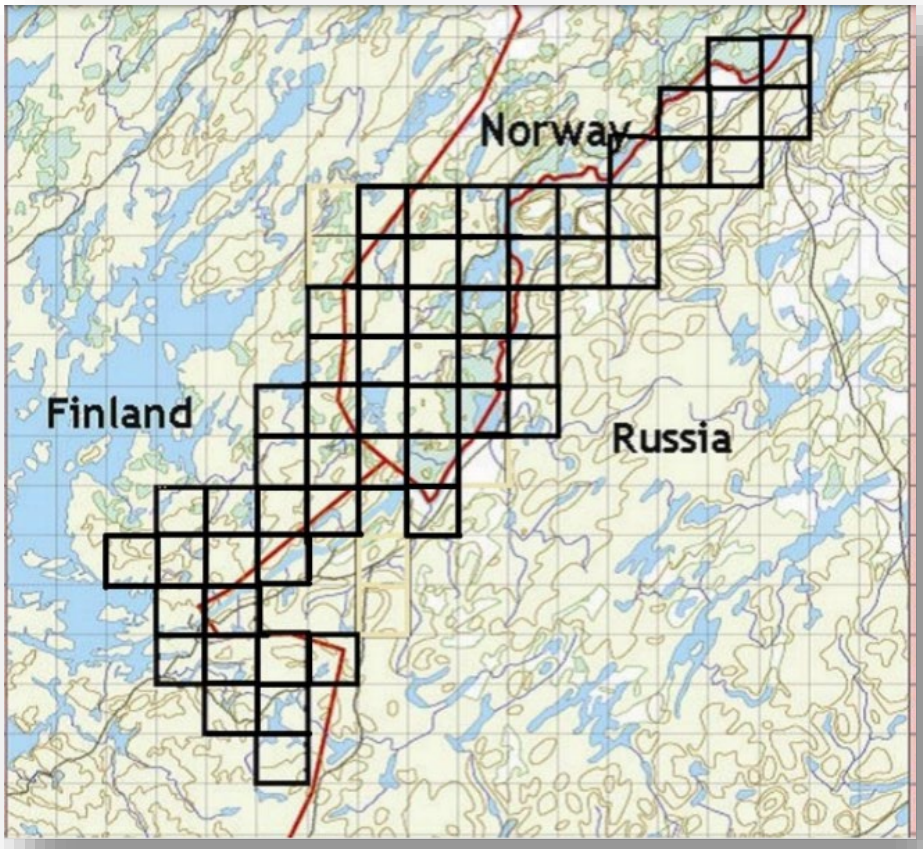


Figure 12 Area in Norway, Finland and Russia covered by the trans-border study.

The trans-border study area includes areas in Norway (Øvre Pasvik), Finland (Inari) and Russia (Pechenga). The study area was divided in 58 cells à 5 km x 5 km with one hair trap in each (two hair traps located in K7, K8 and J10, one on each side of the Norwegian and Russian border). Hair traps were moved to a second location within the same square half-way through the collection period (after four weeks).

24. Visitor Experiences at Visitor Point Gjøken

As there are no service buildings in the Park itself we will service the visitors at the new Visitor Point.

The Øvre Pasvik National Park Board has since 2011 worked to establish a Visitor Point close to nature protected areas in Øvre Pasvik. Through a process with a feasibility study and in dialogue with different stakeholders “Gjøkhotellet” was chosen as the locality. The name is now Visitor Point Gjøken. The plans have been elaborated in cooperation with the National Park Board's Advisory Committee, the Visitor Centre for Øvre Pasvik National Park at NIBIO Svanhovd and local tourism entrepreneurs. The Visitor Centre is an essential partner in the design of public information and the future operations and had its formal opening on June 17th 2023. Through the Kolarctic PAN project the vision of a new Visitor Point is now being realized.

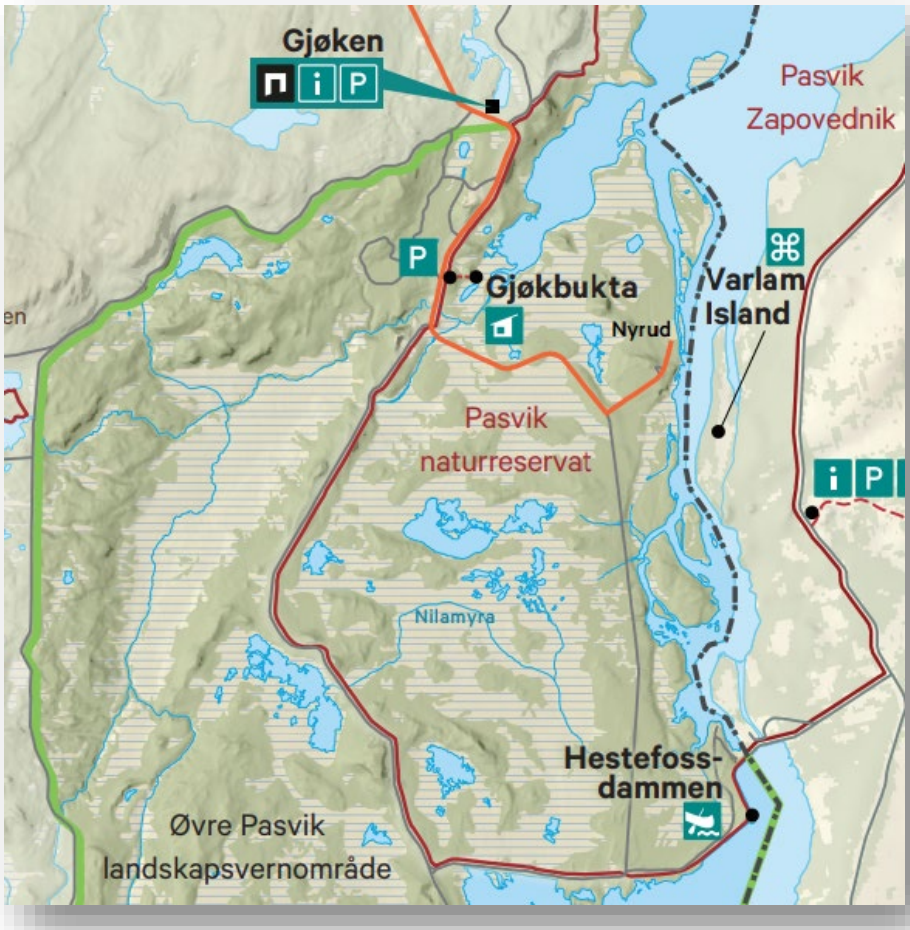


Figure 13 Location of the Visitor Point Gjøken in relation to the nature protected areas (red hatch) in Øvre Pasvik.

A feasibility study from 2014 concluded that it is expedient to establish a Visitor Point in Øvre Pasvik because:

- The Visitor Centre for Øvre Pasvik National Park (Svanvik) is located 65 km from the National Park.
- Øvre Pasvik has four protected areas located so closely that a Visitor Point will be useful in the management of all of these.

- Access to the protected areas is from the main road FV 885, a Visitor Point should be established along this road to catch all visitors.
- Also useful for giving the public knowledge about the rules of conduct when traveling in this border zone towards Russia and Finland.

Locally known as Gjøkhotellet-“the Cuckoo hotel” in Øvre Pasvik old protected log houses have been placed in order to salvage them from damming and disrepair. This happened some 50 years ago with a plan to establish a museum for forestry in Pasvik here. This was never done, and the buildings fell in disrepair. This rural courtyard with the ancient houses is now being upgraded as a Visitor Point linked to the nearby nature protected areas.

Figure 14 The log houses Stallen (the Stable), Stabburet (Food storehouse) and Skogfosskoia (accommodations for travellers) were placed at "Gjøkhotellet" for approximately 50 years ago.

The main house with a sanitary annex, sadly burned in 2014. The replacement was done by moving a log house from its previous location 5 km from the Gjøken. This house has earlier been used for accommodations in connection with forestry activities and will fit in with the other traditional handcrafted log houses at the Visitor Point.

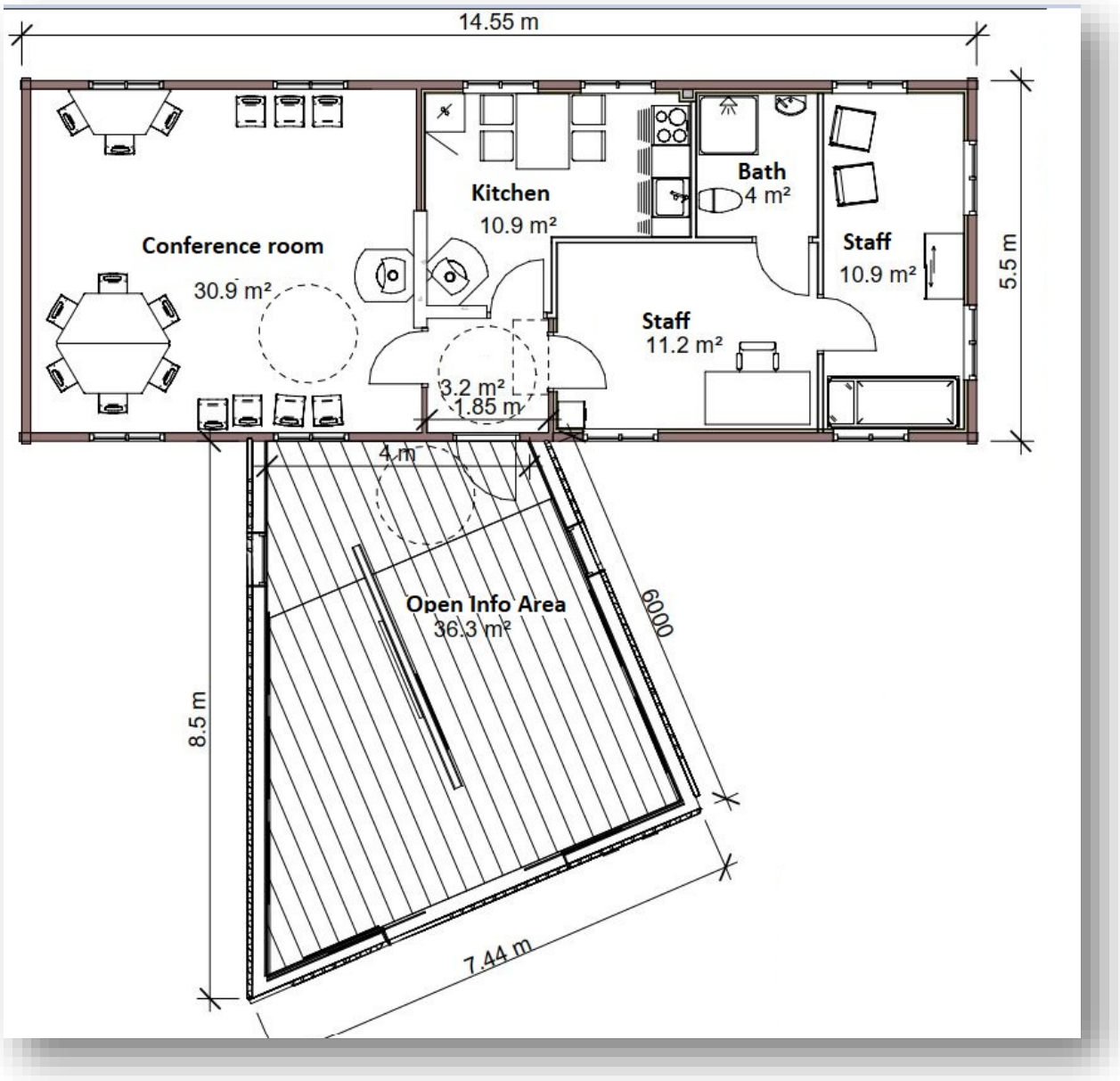


Figure 15 The refurbished main building, with floor plan for a new open entrance dedicated to information posters.

