



Pyhäjärven Murtomäki 2 -tuulivoimahankkeen kuljetus selvitys

11.12.2023

Alueelle on hankekehittäjän toimesta teetetty kaksi erillistä kuljetus selvitystä, jotka on koottu tähän dokumenttiin yhteen. Näiden selvitysten perusteella on tarkasteltu kuljetusreitit Raahen ja Kalajoen satamista hankealueelle.

Eolus Energy Oy

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ROUTE SURVEY MURTOMÄKI 2

1. Implementation

Date	8.5.2023	
Revision nr - modified by	1.0 –SK	
Time	12:00-18:00	
Weather	+12 - +15C	
Conditions	Dry, Sunny	
Participants	Function	Company
Sami Kivelä	Site Manager	Silvasti

1.1 Start and end points of the route

Start point(s)	Coordinates	End point	Coordinates
Port of Kalajoki	64.218094, 23.707825	Site entrance Murtomäki	63.735837, 25.700444

1.2 WTG type

Number of WEA	Type WTG	Type tower	Type blade
?	?	?	?

1.3. Total dimensions checked

Component	Length	Width	Height	Weight	Overhang
Blade	92,0m	4,60m	5,50m		? m
Tower	45m	6,30m	7,50m	?	



2. Result

Purpose of this survey was to define feasible route for transports with total dimensions stated in the report from port of Raahe to site area Murtomäki, in Pyhäjärvi municipality, Finland.
Location of the site entrances are unknown, used estimated site entrance.

Survey is based on use of Super wing carrier or similar for blade transports and semitrailer for tower transports.

Some of the modifications along the routes were already built at the time of the survey. Final dimensions of all drivable and oversail areas to be defined after transport dimensions of blades and heavy components are confirmed.

All modifications mentioned in the report are needed to enable the transports.
Modifications inside of port area and factory area are excluded from this report.

On the basis of the executed survey, route from POL until to the site entrance is feasible when modifications shown in this document are made.

2.1 Disclaimer of liability

This survey is valid only on the day it is compiled.
The given route is subject to final approval by the local authorities.
A test permit needs to be applied in order to define if heavy transport is possible on the defined route.
A second feasibility check of the proposed route must be done at least 10 weeks before start of deliveries.

3. Route and maps

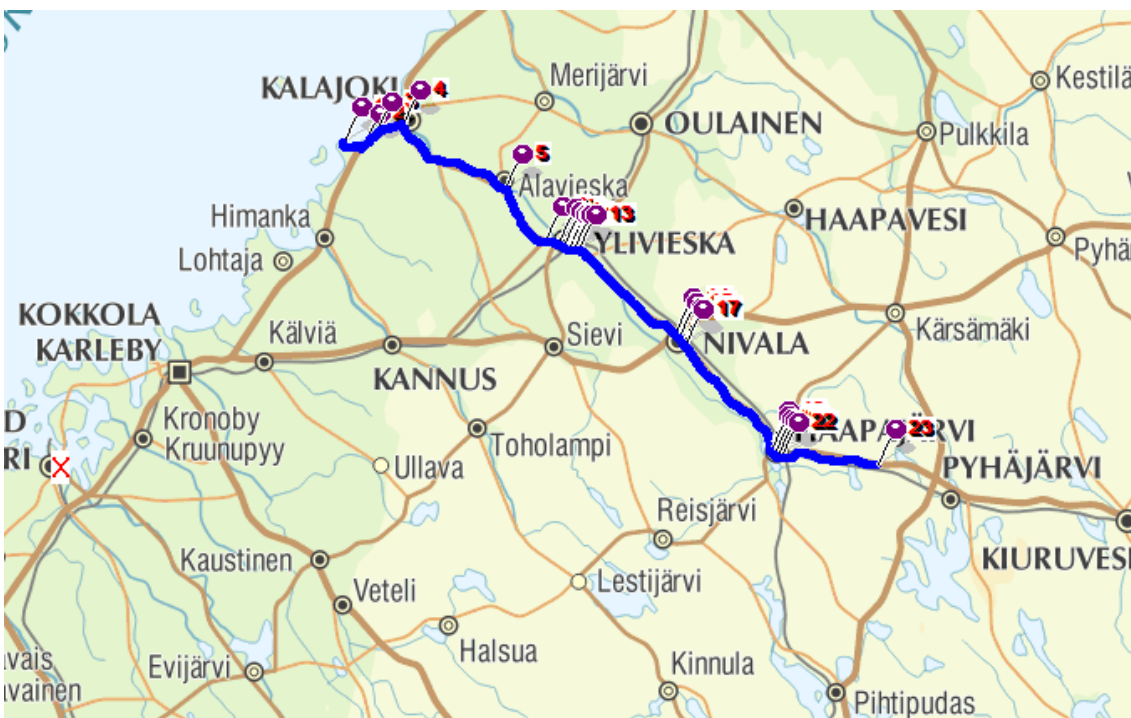
3.1 Overall route

Total length of the route(s) from the port: Route - 126km.

