

Consultation document

## **Workplan for new part of road E10, Kiruna**

and suspension of existing part from common maintenance

Kiruna municipality, Norrbottens county

2012-10-25



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# 1. Introduction

The town of Kiruna is in the middle of a huge change. The town is being moved because of the expanding mining activity in the Kirunaavaara mine which means that the town needs new urban planning. Due to the deformation zone next to LKAB the existing route E10 will be in the danger zone soon enough. Trafikverket have therefor ordered an investigation on possible ways to reroute E10. Their goal is to create a sustainable solution that can change with the development of the city's needs. The investigation resulted in a suggested route for the new E10 to the north of the city centre which is to be opened in the beginning of 2016.

Previously made investigations in this area are a pre study and a road investigation. These documents can be found in Swedish on Trafikverket's webpage: [www.trafikverket.se/kiruna-nyavagar](http://www.trafikverket.se/kiruna-nyavagar). The road investigation included studies regarding the traffic technical standard, the environmental impact and traffic safety consequences.

Now's the chance to speak up about the new route. Trafikverket have developed a suggestion and we want you to give us your views on the matter. This consultation document describes this suggested route, what it will look like and its impact on the environment and common health. Please take a moment, think about how the new route will affect you and let us know what you think.

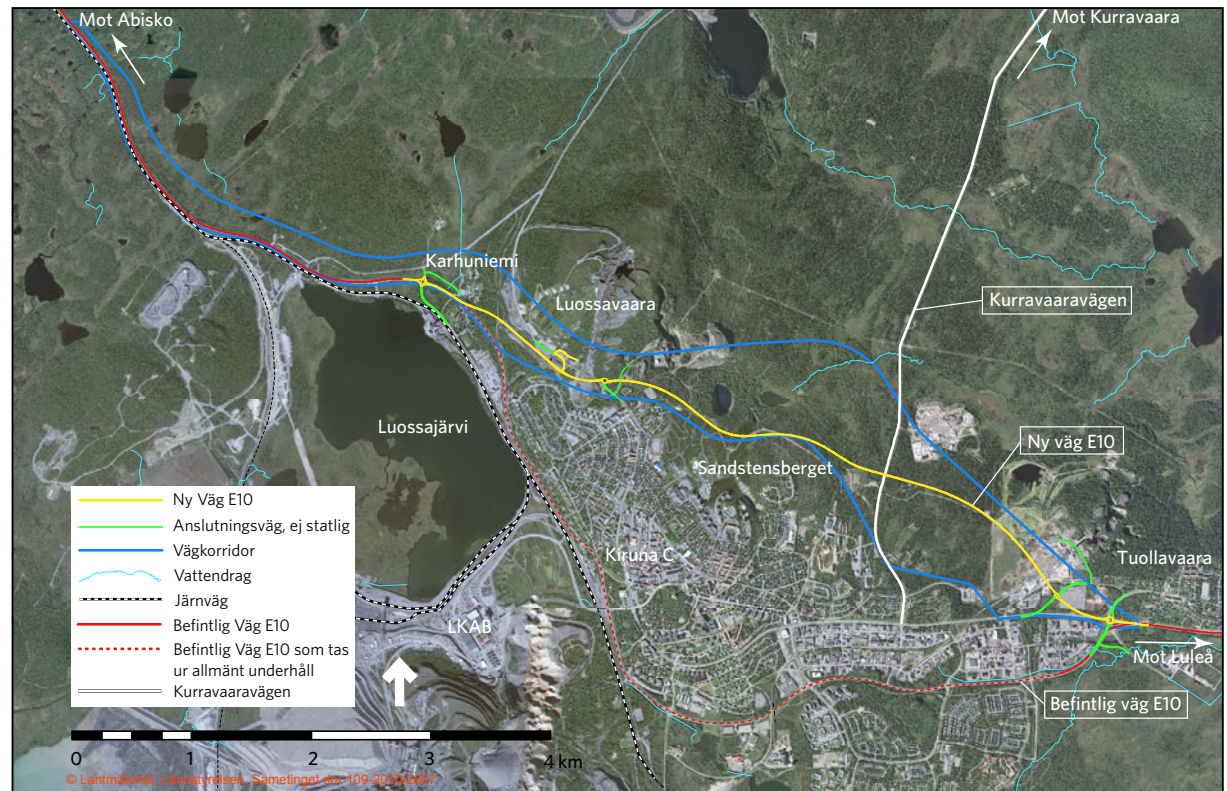


Figure 1.1. Suggested new route E10.

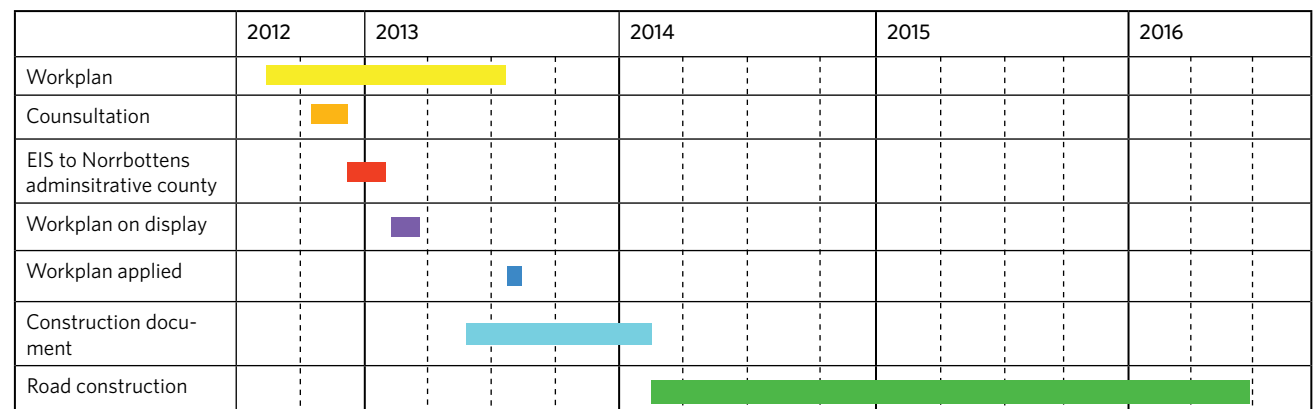


Figure 1.1. Timeplan.