Figure 16 The refurbished main building at the Visitor Point Gjøken.

From the main facility at Visitor Point Gjøken, short and medium-long nature trails to viewpoints and nature and cultural attractions have been established. These are:

1. A round trip to of 800 meters length to an archaeological excavation-site of settlements from the Middle Ages with great educational value.
2. Heritage trails in military camps from WW2 with distances ranging from 200 meters to 2 km from the Visitor Point.
3. A third trail will be established in the same area for star gazing activities.

A survey among tourism entrepreneurs in Pasvik in 2018 showed that the Visitor Point will provide them important support. 5 out of 6 companies have offers related to nature guidance and bird tourism, which they want to convey to visitors from The Visitor Point. The companies consider the Visitor Point to be important for their business and the same for the local population. They want to use Visitor Point as an integral part of the offer to their guests and this facility in Øvre Pasvik will ensure their 21 employees / 14 man-years and provide potential for further value creation.

In the project, a number of formal clarifications have been necessary to put in place. The most important are Lease contract with the landowner the Finnmark Estate, agreement with Sør-Varanger municipality that the land-use objectives will be a service and information

centre for visitors to Øvre Pasvik National Park in the municipal master plan, and permission for road signage from the road authorities.

Recognized as some of the oldest wooden buildings in the region we aim to both restore the authenticity and protect their historical integrity, as they are listed buildings. The planning of the work has been done by expert architect in close dialogue with the building antiquarian authorities. When tendering the restoration, we had to demand carpenters with skills on traditional techniques, re-use of original woodwork in a high degree and use of local wood when in need of new materials.

Architectural solutions are based on both care for nature and the use of traditional materials. The transition between new and old should be seamless. The wooden houses have been respectfully adapted to display the pristine pine forest with her taiga birdlife and high-quality outdoor experiences in Øvre Pasvik.

The rustic log houses with their Pasvik-history will be an important backdrop in displaying the values of the protected nature and the culture history associated with this borderland and meeting point of nature regions and ethnic groups. This concept is beautifully integrated in our joint venture with our partners in the Kolarctic PAN project.

25. Public signage

Public signage will be established at four locations.

1. Park entrance Treriksrøysa, Grensefoss
2. Park entrance Sortbrysttjern
3. Visitor Point Gjøken
4. Svanhovd Conference Centre/National Park Visitor Centre

We have developed several displays that have been put up in places where the public will see them. Some examples are shown below.

The displays have explanatory text in Norwegian, English and Sami languages, see examples below.

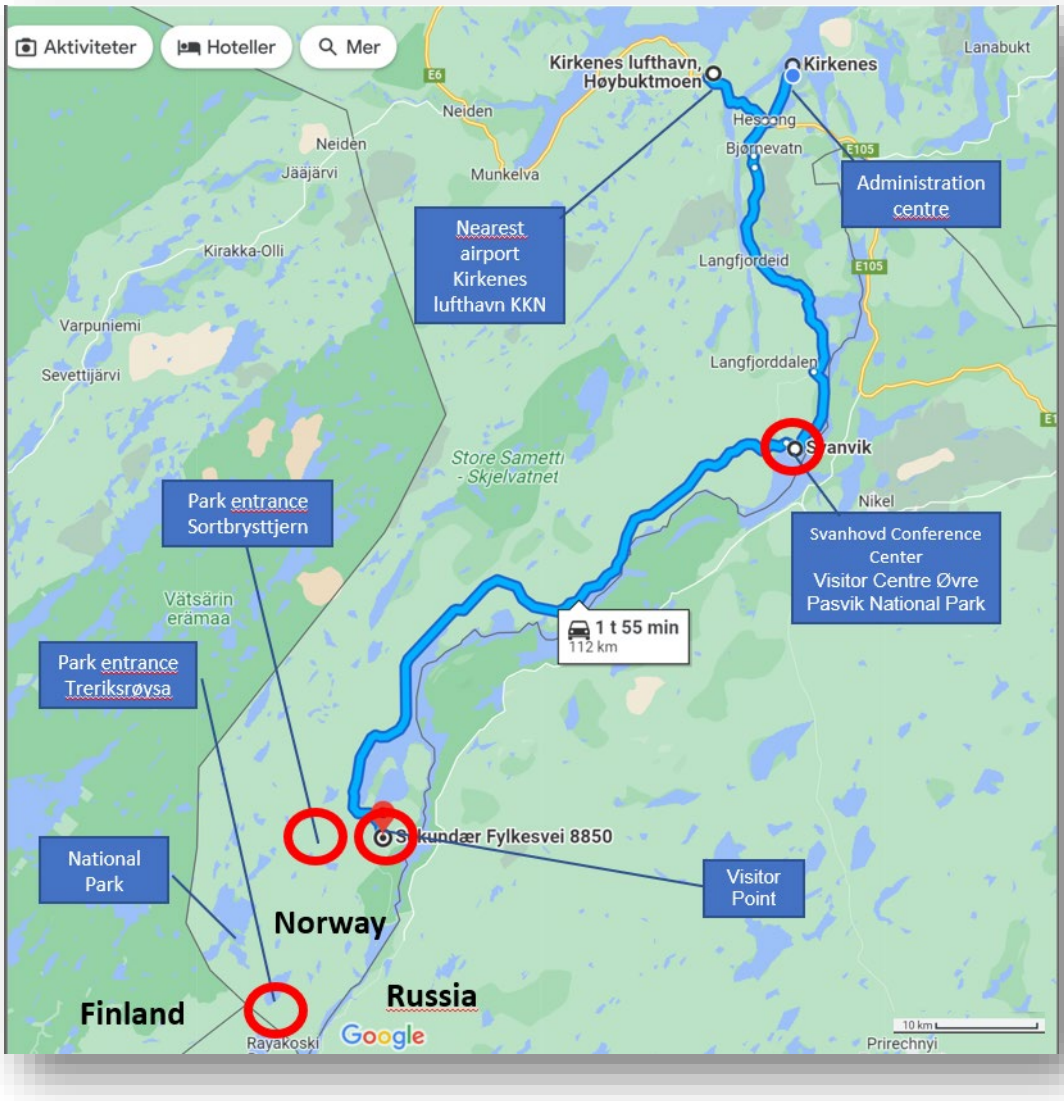


Figure 17 Map showing where public signage is displayed, background from www.google.com/maps.

Foto: Bernt Nilsen: Gapahuken ved Grenseberg - startpunktet for turer til Treriksrøysa. På nattehimmelen sees lys fra Rajakoski på russisk side / The shelter at Grenseberg – the starting point for trips to Treriksrøysa (the three-country cairn). In the night sky, light can be seen from Rajakoski on the Russian side of the border /Gapahuken, Grenseberg káávas – álteernpaikk mátkka kooum niikk raajpäikka. Innáá'lmest kuáittai čuövv Raajkuoškást Ruõss beä'lnn.

Dark Sky – arktisk lys

Dark Sky - Arctic light

Dark Sky – Aarktlaž čuõvv

Opplevelser knyttet til nattehimmelen er mange steder redusert på grunn av kunstig belysning. Øvre Pasvik nasjonalparkstyre ønsker å få nasjonalparken godkjent som en «International Dark Sky Park» gjennom «The International Dark-Sky Association». Organisasjonen arbeider blant annet for reduksjon av lysforurensing rundt om i verden.

Øvre Pasvik er et utmerket område, fordi det er lett tilgjengelig og samtidig er utsatt for svært lite lysforurensing. I klarvær kan du få fantastiske opplevelser av nattehimmelen og fenomener som nordlys.

Her ved Informasjonspunkt Gjøken vil vi sette fokus på hva man kan oppleve på nattehimmelen og hvorfor det er viktig å unngå lysforurensing. I denne sammenheng er det en stor fordel at vi befinner oss i et område med to måneder mørketid.

In many places, our experience of the night sky is hampered by artificial lighting. The National Park Board for Øvre Pasvik would like the park to be approved as an International Dark Sky Park through The International Dark-Sky Association. Amongst other things, the organisation aims to reduce light pollution around the world.

Øvre Pasvik is an excellent area for this because it is easily accessible, yet has very little light pollution. In clear weather, one can enjoy magnificent views of the night sky and natural phenomena such as the Northern Lights.

At Gjøken information point we will focus on the experiences the night sky has to offer and why it is so important to avoid light pollution. In this regard, it is of great advantage that we are located in an area where the polar night lasts for two months of the year.