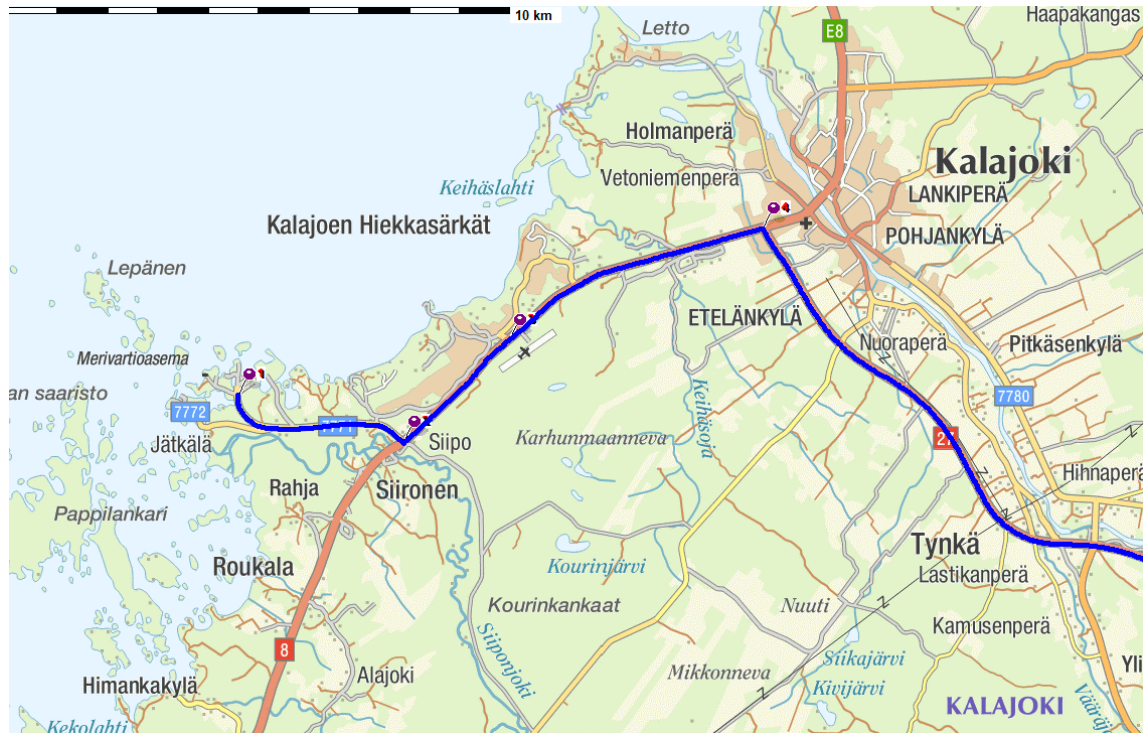
Route in google maps: <https://goo.gl/maps/cxAtJgab91BpDNk16>

Route description:

Route : Port of Kalajoki – road 7771 – road 8 – road 27 – Site entrance Haapajärventie 1152, Pyhäjärvi.



Map. 1. Route overview

3.2 Maps 2-7 – Positions noted.

Map 2. First part of the route.



Map 3. Second part of the route.



Map 4. Third part of the route.



Map 5. Fourth part of the route.



Map 6. Fifth part of the route.



Map 7. Last part of the route.