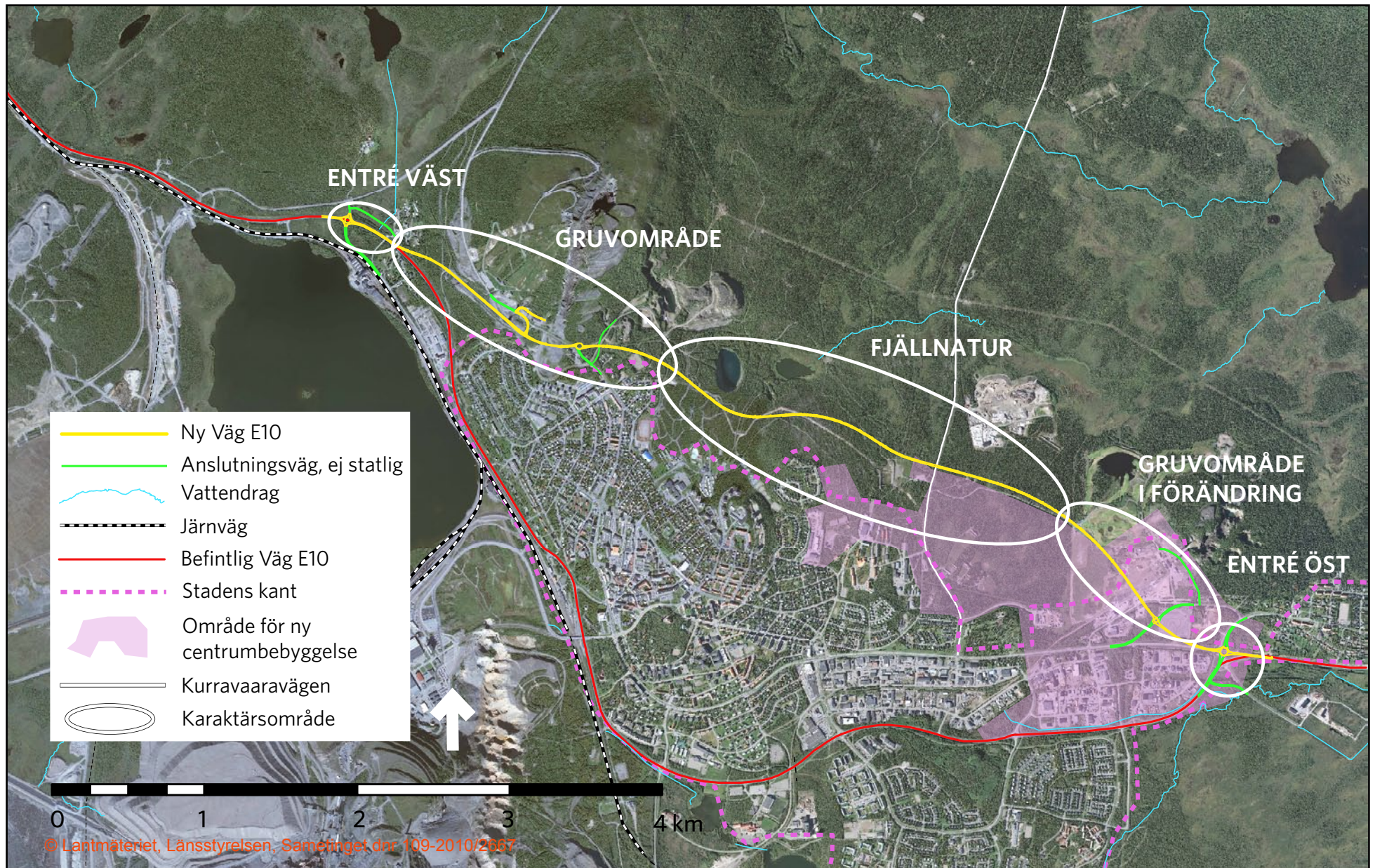


Figure 2.3. The map shows the characteristic areas of the landscape.



## 2. Conditions

Kiruna is situated in a valley with- in the alpine area of Haukivaara. The city is characterised by this, the mining history and the fact that the city was built to remain pleasant in the rough northern climate. The size, formation and buildings of the town are designed to give a feeling of always being close to nature even in the city centre. The new E10 will be situated close to some parts of town north of Kiruna. The closest the road will be to buildings is 40 me- ters.

The purpose with this workplan is to show the new route in detail and it has been adjusted and re- adjusted to meet new conditions. Kiruna municipality are at the same time planning for the new city centre which have been some- thing to adjust the road accord- ingly, figure 2.1.