Skoltesamisk

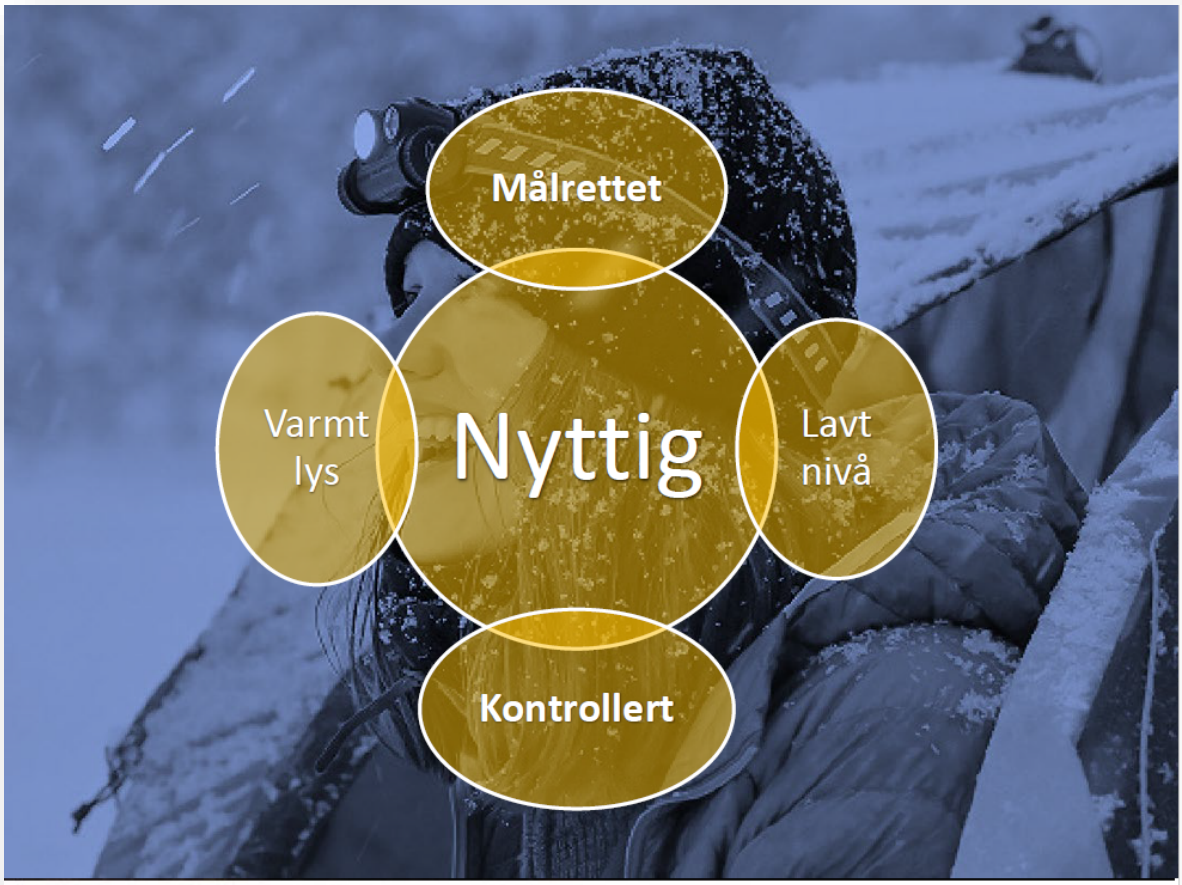
Innälimma kõskki jeä'lstõõzz lie oconem määrgai pää'Kin, gu ludde'm čuõvv lie läsnam. Pä'jj-Peččjoogg meermie'cc hallõs haa'lad, šlo meermeä'cc primõt "International Dark Sky Park" vue'sen "The International Dark-Sky Association" organisaatiost. Organisaatio hä't mäka šõõlääđt uu'cceed čuõvvkaa'st pirr maa'lm.

Pä'jj-Peččjokk lij tuõđi šiõgg vu'vdd, go tok lij hällpp pässäd da to'ben lij semei occanj čuõvvkaa'st. Go lij kue'ttteš šõryj, pässzek naeudšed innää'lm jeä'lstõõzzäst da kuuskõõzzin.

Tää'ben Gjøken informaatio-pää'Kest õrjmõõvvâd innää'lm jeä'lstõzzid da tõõzz, mõõn dõõt lij väažnai veä'ttted čuõvvkaa'st. Tän õõttvuõđđät lij jõnn ouddõs tõ'st, šlo Pä'jj-Peččjoogg meermeä'cc ääm vuu'dest, ko'st skammpodd peäšt kuei't määrpää'l).

Figure 18 Example of public signage - Dark Sky.

Figure 19 Example 2 of public signage - Northern Lights.



Riktig bruk av kunstig lys

Proper use of artificial light

Proper use of light - SAMI

Vær oppmerksom på at du nå kommer inn i et område som ikke har noen faste lyspunkt. Hjelp oss å bevare mørket til glede for både mennesker, dyr, insekter og planter ved å følge disse reglene for bruk av kunstig lys.

1. Nyttig: Alt lys skal ha et klart formål
Før du slår på lyset må du avgjøre om lys er nødvendig. Tenk på hvordan bruk av lys vil påvirke området, inkludert dyreliv og miljø.

2. Målrettet: Lyset skal bare rettes dit det trengs
Bruk skjerming og rett lysstrålen slik at den peker nedover og ikke lyser opp områder hvor det ikke trengs.

3. Lavt nivå: Ikke kraftigere enn nødvendig.
Bruk det laveste lysnivået som er nødvendig. Vær oppmerksom på omgivelsene, da noen overflater kan reflektere mer lys opp i nattehimmelen enn det som var ment.

4. Kontrollert: Lys skal bare brukes når det er nyttig
Bruk styring som timere eller bevegelsessensorer for å sikre at lyset kun er på når det trengs, dimmes når det er mulig, og slås av når det ikke trengs.

5. Varmt lys: Bruk varmere fargelys der det er mulig
Begrens mengden kortere bølgelengde (blåfiolett) lys til minst mulig behov.

Lys der du trenger det, når du trenger det, i mengden som trengs, og ikke mer.

1. Useful
All light should have a clear purpose
Before installing or replacing a light, determine whether light is needed. Consider how the use of light will impact the area, including wildlife and the environment. Consider using reflective paints or self-luminous markers for signs, curbs, and steps to reduce the need for permanently installed outdoor lighting.

2. Targeted
Light should be directed only to where it's needed
Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.

3. Low level
Illumination should be no higher than necessary
Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than was intended.

4. Controlled
Light should be used only when it is useful
Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.

5. Warm-colored
Use warmer-color lights where possible
Limit the amount of shorter wavelength (blue-violet) light to the least amount needed. Light where you need it, when you need it, in the amount needed, and no more.

Figure 20 Example 3-Draft of public signage - Responsible Outdoor Lighting.

English text from the posters above;

In many places, our experience of the night sky is hampered by artificial lighting. The National Park Board for Øvre Pasvik would like the park to be approved as an International Dark Sky Park through The International Dark-Sky Association. Amongst other things, the organisation aims to reduce light pollution around the world.

Øvre Pasvik is an excellent area for this because it is easily accessible, yet has very little light pollution. In clear weather, one can enjoy magnificent views of the night sky and natural phenomena such as the Northern Lights.

At Gjøken information point we will focus on the experiences the night sky has to offer and why it is so important to avoid light pollution. In this regard, it is of great advantage that we are located in an area where the polar night lasts for two months of the year.

The Northern Lights have always been a source of wonder. They dance across the night sky, creating the most amazing shapes and patterns. But what are the Northern Lights, and why do they occur?

Many people have tried to explain what causes the Northern Lights in the night sky, but the Norwegian physicist Kristian Birkeland (1867–1917) was the first to solve the puzzle in 1896. He presented a theory that the Sun emits not only light, but also a constant stream of charged particles that are deflected by the Earth's magnetic field and pulled towards the polar regions. At the magnetic poles, these charged particles collide with the atmosphere and create the magic of the Northern Lights.

Few scientists believed him at the time, since most believed that space was completely empty and that the explanation for the Northern Lights would have to be found on Earth. Birkeland's theory was not confirmed until the 1960s.

1. Useful
All light should have a clear purpose
Before installing or replacing a light, determine whether light is needed. Consider how the use of light will impact the area, including wildlife and the environment. Consider using reflective paints or self-luminous markers for signs, curbs, and steps to reduce the need for permanently installed outdoor lighting.
2. Targeted
Light should be directed only to where it's needed
Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.
3. Low level
Illumination should be no higher than necessary
Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than was intended.
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Light should be used only when it is useful
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5. Warm-colored
Use warmer-color lights where possible
Limit the amount of shorter wavelength (blue-violet) light to the least amount needed. Light where you need it, when you need it, in the amount needed, and no more.

Figure 21 English text from public signages above.

Figure 22 Example of outdoor displays of public signage.

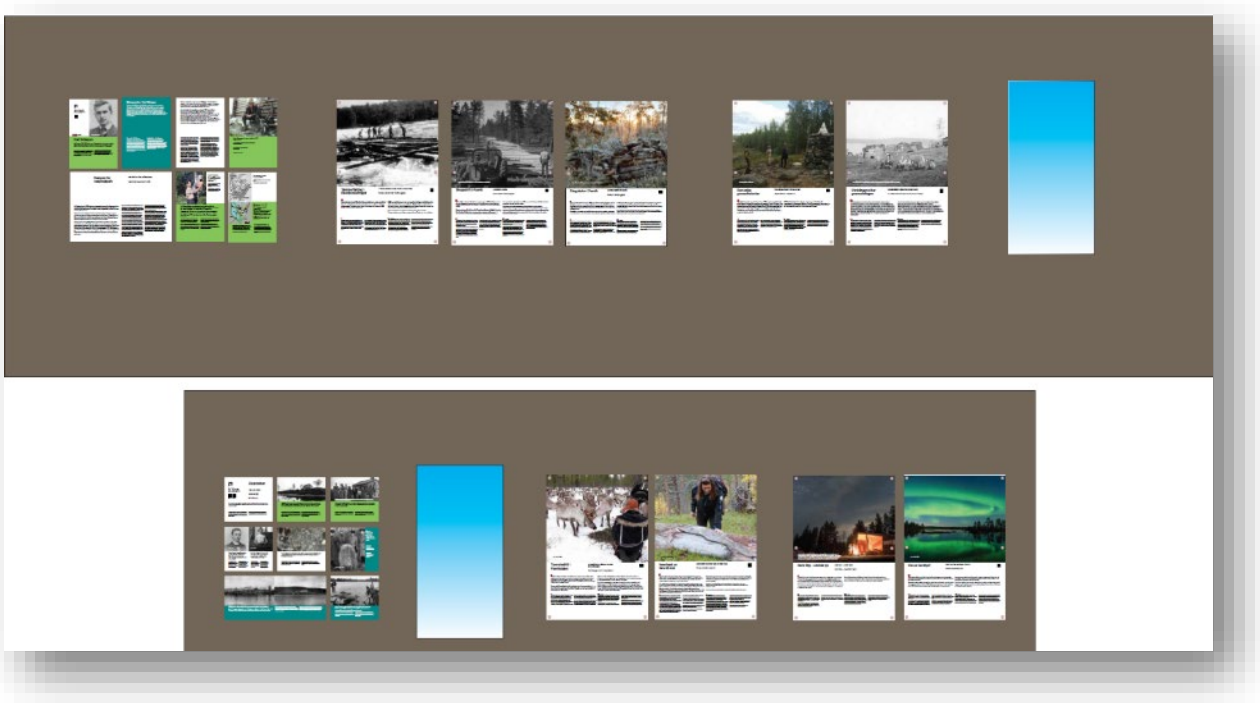


Figure 23 Variety of public signage displayed, See enlargement of DarkSky relevant posters above.

26. Public nighttime access – all year round

The park has excellent nighttime access for the public through two access points in the summer and autumn. The access roads to the starting points for hiking into the national park are not cleared of snow in winter so you need to use skies or snowshoes to access the park. Both starting points have information signs and marked trails into the National Park. There are also shelters where the park management supply firewood. These shelters do not have any lighting whatsoever.