4. Individual route sections

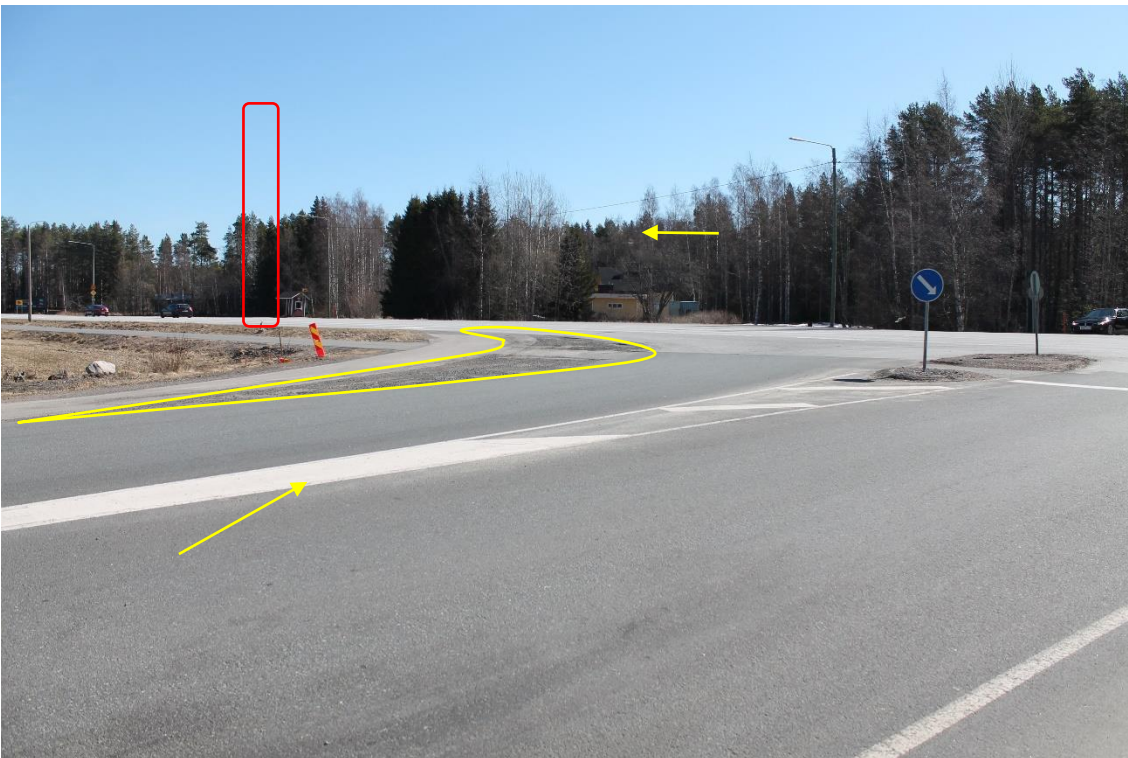
Pos 1/Pic 1. Exit at Kalajoki port. <https://goo.gl/maps/yrYTFaRtjjanndC8A>



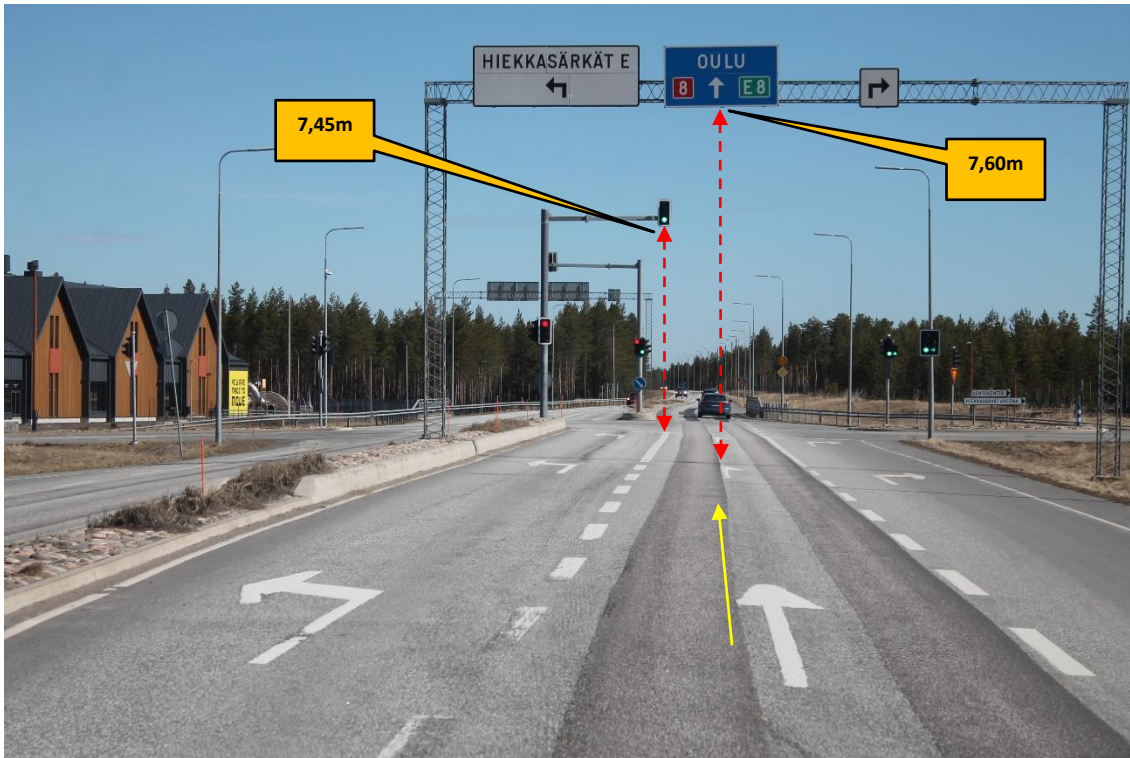
Pos 1/Pic 2. Exit at Kalajoki port toward road 7771.
Modifications : N/A