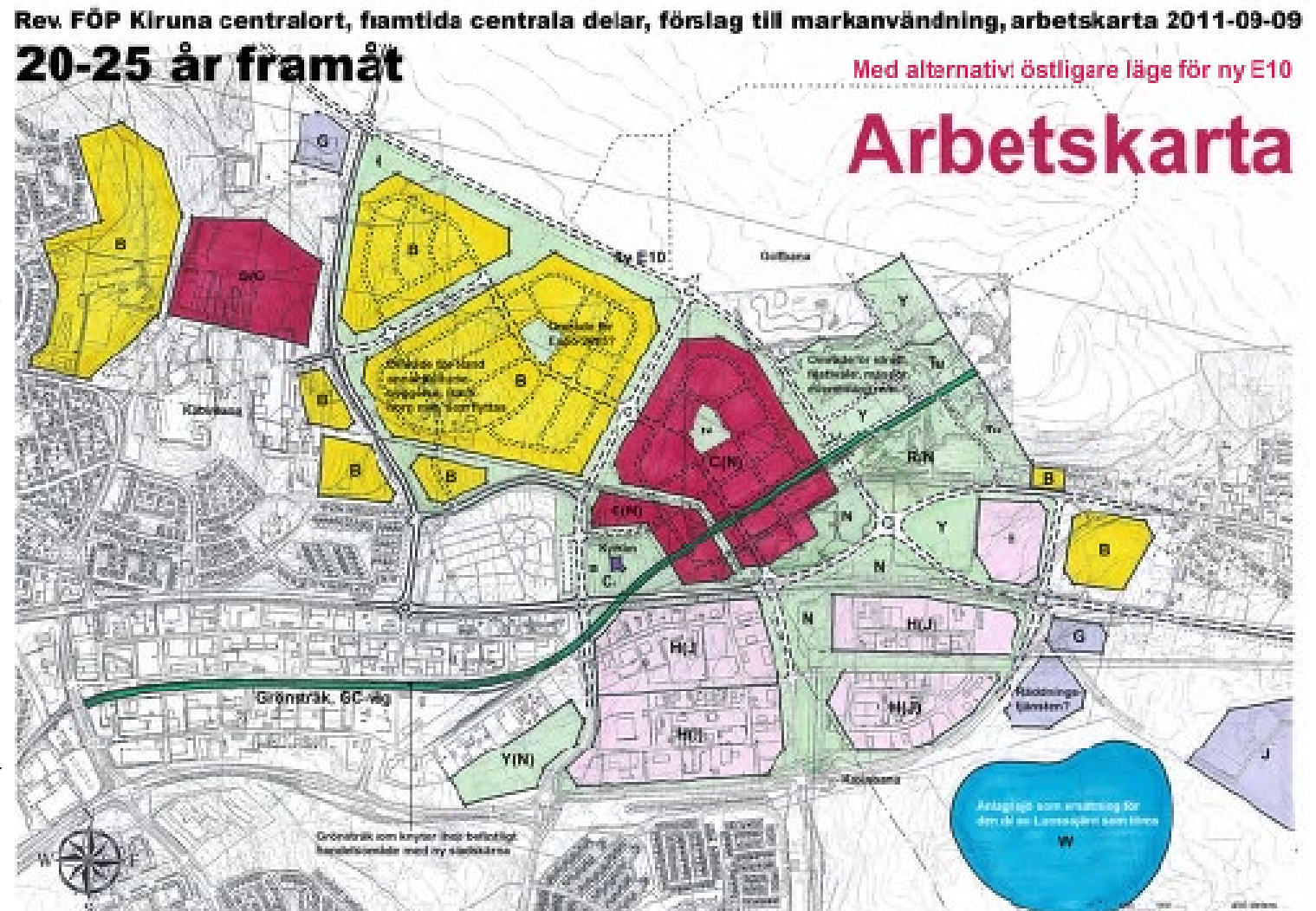


Figure 2.1. Developing areas of Kiruna city.

## Road design

The suggested route takes off west of Tuolluvaara and is reunited with the old E10 just before Lokstallet and Kahruniemi. There will be a roundabout at both ends of the road to connect the new road to the existing E10. The length of this part of the road is about 6.4 km, it will be 9 m wide and built for a speed limit of 80 km/h. The idea for this new road is to make it follow the terrain to give it a natural experience. There will also be a few passages under the road for skiing, scooter and walking tracks. The traffic on this route is expected to be about 8000 per day and year. Of these 8000 passing vehicles 1200 will probably be heavy traffic.

Apart from this applied proposal there was a proposed route northeast of Bogdanofftjärnen, which was preferred by Kiruna municipality. This proposed route would be further away from buildings and would not disturb skiing, scooter and walking tracks as much which is the main reason the municipality prefer it. However it would conflict with the location of a known ore body, Lappmalmen, and areas used by the reindeer industry which both are of national interest, figure 2.2. Also the design of the road wouldn't be as good as for the selected route.



Figure 2.2. Mineraliseringar, Lappmalmen. Karta LKAB.