The Park is a typical Norwegian National Park – with no facilities! There are signs spread around when you enter the park, see enclosed picture. These inform you that you enter the park and give you a small info on the rules you must obey by.

We have two old log cabins it the park itself. There is no electricity or running water. The park service maintains the cabins and supply firewood but apart from that people are on their own. The cabins are open all year and never locked. Use of the park and cabin is free of charge.
We have no system for registering access and people are free to stay as long as they like.

Norwegians are used to this climate – and dress and behave accordingly. See enclosed picture for a typical outfit for the visitor in wintertime.

Out information center Gjøken is located outside the park and provide information on what you can expect in the park.

Figure 24 Skiing in minus 30 Celsius is quite common in this area and require proper clothing, photo Bernt Nilsen

27. Exceptional dark sky resource

Due to the location in the end of a valley in between Finland and Russia and isolated from human intervention the park offers an “island of darkness”. We have some light pollution on the southeastern side of the park from the nearby Russian villages of Rayakoski and Nautsi. Due to the topography of the park this is not a problem in the rest of the park. And even close to Rayakoski/Nautsi our measurements show little influence due to the large fir trees in the area. Even close to Rayakoski/Nautsi we are at a Bortle class 2. We will provide panoramic photos from various locations around the edges of the park with our first annual review report.

Rayakoski is the closest village on the Russian side. It is a service-location for a hydroelectric station with about 200 inhabitants. As Russia always have restricted access to the border area there are, and most likely, never will be any other activity in the area. The lights that can be seen is mainly from the power plant itself. Since this a part of a joint Norwegian-Russian utilisation of the Pasvik border-river there certainly will be no expansion during the current political situation.

Nautsi is an old village from the Soviet-era which now is only a border station and no permanent inhabitants. And again located in the restricted border area no new activity will be allowed by the Russian authorities.

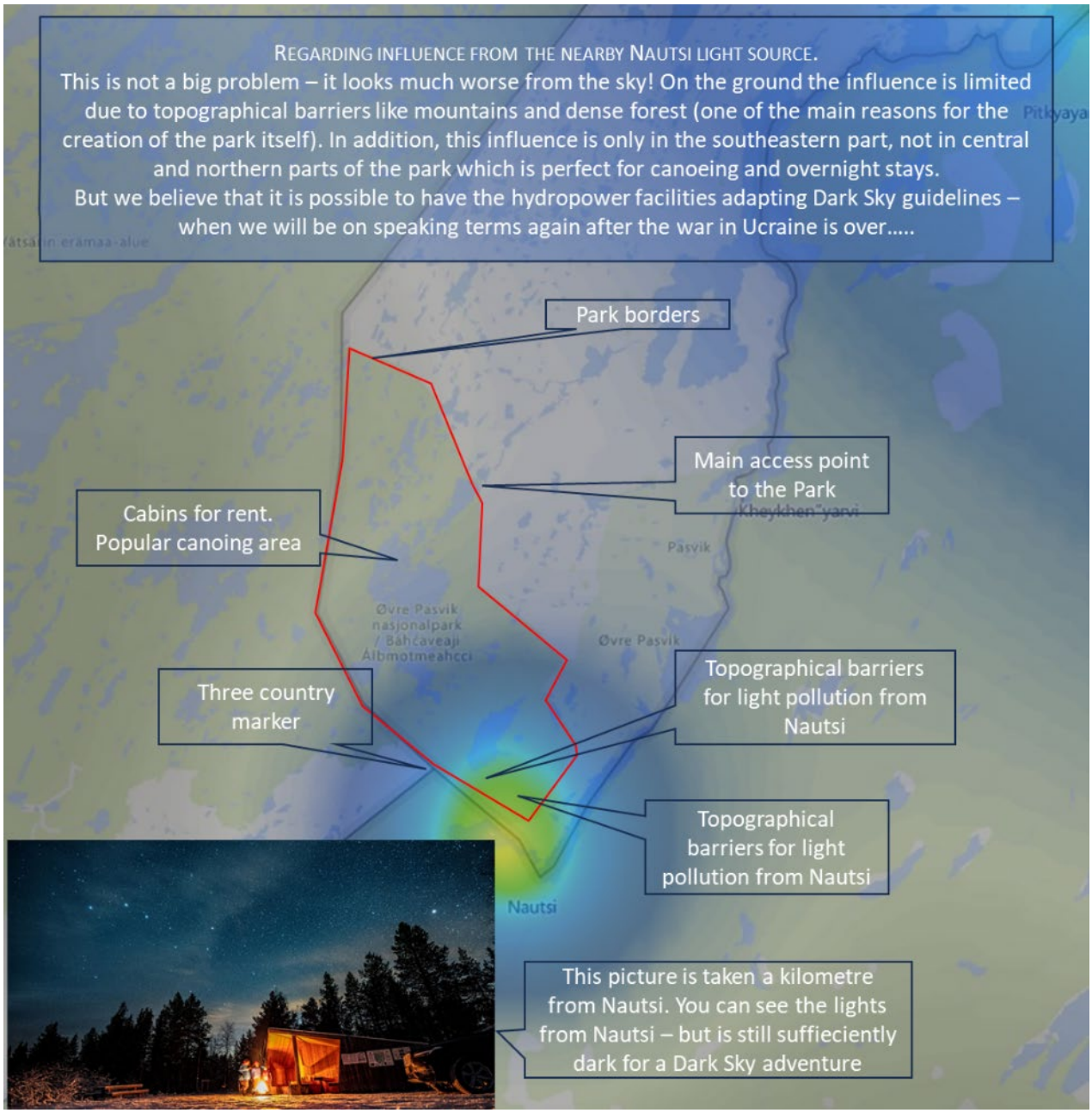


Figure 25 Location of nearest light pollution on southern entrance, background map from www.lightpollutionmap.info

Figure 26 Southern entrance of Øvre Pasvik National Park, Photo by Bernt Nilsen.

Figure 27 Dense forest on the border of Russia. Photo Bernt Nilsen

28. Outreach and crossborder communication

Based on the current situation with the Russian attack on Ukraine all local contact with Russia is put on hold.

Being an international focused community we always have had close contact with the other countries in the Barens Region. We are now scaling up contacts with Sweden, Finland and other countries interested in the region including the European Commission.
Due to the geographical nearness to Finland, we have a special focus on this bilateral relation.

We have a close cooperation with the Finnish authorities in our neighbour community of Inari. This involves contact with the nearby village of Nellim. This is a small village of a few hundred inhabitants which focus on nature-based tourism. There is a marked trail from Nellim to our National Park, but no installations like lighting, roads or similar.

We have established a separate committee with representatives from Inari that meets regularly to discuss both local and international projects. We have already informed our Finnish colleagues about our plans for a DarkSky Park.

29. Lighting Management Plan

Even if the park itself does not have any lighting we are using the same principles for our facilities outside the park.

See Appendix 1 Lighting Management Plan (LMP) for Øvre Pasvik National Park.

30. Exterior Lighting Inventory

As there are no light fixtures in the National Park the overview there is quite easy to set up. We include the table anyway for record if there will be any installations in the future. In addition, we include a separate table for the Information Point which is outside the park itself but will be the first point of information for the visitors.

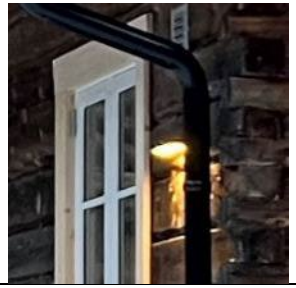
Light Inventory - Øvre Pasvik National Park

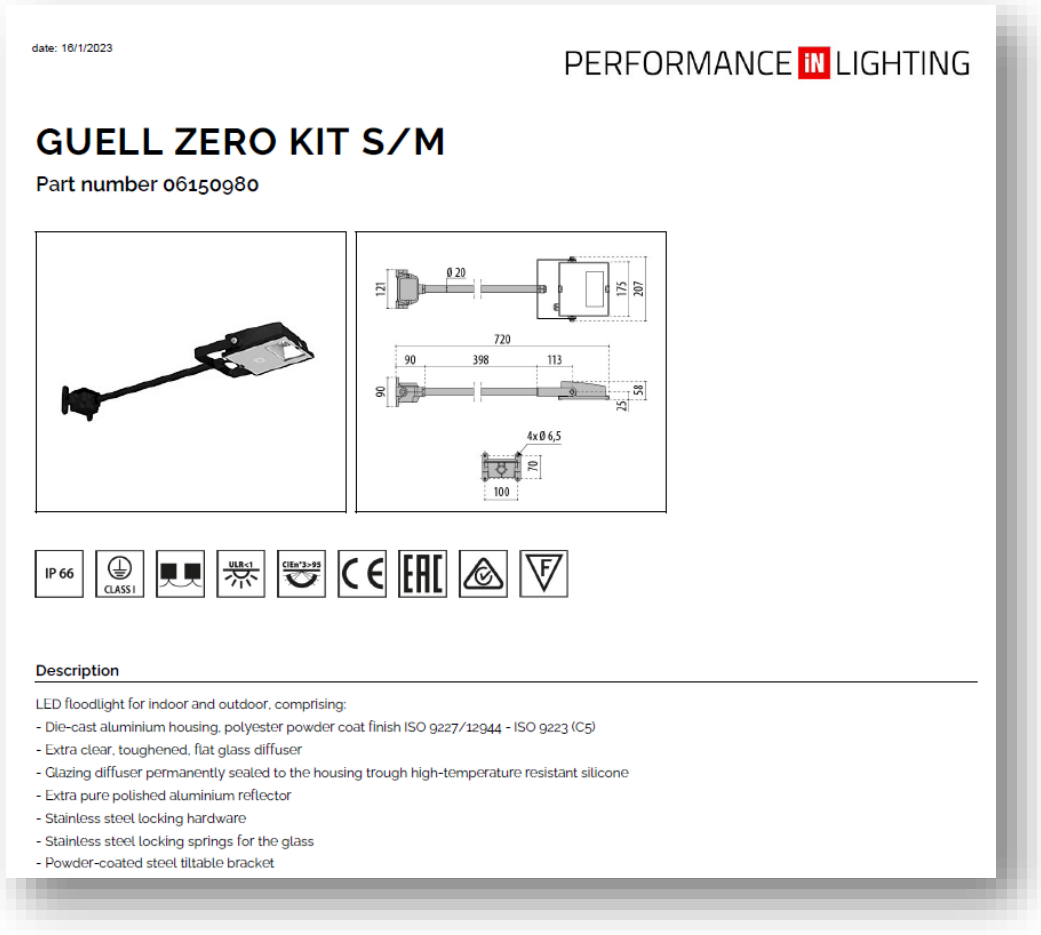
Currently 0 Outdoor Lights, All Conform to LMP as of April 2024

Location	Fixture	Photo	Application	Fully shielded	Special Purpose < 500 lumen	Conformity with LMP
National Park	none					