Pos 2/Pic 3. Turning from road 7771 toward road 8. <https://goo.gl/maps/ZAwFRpyGBs4upWun6>
Marked lamp post (missing) need to be removed.



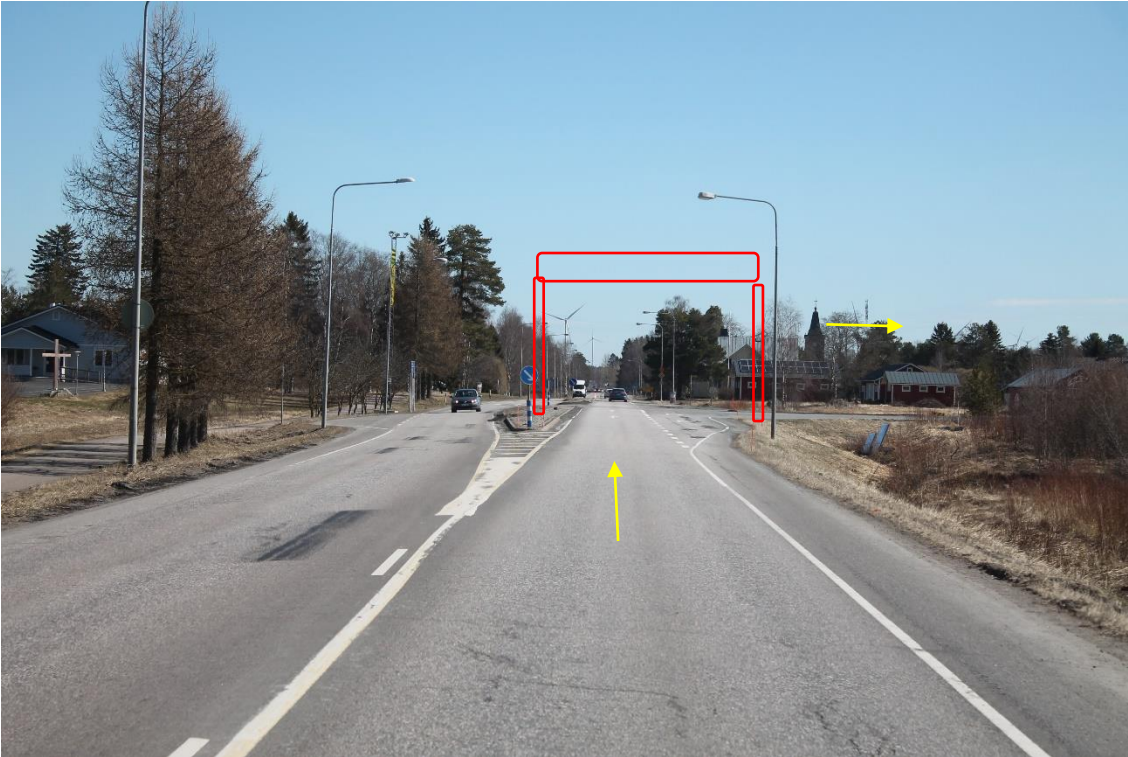
Pos 2/Pic 4. Turning from road 7771 toward road 8.
Marked lamp post (missing) need to be removed. Marked area need to be filled and drivable.



Pos 3/Pic 5. Road 8. <https://goo.gl/maps/42DT7D9Rz1KYUi8R8>
Modifications: N/A.



Pos 3/Pic 6. Road 8.
Modifications: N/A. Height of the rail is 1,10m.