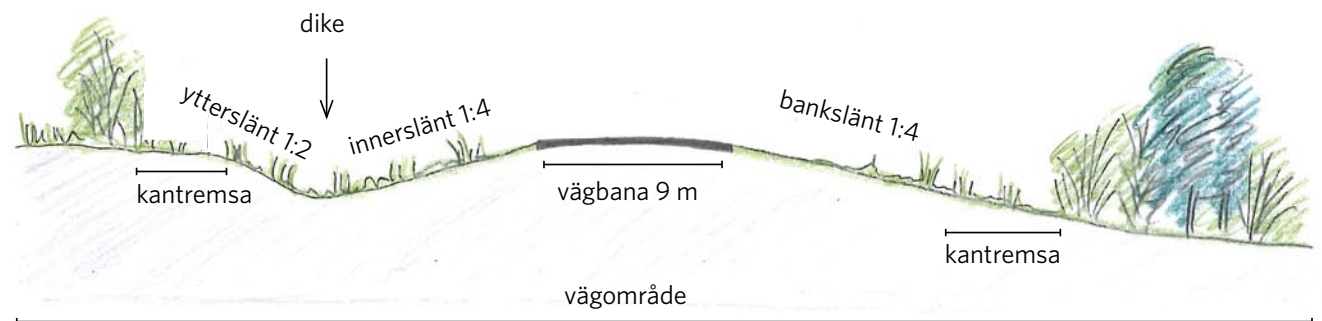
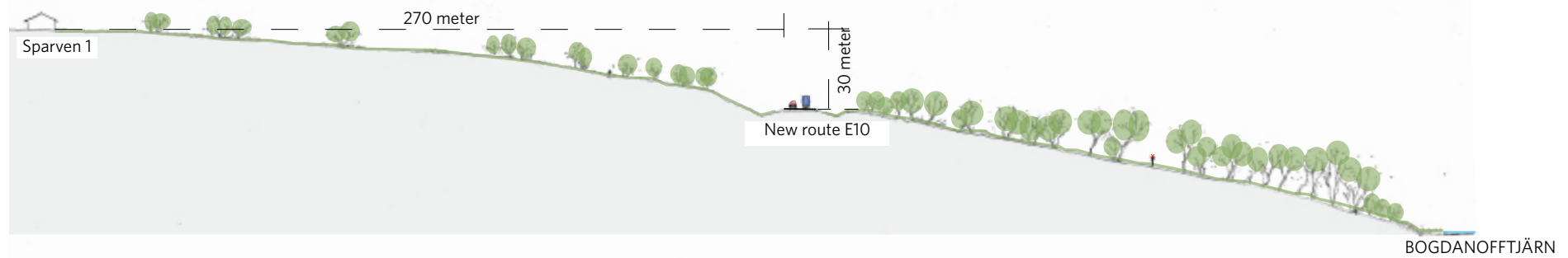


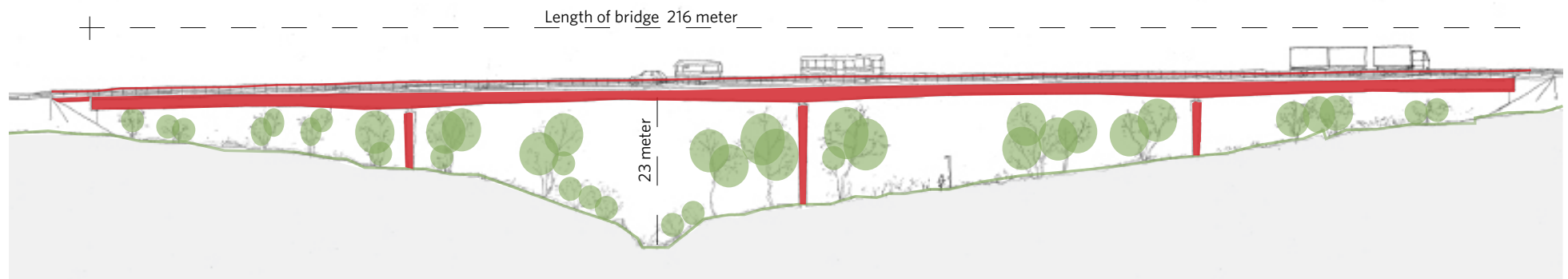
Figure 2.3. Road section

### SECTION 3. SPARVEN 1 - NEW ROUTE E10 - BOGDANOFFTJÄRN

Vid sektion 3/660



### SECTION 2. NEW ROUTE E10 - BRIDGE OVER A RAVINE



### SECTION 1. BROTTAREN 6 - NEW ROUTE E10

By section 4/600

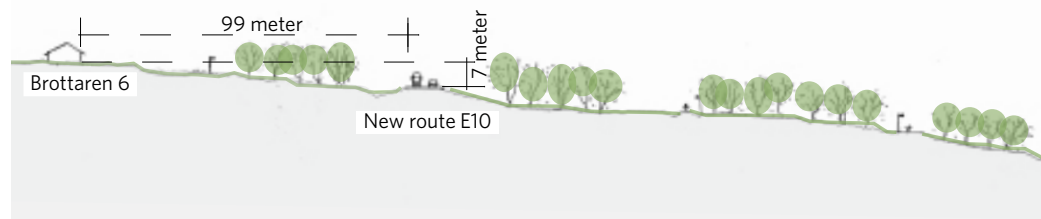


Figure 2.4-2.6. Sections.



### 3. Environmental impact

#### National interest and historical culture

Kiruna city and the area around it have been classified as a cultural environment of national interest because of the unique community design from the beginning of the 20<sup>th</sup> century. There are no historical remains of high value but a few historical memories that are of interest for example, a few trees with inscriptions.

In the surrounding area there are five objects and smaller areas with national interest; the cultural environment of Kiruna city and mine, ore bodies, the railway, the existing E10, the road corridor of the new route E10 and the road to the airport.

Furthermore there are a few areas of national interest that are not directly affected; the reindeer industry, the shooting field of Kalixfors and the outdoor living and environment of the Torne and Kalix rivers.