Light Inventory – Visitor Centre Gjøken

Currently 3 Outdoor Lights, All Conform to LMP as of April 2024

Location	Fixture	Photo	Application	Fully shielded	Special Purpose < 500 lumen	Conformity with LMP
New building	1 LED light by National Park-sign. GUELL ZERO KIT S/M Part number 06150980	 	Entrance / Information Sign	Yes	No	Yes
Old building	2 LED light SG Curve Direct, Part no. 3100044		Entrance / safety	Yes	No	Yes
Old building	3 LED light SG Curve Direct, Part no. 3100044		Entrance / safety	Yes	No	Yes



date: 16/1/2023

PERFORMANCE iN LIGHTING

GUELL ZERO KIT S/M

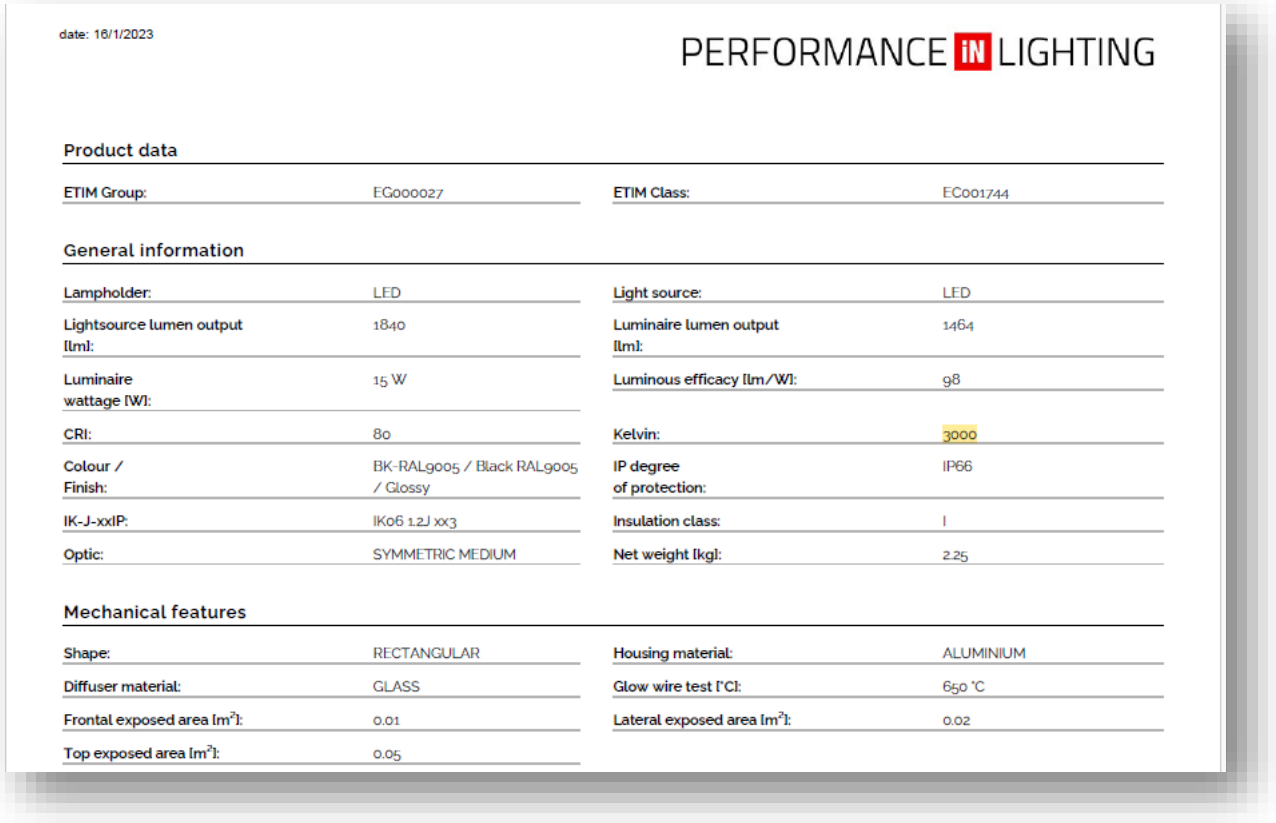
Part number 06150980

IP 66 CLASS I

Description

LED floodlight for indoor and outdoor, comprising:
- Die-cast aluminium housing, polyester powder coat finish ISO 9227/12944 - ISO 9223 (C5)
- Extra clear, toughened, flat glass diffuser
- Glazing diffuser permanently sealed to the housing trough high-temperature resistant silicone
- Extra pure polished aluminium reflector
- Stainless steel locking hardware
- Stainless steel locking springs for the glass
- Powder-coated steel tiltable bracket

Figure 28 Light fixture 1 used at the Visitor Point Gjøken.



date: 16/1/2023

PERFORMANCE iN LIGHTING

Product data

ETIM Group:	EG000027	ETIM Class:	EC001744

General information

Lampholder:	LED	Light source:	LED
Lightsource lumen output [lm]:	1840	Luminaire lumen output [lm]:	1464
Luminaire wattage [W]:	15 W	Luminous efficacy [lm/W]:	98
CRI:	80	Kelvin:	3000
Colour / Finish:	BK-RAL9005 / Black RAL9005 / Glossy	IP degree of protection:	IP66
IK-J-xxIP:	IK06 1.2J xx3	Insulation class:	I
Optic:	SYMMETRIC MEDIUM	Net weight [kg]:	2.25

Mechanical features

Shape:	RECTANGULAR	Housing material:	ALUMINIUM
Diffuser material:	GLASS	Glow wire test [°C]:	650 °C
Frontal exposed area [m^2]:	0.01	Lateral exposed area [m^2]:	0.02
Top exposed area [m^2]:	0.05		

Figure 29 Light fixture 1 used at the Visitor Point Gjøken.

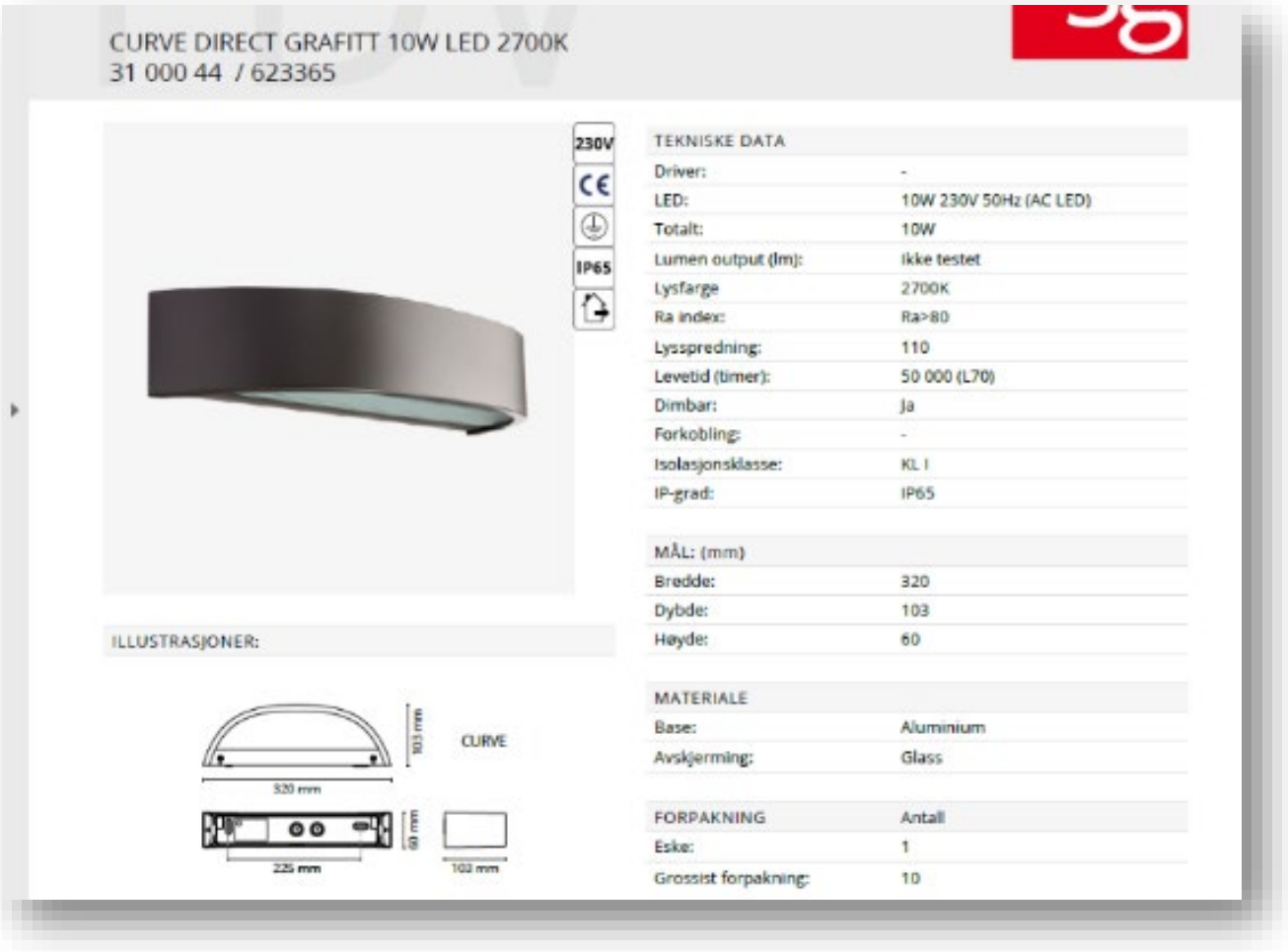


Figure 30 Light fixture 2 and 3 used at the Visitor Point Gjøken.

31. Night Sky Measurements

We have started measuring the light quantity this season by using instruments of the type Sky Quality Meter from Unihedron, http://www.unihedron.com/projects/darksky/. We are experiencing a couple of challenges though that we need to overcome: In wintertime, which is the darkest part of the year in our area, the ground is usually covered with snow that influences the measurement. We also have had very much solar activity generating Northern Lights recently. And when the snow disappears, we have Midnight Sun for a couple of months…..

Our measurements show values in the order up to 21.83.

We have added a new column to your form called "% Snow on the ground" because this influences the measurement as the snow reflects the light in the trees and mountains around the instrument.

We are now making plans for regular measurements in the period where we have the darkest conditions which will be late fall, after the Midnight Sun have stopped appearing and before the ground is covered with snow.

Date	Location	Coordinates	Time CET	SQM reading 1	SQM reading 2	SQM reading 3	Average	% Snow on the ground	% Cloud Cover	% Moon visibility	Air Temp.
February 25th2022	Spurven	69.336806, 29.181536	23:50	20,61	20,30	-	20,45	100 %	0	-	-10 Celsius
Februar 26th 2022	Cabin	69.273594, 29.254177	03:51	21,05	20,88	20,86	20,93	100 %	0	-	-14,5 Celsius
October 12th 2022	Vakker-vann	69.18653, 28.83736	21:37	19,91	19,79	-	19,85	100%	10%	5%	-10,0 Celsius
Nov 22th 2022	Piilola	69.12480, 28.81770	19:22	21,38	-	-	21,38	100%	0	0	-16,0 Celsius

Date	Location	Coordinates	Time CET	SQM reading 1	SQM reading 2	SQM reading 3	Average	% Snow on the ground	% Cloud Cover	% Moon visibility	Air Temp.
January 17th 2023	Vakker-vann	69.18653, 28.83736	22:26	21,50	21,65	21,62	21,59	100%	0	0	-22,0 Celsius
January 17th 2023	Vakker-vann	69.18653, 28.83736	22:26	21,50	21,65	21,62	21,59	100%	0	0	-22,0 Celsius
February 09th 2023	Visitor Point center	69.16539 29.21874	19:23	21,83	21,66	-	21.75	100	0	0	-2,3 Celsius
February 09th 2023	Visitor Point, lake	69.16568 29.22063	19:31	21,44	21,31	21,38	21,38	100	0	0	-2,3 Celsius
February 10th 2023	Visitor Point center	69.16539 29.21874	20:42	20,22	20,33	-	20,28*	100	0	0	-16,0 Celsius
February 10th 2023	Visitor Point, lake	69.16568 29.22063	20:45	19,97	20,10	-	20,04*	100	0	0	-16,0 Celsius
March 10th 2023	Visitor Point center	69.16539, 29.21874	19:59	20,74	20,81	-	20,78*	100	0	0	-19,8 Celsius
March 10th 2023	Visitor Point, lake	69.16568 29.22063	20:03	20,73	20,68	-	20,71*	100	0	0	-19,8 Celsius
March 11th 2023	Just North of Visitor Point	69.195707, 29.147337	00:26	20,96	20,86	20,87	20,89	100 %	0	0	- 20,5 Celsius
March 11th 2023	Visitor point Gjøken	69.164387, 29.220833	01:04	20,93	20,97	20,91	20,94	100 %	0	0	- 27,5 Celsius

March 27th 2023	Visitor Point Gjøken	69.164387, 29.220833	23:29	21,20	21,18	21,13	21,17	100 %	0	0	-14,5 Celsius
October 17th 2023	Visitor Point Gjøken	69.16539, 29.21874	20:40	21.67	21.55	21,87	21,70	5%	0	0	-4,0 Celsius

Figure 31 Locations for light measurements.

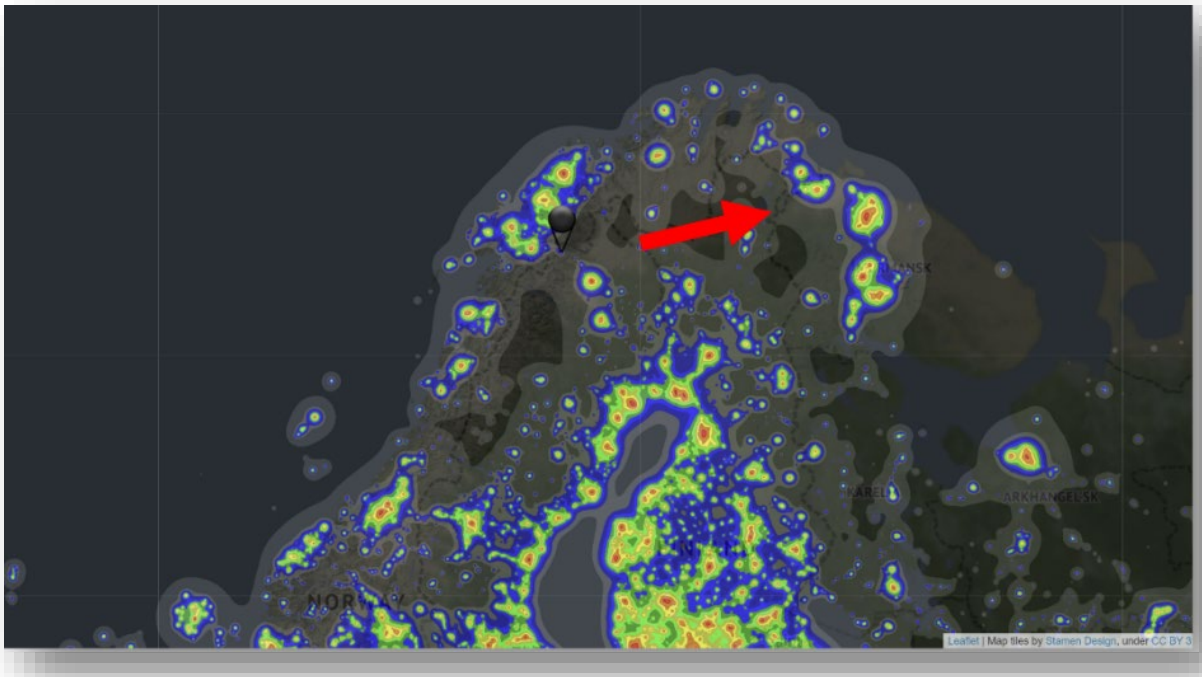


Figure 32 This picture from DarkSiteFinder.com shows the excellent conditions in our area.

32. International light measurement program

We have recently joined an international program called Active Citizens Fund – Regional which is funded by Iceland, Liechtenstein, and Norway through the EEA Grants. Here we will install two special TESS sky quality meter (SQM) units that will be reporting measurements online through the Stars4all EU-project.

33. Night Sky Observations

The Park has for a long time been a popular location for night-time photography. We are experiencing excellent conditions for observing, and taking pictures, of both the Milky Way and individual stars.

Figure 33 The picture of the Milky Way has been taken in the area, but a bit closer to the city as indicated by the lights showing in the distance. Photo Bernt Nilsen.

Figure 34 The following picture of Star Trails around Stella Polaris have been taken in the area. And typically we have some Aurora Borealis showing up in the pictures. Photo Bernt Nilsen.

34. Commitment to dark skies

The Parks administration and board members are dedicated to idea of the Dark Sky movement and are willing to spend both time and money to achieve and maintain the status.

- All the lighting fixtures at the visitor centre conform to the Park´s LMP. And inside the park itself there are no lights at all.
- Guidelines from our LMP will be enforced and easily available information to the public will be provided.
- Lighting inventory is established, all 3 fixtures comply with the requirements.

- A measurement program is already in place and several people have been trained to use and document the instruments.

Figure 35 Night sky condition at Visitor centre Gjøken. Photo Bernt Nilsen.

Figure 36 Night sky condition at Visitor centre Gjøken. Photo Bernt Nilsen.

Figure 37 Aurora Borealis reflecting on the snow influencing measurements at the Visitor Point Gjøken. Photo Bernt Nilsen.

35. Current and future threats

We do not see any real threats as the park already are regulated by national legislation.

36. Adapting to Sami Culture

The Øvre Pasvik National Park is in the heart of the Sami region spreading over Sweden, Finland, Norway and Russia. It is therefore natural that we also focus on the little-known Sami traditional names and stories about the constellations. The Sami have named their own constellations and combined these with stories from their own life in the wilderness with their reindeer herds. They describe a story of a hunting exercise taking place as the stars appear in the night sky.

We believe that telling this story will generate more interest for the DarkSky for new groups.

Figure 38 Location of Øvre Pasvik NP in the Sami region.

Figure 39 Sami Constellations from gaavnoes.no/2017/07/den-samiske-stjernehimmelen/ Saemien Sijte 2017.

37. Leadership example

We are now planning several activities pr year. In addition to our programs arranged in our own facilities in the park and at the visitor centre and visitor point we are now establishing a cooperation with the following partners:

- Pasvik Folkehøyskole, Pasvik community college, https://www.pasvikfolkehogskole.no/ is in the Pasvik Valley. They have a special annual course on Arctic Tourism where they will include Dark Sky subjects including visits to the park. In addition to training their own students they regularly organize events for short time visitors both locally and internationally. The activities include hunting/harvesting/bushcraft/wilderness survival and dog sledding.
- The Science Centre of Northern Norway, https://nordnorsk.vitensenter.no/?language=en, is now establishing a local facility in Kirkenes. At their headquarters in Tromsø they already have a planetarium and programs for discussing and presenting the Northern Lights. At their new Kirkenes location they are planning to use the Dark Sky approval as an ingredient in the program they are developing for local audience and schools as well as for tourists coming to Kirkenes from all over the world every day with the coastal steamer Hurtigruten.

38. The commitment to public education

There will be public programs the following places;

- In the park itself – mainly it the fall before the snow covers the ground.

- Visitor point Gjøken – all year. Indoor facilities for 20 people.
- Svanhovd – all year. Indoor facilities for 100 people.
- Pasvik Folk High School. Both for their own students but also open lectures to the public.
- Kirkenes public school and Sandnes and Bjørnevatn public schools will have separate projects included in their annual programme.

Publications, flyers etc will be spread to normal visitors, through schools and social media. Contact with astrophysical unit at University of Oslo.

Cooperation with local camera club for night-time observation and photography.

The two major primary schools in Sør-Varanger Municipality are now focusing on STEM-activities. We have a more than 10-year cooperation with them on First Lego League and summer camps for science projects. We are now planning both inside and outside activities focusing on the Dark Sky concept.

NIBIO Research centre at Svanhovd as an authorised centre for Øvre Pasvik National Park, will contribute to the dissemination of Dark Sky by including the project in the ongoing dissemination activities that take place throughout the year, they have nature schools for children, citizen science activities and open lectures for adults.

39. Tourism

We are planning 4 levels of interaction with tourists. We are in control of the first two levels whereas the remaining will involve local partners already attracting tens of thousands of tourists already to the region. We do not think – and surely not hope – that most of these tourists will actually visit the park. But we will make sure that they are informed about the Dark Sky concept and objectives. For the most adventurous of them who will plan for a longer visit and visit the park itself we will provide guidance and information on both Dark Sky but also on how to behave and survive in the harsh environment especially in wintertime.

Levels
1. Visitor Point and National Park Centre
    - poster display, some outside accessible all hours.
    - presentations, school programs including star spotting guiding.

2. Inside the actual National Park: as there are no infrastructure inside the park, and it is more difficult to access in wintertime. The main focus will be on posters and fall events before the snow and cold weather makes it more difficult to visit.

3. Cooperation with Kirkenes Snow Hotel, see https://www.snowhotelkirkenes.com/ The Snowhotel is already offering Northern Light cabins and tours. But since they are too close to town to be able to show the “real thing” they are looking for new ideas to make their

customers staying one more night. We are now discussing a “Snow hotel special” where they will offer specific Dark Sky tours.