#### Recreation and nature

Directly to the north of the city centre, Kiruna has a big recreation and exercise area. The new route will cut through this area, which is an important area for the inhabitants and is also an area that is used in the World Cup of skiing. To enable the use of these tracks, the new route will have passages under the road that will connect the north and the south part. In the northwest

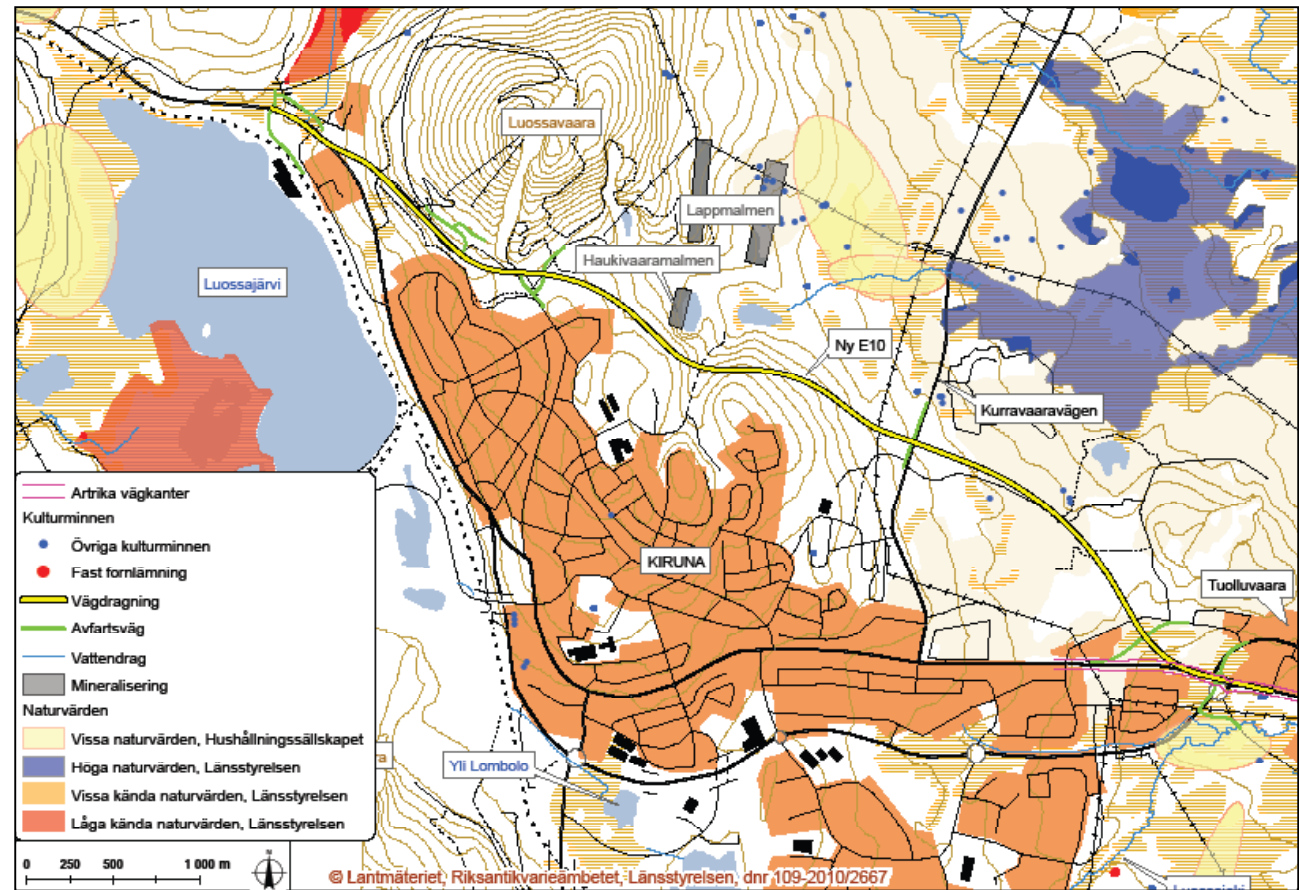


Figure 3.1. Nature-, cultural values and ore bodies.

part of the route there is a skiing slope and a lookout that both the townspeople and tourists visit to see the midnight sun and stunning views. This area will not be affected by the new route. To enable crossings with skiing and exercise tracks a few passages are planned but this also means that some of the tracks will be

rerouted to fit into these passages. The track by Sandstensberget will remain but will be somewhat rerouted.