4. The Norwegian Coastal Steamer https://www.hurtigruten.no/destinasjoner/norge/ and Havila https://www.havilavoyages.com/ visits Kirkenes every day year round. We plan an information package for the thousands of tourists informing them that they are approaching the northernmost DarkSky park. Both Hurtigruten and Havila are offering overnight tours to their customers. This will be a significant addition to the offers they have today.

40. Annual report

The administration will include Dark Sky monitoring and reporting in the office routines and year planning.

41. Letters of support

Enclosed are a few letters of support. We are expecting more that will be forwarded at a later stage.

42. Letter of support from Mayor, Sør-Varanger Municipality

Sør-Varanger kommune

Postboks 406

9901 Kirkenes

To whom it may concern

This letter is written in support of Øvre Pasvik National Board's efforts to achieve Dark Sky certification. We will engage in joint efforts to reduce the level of outdoor light pollution in this area within our framework.

Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies.

This is a most welcome opportunity to increase awareness of qualities, experiences and values on dark sky as an arctic natural light phenomena in our region. In the long run this will have a positive impact on our mindset of outdoor lightning.

Our nature has an extreme variation in light conditions from 2 summer months with midnight sun to 2 winter months with polar night. The focus on Dark Sky will stimulate and make local tourism aware of the possibilities within winter tourism.

In the management of nature is the effect of artificial lighting on wildlife a topic we need to highlight. Not least for the bird life dominated by species from the Siberian taiga, which are rare in the rest of Norway.

Kirkenes 24.11.2022

Lena N. Bergeng

Lena Norum Bergeng

43. Letter of support from FeFo -The Finnmark Estate

FINNMARKSEIENDOMMEN
FINNMÁRKKUOPMODAT

Vår dato/Min beaivi: 25.11.2021
Vår ref./Min čuj.: 21/2515 –2

Deres dato/Din beaivi: 25.11.2021
Deres ref./Din čuj.:

To whom it may concern

This letter is written in support of Øvre Pasvik National Park Board's efforts to achieve Dark Sky certification.

Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies.

This is a most welcome opportunity to increase awareness of qualities, experiences and values on dark sky as an arctic natural light phenomenon in our region. In the long run this will have a positive impact on our mindset of outdoor lightning.

Our nature has an extreme variation in light conditions from 2 summer months with midnight sun to 2 winter months with polar night. The focus on Dark Sky will stimulate and make local tourism aware of the possibilities within winter tourism.

In the management of nature is the effect of artificial lighting on wildlife a topic we need to highlight. Not least for the bird life dominated by species from the Siberian taiga, which are rare in the rest of Norway.

This letter of support does not indicate any further obligations, financially or otherwise.

Finnmarkeseiendommen/Finnmárkkuopmodat (FeFo) is an organization established according to the Finnmark Act, adopted by the Norwegian Parliament on 17th June 2005. This act is a recognition of the land rights of the Sami people, an indigenous people, in Finnmark. The act is a part of the fulfilment of the States obligations according to international law regarding indigenous peoples. FeFo is a landowner of an area of around 46 000 square kilometres (around 95% of the area of Finnmark), operation within the framework of the Finnmark Act. The Sami Parliament and the county council of Troms og Finnmark appoint three members to the Board each.

Best regards

Jan Olli
direktør
Tel: 95820286

44. Letter of support from Friends of the Earth Norway

Naturvernforbundet
i Sør-Varanger

To whom it may concern

This letter is written in support of Øvre Pasvik National Board's efforts to achieve Dark Sky certification. We will engage in joint efforts to reduce the level of outdoor light pollution in this area within our framework.

Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies.

This is a most welcome opportunity to increase awareness of qualities, experiences and values on dark sky as an arctic natural light phenomena, in our region. In the long run this will have a positive impact on our mindset of outdoor lightning.

Our nature has an extreme variation in light conditions from 2 summer months with midnight sun to 2 winter months with polar night. The focus on Dark Sky will stimulate and make local tourism aware of the possibilities within winter tourism.

In the management of nature is the effect of artificial lighting on wildlife a topic we need to highlight. Not least for the bird life dominated by species from the Siberian taiga, which are rare in the rest of Norway.

Kirkenes November 25th, 2021

Trond Gaasland

45. Letter of support from NIBIO Research Centre

NIBIO
NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH

To whom it may concern

NIBIO
PO Box 115,
NO-1431 Ås, Norway
Tel: +47 406 04 100
post@nibio.no
nibio.no

Ent. no: 988 983 837

Date: 26. November 2021
Your ref: Initials
Our ref: Initials

Support letter

This letter is written in support of Øvre Pasvik National Board's efforts to achieve Dark Sky certification. We will engage in joint efforts to reduce the level of outdoor light pollution in this area within our framework.

Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies. We as a partner in the Visitor Point at Gjøken we will participant actively in developing the information material about the important of the darkness.

This is a most welcome opportunity to increase awarness of qualities, experiences and values on dark sky as an arctic natural light phenomenon in our region. In the long run this will have a positive impact on our mindset of outdoor lightning.

Our nature has an extreme variation in light conditions from 2 summer months with midnight sun to 2 winter months with polar night. The focus on Dark Sky will stimulate and make local tourism aware of the possibilities within winter tourism.

NIBIO Svanhovd located in Pasvik valley is strongly committed to environmental research cooperation in the Barents region. The station disseminates knowledge and performs R&D based upon the natural environment of this region. We also run an up-to date DNA-laboratory, a national park visitor centre, a botanical garden, and a conference centre.

As the authorised visitor centre for Øvre Pasvik national park we have exhibitions presenting Pasvik valley's unique nature, fauna, culture, and history. In addition, a special brown bear exhibition from which one can learn more about this fascinating animal. We also have a variety of different dissemination activities for groups and school children.

Kind regards
NIBIO Svanhovd

Anne Wikan
Research Station Manager

NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH
NIBIO
Organization NO 988 983 837

46. Dissemination activities from local partner

NIBIO
NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH

To whom it may concern

NIBIO
PO Box 115,
NO-1431 Ås, Norway
Tel: +47 406 04 100
post@nibio.no
nibio.no

Ent. no: 988 983 837

Date: 23.06.2023

NIBIO Svanhovd's contribution to Øvre Pasvik National Park as a International Dark Sky Park focusing on the Visitor Point Gjøken

NIBIO Svanhovd would like to contribute to the dissemination of the Dark Sky project by including the project in the ongoing dissemination activities that take place through out the year.

NIBIO Svanhovd is a research institute which hosts the visitor center for Øvre Pasvik National Park. Due to its unique location in the Pasvik valley it arranges several nature dissemination activities which include, among other topics, biodiversity, primeval forests and nature protection and conservation. Examples of such activities are nature schools for children on wildlife in northern areas, citizen science activities on climate change and phenology for secondary school pupils or open lectures for adults. As a Visitor Center for the Øvre Pasvik National Park and a partner in the national park Visitor Point Gjøken we will increase our focus on light pollution and the importance of natural light for plant, animal wildlife in dissemination activities. Here, Gjøken will be the key location for raising awareness of how to preserve the night sky, organizing night sky experiences for the public, and setting up information posters and educational programs for light pollution.

Dissemination activities on Dark Sky topics will include visitors of all ages, ranging from school children visiting Gjøken participating in the already the established nature schools, to adults participating in open lectures on light pollution or the importance of preserving the night sky.

Kind regards
NIBIO Svanhovd

Snorre B. Hagen
Research director

NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH
NIBIO
Organization NO 988 983 837

47. Letter of support from The Norwegian Trekking Association

Sør-Varanger Turlag

To whom it may concern

Sør-Varanger Turlag is the local member organisation of The Norwegian Trekking Association, Den Norske Turistforening (DNT). DNT is Norway's largest outdoor life organization. DNT aims to promote straightforward, active, versatile and environmentally-friendly outdoor activities and to preserve the outdoors and the cultural landscape.

This letter is written in support of Øvre Pasvik National Board's efforts to achieve Dark Sky certification. We will engage in joint efforts to reduce the level of outdoor light pollution in this area within our framework.

Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies.

This is a most welcome opportunity to increase awarness of qualities, experiences and values on dark sky as an arctic natural light phenomena in our region. In the long run this will have a positive impact on our mindset of outdoor lightning.

Our nature has an extreme variation in light conditions from 2 summer months with midnight sun to 2 winter months with polar night. The focus on Dark Sky will stimulate and make local tourism aware of the possibilities within winter tourism.

In the management of nature is the effect of artificial lighting on wildlife a topic we need to highlight. Not least for the bird life dominated by species from the Siberian taiga, which are rare in the rest of Norway.

Kirkenes 26.11.2021

Hans Holmboe
Board member
Sør-Varanger Turlag

48. Letter of support from Sør-Varanger Camera Club

Jan Erik Meldgaard
Sør-Varanger Fotoklubb
Postboks 343
9915 KIRKENES

29 november 2021

To whom it may concern

This letter is written in support of Øvre Pasvik National Board's efforts to achieve Dark Sky certification. We will engage in joint efforts to reduce the level of outdoor light pollution in this area within our framework.

Øvre Pasvik National Park Board is seeking designation as a Dark Sky Park, where the Visitor Point for the national park at Gjøken will give locals, students and visitors both dark sky experiences and education about the importance of dark skies.

This is a most welcome opportunity to increase awareness of qualities, experiences and values on dark sky as an arctic natural light phenomenon in our region. In the long run this will have a positive impact on our mindset of outdoor lightning.

Our nature has an extreme variation in light conditions from 2 summer months with midnight sun to 2 winter months with polar night. The focus on Dark Sky will stimulate and make local tourism aware of the possibilities within winter tourism.

In the management of nature is the effect of artificial lighting on wildlife a topic we need to highlight. Not least for the bird life dominated by species from the Siberian taiga, which are rare in the rest of Norway.

Sincerely

Jan Erik Meldgaard
Sør-Varanger Fotoklubb
Chairman

49. Letter of support from The Science Center of Northern Norway

VITENSENTERET
NORDNORSK VITENSENTER TROMSØ

Letter of support Dark Sky Øvre Pasvik National Park

Nordnorsk vitensenter, The Science Center of Northern Norway, is excited to be involved in the establishment of the first Dark Sky Location in Norway. We are eager to contribute to the plans Øvre Pasvik National Park have presented in creating alternative learning arenas and meeting places between school, family, and businesses.

Our mission is to increase knowledge about science and technology among children and young people. We will offer services from our academic personnel as well as exhibits focusing on the goals of the Dark Sky Association. We believe that our unique skills and expertise in interactive communication will be useful in demonstrating to the audience of all ages and nationalities the exciting values of the Dark Skies.

From our base close to UiT The Arctic University of Norway in Tromsø we have a long experience in presentations on Aurora Borealis and look forward to bringing our portable Planetarium to public awareness activities at the Øvre Pasvik National Park.