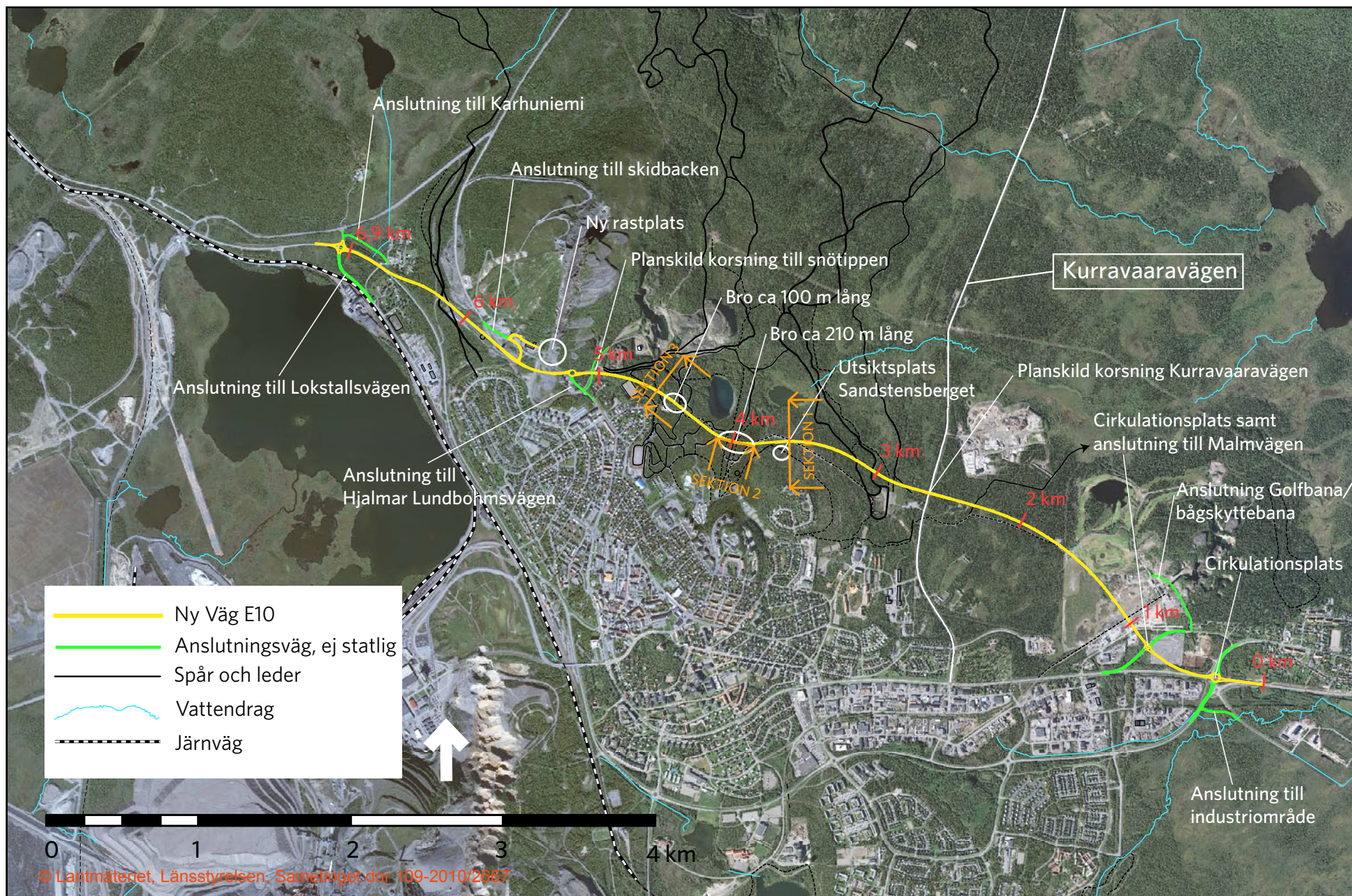


Figure 3.2. Connections and road constructions along the new route E10.





Figure 3.3. The map shows the skiing and walking tracks in the area of the new route and possible passings for all tracks.



## Reindeer industry

The reindeer industry is the oldest industry in the municipality and is still a very important part of their industry and commerce. In total it engages 215-300 people directly or indirectly in the municipality and it requires a lot of space. The reindeers move around all year and every area has its own function. The area north of Kiruna city works as a transportation and pasturage area for the Gabna Sami village reindeers. Further north there is an area of national interest but the suggested route will not conflict with this area due to its southern location.

## Transportation of hazardous cargo

Hazardous cargo is a generic word for substances and objects which can cause great consequences for people, nature and property in the event of an accident. This kind of transport is regulated by the European legislation (ADR).

In Sweden there is no national regulation for what hazard limit is acceptable but the county admin-