Tromsø, 31.03.23

Tove Marienborg

Tove Marienborg
Direktor
Nordnorsk vitensenter

50. Letter of support from Pasvik Folk High School

Troms og Finnmark fylkeskommune
Romssa ja Finnmárkku fylkkagielda
Tromssan ja Finmarkun fylkinkomuuni

Pasvik folkehøgskole

Svanvik, 01.06.23

LETTER OF SUPPORT

Pasvik folk college will clearly support Øvre Pasvik National Park Bord in the work on approval.

As a Dark Sky Location, it is important to contribute with an increased focus on light pollution.

With the application, Pasvik can be recognized as a place where you can experience dark skies. This experience is becoming increasingly rare in our modern world.

It will be of great importance for business and tourism. And it is important to show the value of the night sky for outdoor life and as an arena for recreation.

Looking at a clear starry sky enhances the nature experience. It can give peace of mind in body and soul, and you can also learn more about space.

Pasvik folk high school will use the area in teaching and we will arrange "star tours" for our students, who come from all over the world and are unlikely to have experienced natural dark nights with the opportunity to see, among other things, the Milky Way. Pasvik Folkehøgskole can also help document the light conditions in collaboration with Øvre Pasvik National Park Board if desired.

We hope that Pasvik will receive international recognition and attention as a Dark Sky Location.

We look forward to it becoming a reality and we believe this to be the first location in Norway and the northernmost in the world.

Pasvik folkehøgskole is a folk high school in Pasvikdalen with approximately 70 students. All the courses are aimed at nature and culture. The school also has an Arctic tourism class.

Yngve Beddari

Yngve Beddari. Teacher at Arctic tourism.

Mona Danielsen

Mona Danielsen. Assistant principal

Postadresse
Pasvik folkehøgskole
Svein H. Sørensens vei 2
9925 Svanvik

Besøksadresse
Pasvik folkehøgskole
Svein H. Sørensens vei 2
9925 Svanvik

E-postadresse
pasvik@tffk.no
Internettside
http://www.pasvik.fhs.no

Telefon
+47 78 96 41 00

Organisasjonsnummer
974 622 696
Bankkonto
4920.20.09181

51. References

Øvre Pasvik National Park, https://www.norgesnasjonalparker.no/en/nationalparks/ovre-pasvik/

National park brochure, https://www.miljodirektoratet.no/globalassets/dokumenter/publikasjoner/brosjyrer/ovre-pasvik_np_e_nett-mai-2011.pdf

Pasvik-Inari Trilateral Park-Europarc Federation, https://www.europarc.org/nature/transboundary-cooperation/discover-our-transboundary-areas/pasvik-inari-trilateral-park-finoru/

Visit Kirkenes, https://www.visitkirkenes.info/

Intact forest landscapes: http://www.intactforests.org/

52. Appendix 1 Lighting Management Plan (LMP) for Øvre Pasvik National Park

1. Purpose and Philosophy

This Lighting Management Plan (LMP) is intended to guide the selection, placement, installation, and operation of all new and replacement/retrofitted light in the park. Its function is to regulate the use of artificial light at night (ALAN) in the park in a way that prioritizes the safety of visitors and staff while minimizing the impact of such light on protected outdoor spaces, viewsheds and wildlife. Therefore, all instances of the use of ALAN in the park will adhere to the principle that outdoor light should be deployed only:

1. when it is strictly needed.
2. where it is needed.
3. in the appropriate amount for a specific task; and
4. with the appropriate spectrum.

2. Applicability

In Norway we have no legislation or regulations aiming directly to limit effects of outdoor artificial lighting on either the experiencing the sky or the ecological effects.
However, there are legislation that in future updated plan may regulate outdoor lighting on a community level as the Land-use Plan, Sør-Varanger municipality (2018) based upon the Planning and Building Act (2008), and the Nature Diversity Act (2009) that on a general level can be used. Also, based on the Nature Diversity Act, the protected areas are managed by the National Park Board in accordance with the means of regulations established by the King in Council. For the Øvre Pasvik National Park and Øvre Pasvik Landscape Protection Area these regulations were enacted by Royal Resolution on the 29th of August 2003.
As of today, there are no installations or buildings with electric power in the Øvre Pasvik National Park. However, the LMP will apply to the National Park Board's starting points and Visitor Point in the outskirts of the park and to the National Park Board's requirements and impact on the Border Guard's facilities along the Russian border and a private cabin in the Øvre Pasvik landscape Protection Area.

The park represents that this LMP meets or exceeds all applicable agency and/or departmental policies regarding outdoor lighting and conforms to all local, regional, and national laws.
The National Park Board will focus on the purpose and the best practices developed in the DarkSky program, both vis-à-vis other authorities and in our own management and care.

3. Exemptions

The following types of outdoor lighting installations shall be permitted in the park and are not subject to the other regulations of this LMP:

1. Lighting installations required by the relevant local, regional or national legal jurisdiction. (there are no such installations today)
2. Lighting installations required temporarily for the safe performance of nighttime tasks, such as construction, at the discretion of the park manager/superintendent. (See “Temporary Lighting,” below)

3. Outdoor lighting controlled with motion-activated switches limiting the duration of illumination to less than five (5) minutes after activation.
4. Unshielded, low intensity 'holiday' lighting whose use is specific to events or time periods as prescribed by the park manager/superintendent.

4. Warranting of outdoor lighting installations

The installation of new outdoor lighting in the park is permitted only in instances where the park manager/superintendent determines that a public safety hazard exists that can only be mitigated using outdoor light at night. Where light at night is required for the safe performance of tasks or safe transit between locations, it will be used; otherwise, the default policy of the park is to not light.

5. Shielding

All outdoor lighting fixtures whose lamps have an intensity of equal to or greater than 500 initial lamp lumens shall be fully shielded. Lighting whose lamps have an intensity of less than 500 initial lamp lumens may be left unshielded for special purposes, such as historical preservation, upon determination by the park manager or superintendent. These lights shall not be exempt from the other requirements of the LMP and must be designed in such a way to minimize impact to the nighttime environment.
Further, to the greatest possible extent, the park will endeavor to limit the inadvertent or incidental emission of light from indoor spaces to the outdoors using window coverings, indoor lighting timers/switches, and other appropriate measures.

6. Spectrum

Outdoor lighting fixtures in the park shall be chosen to minimize the amount of short wavelength light[1] emitted into the nighttime environment. The park will prefer amber and similar colors for lighting and avoid white light wherever practically possible unless a demonstrated need for color rendition exists. In no case shall the correlated color temperature of any lamp exceed 3000 Kelvin.

7. Illumina

Internally illuminated signs[2], and signs illuminated by electronic means such as LEDs and similar lighting[3], are prohibited in the park.

8. Curfew

Dusk-to-dawn lighting is in general not allowed in an International Dark Sky Park. Due to our northern location with extreme light variations from midnight sun to polar night, with no electrical installations in the national park itself and a low density of visitors, a curfew is not a suitable tool.

[1] "Short wavelength" is generally regarded as blue and violet light whose wavelengths are below 500 nanometres.
[2] Also known as "cabinet signs."
[3] Also known as "Electronic Message Centers" (EMCs).

9. Adaptive Controls

To the greatest practical extent possible, all park lighting will make appropriate use of adaptive controls to limit the duration, intensity, and/or extent of outdoor lighting.

10. Temporary Lighting

Allowable installations of outdoor lighting in the park for temporary purposes, as exempted above, shall be limited to the minimum number of nights required to complete the task that the lighting illuminates. Staff responsible for such installations will follow these guidelines to the greatest practical extent and will endeavour to limit as much as possible off-site impacts of such lighting.

11. Visitor Lighting

Lighting of vehicle exteriors, tents, and other personal property belonging to park visitors of shall be limited by the park in such a way as to provide for reasonable use while maintaining the natural character of the park and avoiding the creation of nuisance for other visitors. All lighting shall be restricted in intensity and extent to provide for the legitimate needs of visitors at their campsites. Inappropriate, high-intensity light painting of park landscapes, the use of searchlights, and similar uses of out- door lighting by visitors is prohibited.

12. Definitions

1. Adaptive controls: Any device that, when used in conjunction with outdoor lighting, limits the duration, intensity or area illuminated by the lighting. Examples include automatic switches, timers, and motion sensors.
2. Correlated color temperature: A metric characterizing the color properties (spectrum) of lighting, specified in units of Kelvins.
3. Initial lamp lumens: The number of lumens of light emitted by a lamp when new, not accounting for depreciation due to age. Initial lamp lumens are specified by manufacturers on product packaging or in data sheets.
4. Light painting: The use of portable lighting directed at landscape features for illumination during long-exposure landscape photography.

Svanhovd 3rd of March 2024

Rolf E Sch Kollstrøm
National Park Manager - by authorization from the Øvre Pasvik National Park Board

53. Appendix 2 Presentations in preparation for Øvre Pasvik IDSP certification

The following presentations have been held by Bernt Nilsen in the process of having Øvre Pasvik National Park certified as an International Dark Sky Park.
Some of the presentations have been held for potential partners that will be involved in the promotion of the DarkSky ideas in the future. Others are from interested parties planning similar applications on their own.

Date	Organized by	Audience	Comment
20210927	Øvre Pasvik National Park	Board members	First meeting to inform board members and staff about the DarkSky idea
20211013	Øvre Pasvik National Park	Regional cooperative committee	Various organizations both public and private like reindeer herders, army, fishermen, tourist organizations
20211102	Sør-Varanger Camera Club	Club members	Very skilled nature photographers with a wide national and international network
20220330	Community council	Bureaucrats and politicians	Discussing adopting local regulations to DarkSky ideas
20221206	Forum for Nature and Outdoor Activities (FNF)	Webinar for members in Northern Norway	Discussions on light pollution, activities for young people
20230312	Polish DarkSky organization (POLARIS-OPP)	Webinar for members in Poland	They are planning to establish a DarkSky area
20230614	Bevar Mørket and Polaris-OPP	Joint webinar	Wide audience including astrophysicist and architects
20230904	Kirkenes Rotary Club	Rotary club members	Members have a wide network and influence
20231028	Norwegian Chartered Engineers	National space seminar for STEM-teachers	Great interest both from space researchers and teachers
20231114	Pasvik Folk Highschool	Staff and students	Members from many countries interested in wildlife and nature conservation
20240110	Norske Fjellstuer – Norwegian Mountain Hotels	Norwegian Mountain Hotel owners	Many hotels are considering adjusting to DarkSky requirements in their area

20240222	Svanhovd Environment Centre	Public	Star photography
20240314	Friends of the Earth Sør-Varanger	Public	Focusing on the environmental issues of light pollution.
20240529	Visit Kirkenes	Finnish and Norwegian tourist businesses	Presenting DarkSky opportunities for tourist organisations

54. Appendix 3 List of figures

55. Contact Information

Øvre Pasvik National Park Board

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