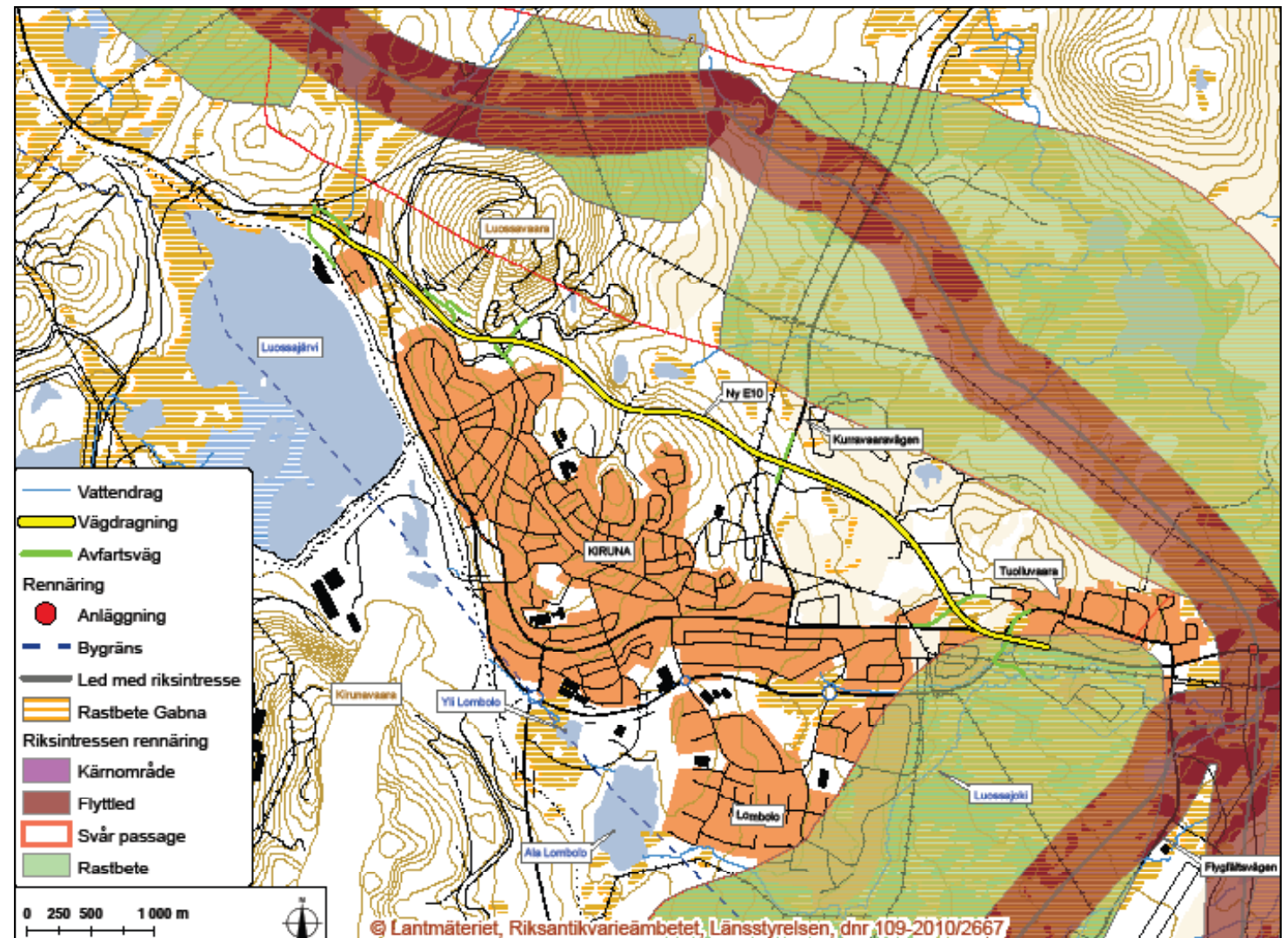


Figure 3.4. Important areas for the reindeer industry

istrative board of Norrbotten county have set up guidelines for the safety distance to routes with hazardous cargo. If these guidelines are met when building, there is no need for more detailed material about the risks or proposals to reduce these risks. A classification of zones from the distance between the source of the risk and different types of ground use has been made in this recommendation.

Within the framework of the workplan there is an analysis about the transportation of hazardous cargo for the proposed route E10. The analysis treats the risk level, probability and consequences for the proposed route and its surroundings to be able to answer the following question: Does the suggested route E10 mean an acceptable risk level for Kiruna? The new route will be the primary transportation road for hazardous cargo through Kiruna. The expected mean day traffic is 8000 vehicles and 14% of these are expected to be hazardous cargo which makes it important to investigate the risk level.

In the area of Karhuniemi and Norra Stallvä-

gen the road will be 40 meters from the closest house and arrangements will be made to reduce any risks to acceptable levels. This means that a railing will keep cars that crash on the road or the direct surroundings, not on properties. Besides that there will be a heat reflecting fence in the case of fire and a collection system for leakages. With these arrangements the area will be safe and the risk level will be below the guideline.

The road will also pass close to the Midnight Sun Cruisers clubhouse but with the same arrangements as at Karhuniemi the risks from hazardous cargo are reduced to acceptable levels. Despite this the road will be 15 meters from their house and will characterize the area.

The golf course and archery court will also be affected by the route but there will not be any arrangements to reduce risks in these areas. Instead it is recommended to move the concerned areas to a safe distance as decided by the county administrative board. When this is done the entire route is risk reduced to within accepted levels.

Avstånd	<30 m	30-70 m	70-150 m	>150 m
Road	No buildings	Industrial areas, smaller markets, parking areas etc.	Houses (up to 2 floors), shops, smaller offices etc.	Houses and other personal business

Figure 3.5. Safety distances according to the county administrative board of Norrbotten

## Noise pollution

The government has given guidelines for the noise pollution from traffic that should not be exceeded when building new houses, building or renovate infrastructure.

The guidelines are:

- 30 dBA equivalent level inside the house
- 45 dBA maximum level inside the house at night
- 55 dBA equivalent level by the outside wall
- 70 dBA maximum level outside in the garden.



Figure 3.6. The road will pass Porfyrvägen at about 90 meters distance in the northwest part of Kiruna.

The suggested new route E10 will go between the neighbourhood of Toulluvaara and the industrial area of Lokstallsområdet. The speed limit will be 80 km/h and there are three neighbourhoods which are situated closer to the new road than any other: Lokstallsområdet/Karhuniemi, Porfyrvägen and Fjällgatan by Loussavaara. These areas have been studied more closely, with consideration to noise pollution, because of the distance to the new road.

It is estimated that there in the Lokstallsområdet/Karhuniemi area are 10 houses which will have a sound level over the guideline of 55 dBA outside. Sound reducing actions will be taken.

The neighbourhood of Porfyrvägen in Loussavaara will not suffer from sound levels exceeding the guidelines, partly thanks to the surrounding terrain that effectively shields the sound of traffic. Therefore, in this area, there is no need for sound reducing action.

In the neighbourhood of Fjällgatan in Loussavaara it is estimated that four houses will suffer from sound levels exceeding the guideline of 55 dBA outside. The highest levels of 60 dBA will be found 5 meters from the ground. In this area sound reducing actions will be needed.

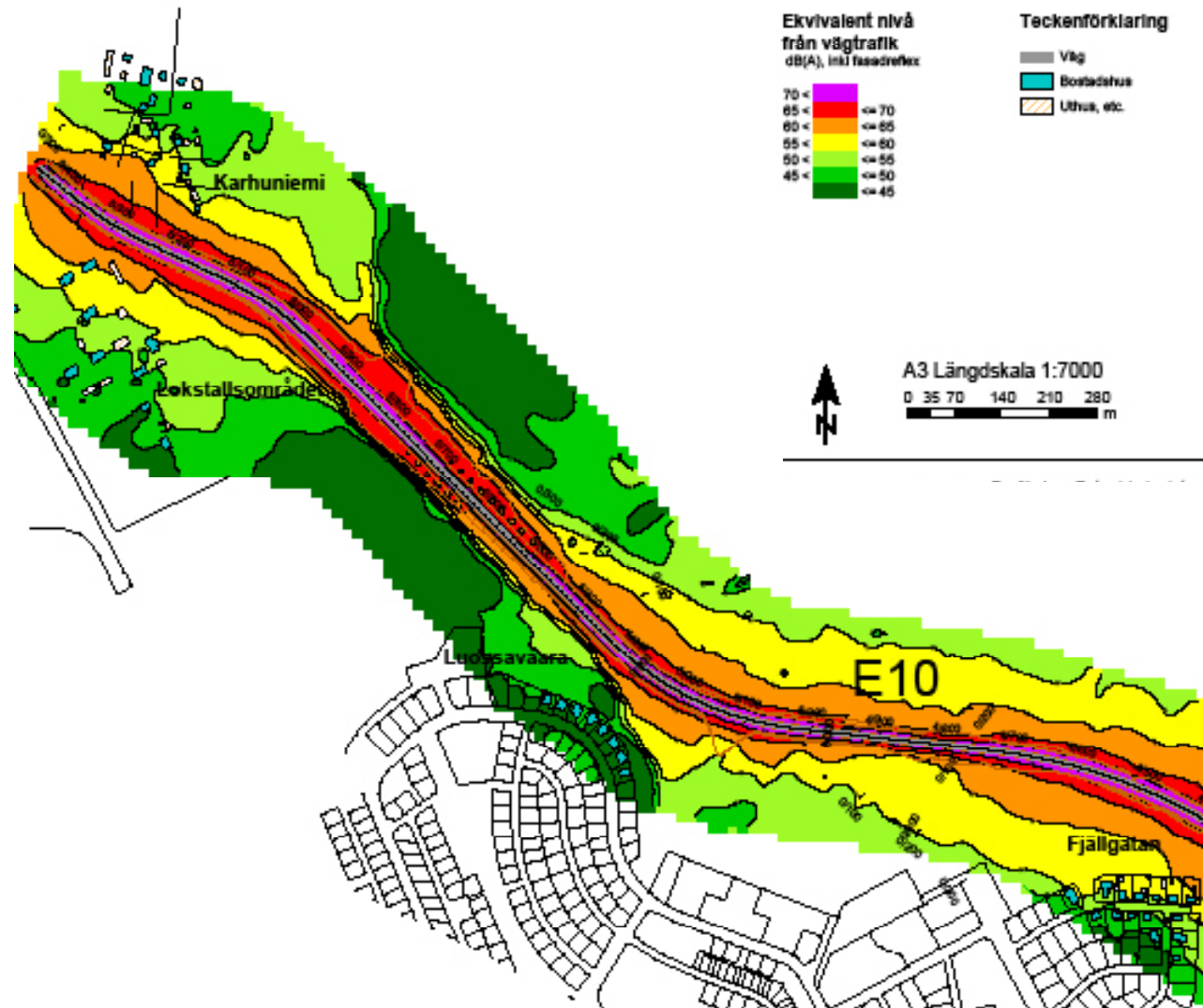


Figure 3.7. The north part of the new route E10 - Ekvivalent sound level 2 meters above ground.



## Air quality

The northern geographical location of Kiruna means that the general background levels of different air pollutants are very low. According to the measurements that Kiruna municipality has taken and is still conducting the air quality is good but when comparing the background data with data from Kiruna center one can see that pollution from society exists.

The new E10 route to the north and northeast of Kiruna will mean a greater impact on the air quality in the areas of the planned route. However the pollution in the city is estimated to decrease due to less passing traffic.

In the future the city will be moved northeast, towards the new route, which will result in a more urban situation for the new route. This also means that the surrounding houses would close the air in again and the pollution concentration would once again increase. Currently the impact of traffic on the air quality is estimated as moderate. The proposed changes are still expected to meet today's directives on environmental quality. The main pollutant in the investigation will be nitro dioxide (NO<sub>2</sub>) and particles smaller than 10 micrometre (PM<sub>10</sub>).

## Impact during building

During the construction of new route E10 there will probably be a few disturbances for the neighbourhood, the reindeer industry and traffic. The construction site will be planned and carried on to avoid as many disturbances and conflicts as possible without risking water and soil pollution. Most of all the construction will, at times, increase the disturbance of traffic. The area will be closed which means civilians will not be able to pass with their car, scooter, dog sled, skis etc. as they would have been able to previously. Provisional solutions and passings will probably be needed during the construction period. The traffic during construction is often slow and will also need provisional crossings and roads which probably will result in conflict with regular traffic. During the time of construction there will be a temporary increase in sound level, air pollution and dust dispersal due to transportation, machinery and temporarily relocating traffic through neighbourhoods.





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