Pos 4/Pic 7. Turning from road 8 toward road 27. <https://goo.gl/maps/QrFYMMwQY48TEcE9>
Marked portal (missing) need to be removed. Marked area need to be filled. Marked lamp posts (2pcs) and signs need to be removed.



Pos 4/Pic 8. Turning from road 8 toward road 27. Marked lamp posts (missing 2pcs) and signs (missing) need to be removed. Marked area need to be filled.



Pos 4/Pic 9. Turning from road 8 toward road 27. Marked lamp post (missing) and signs (missing) need to be removed. Marked areas need to be filled.



Pos 5/Pic 10. Road 27 in Alavieska. <https://goo.gl/maps/qwZE6KPTHdZaPBt59>
Marked portal (missing) need to be removed.



Pos 6/Pic 11. Road 27 in Ylivieska. <https://goo.gl/maps/MTkoZGUZLhy1fFs4A>
Marked portal (missing) need to be removed.



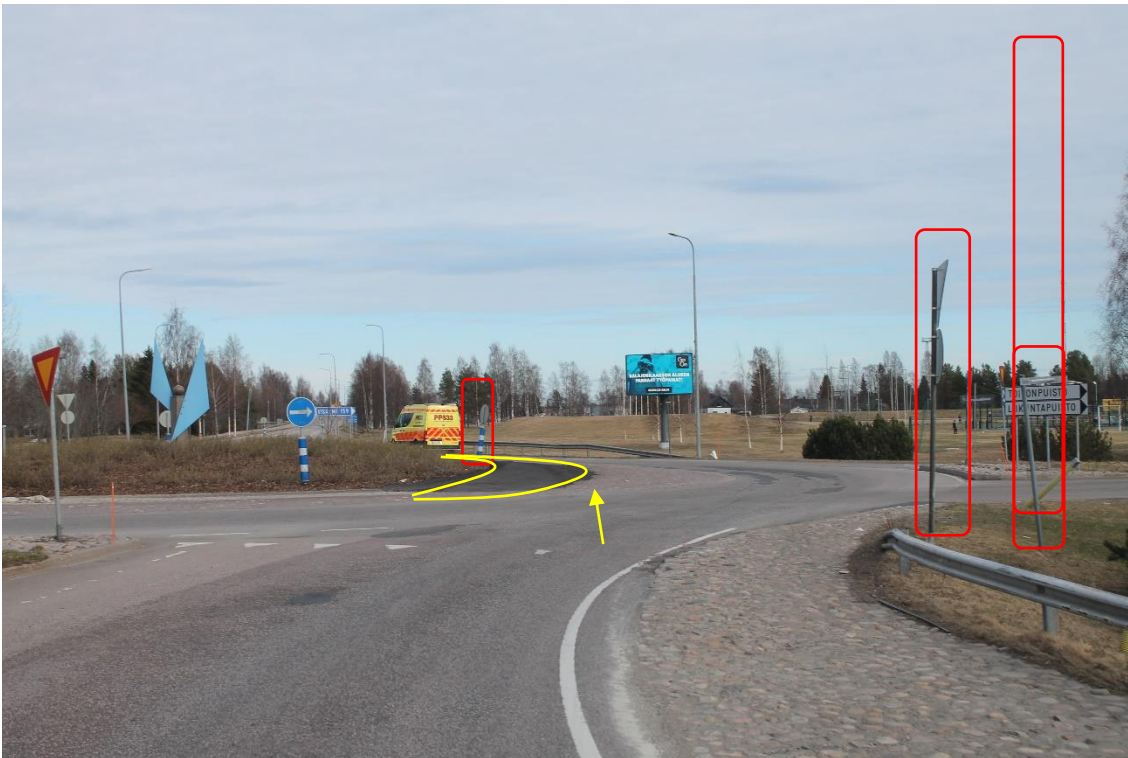
Pos 7/Pic 12. First roundabout on Road 27. <https://goo.gl/maps/DPdr3QMEoa45F6Nw8>
Continue straight on road 27. Marked signs (one missing) and lamp post (missing) need to be removed.
Marked area need to be filled and drivable.



Pos 7/Pic 13. First roundabout on Road 27.
Continue straight on road 27. Marked sign need to be removed.



Pos 8/Pic 14. Second roundabout on Road 27. <https://goo.gl/maps/MSQUoRtCQnoKuMHTA>
Continue straight on road 27. Marked signs and lamp posts 2pcs (missing) need to be removed.



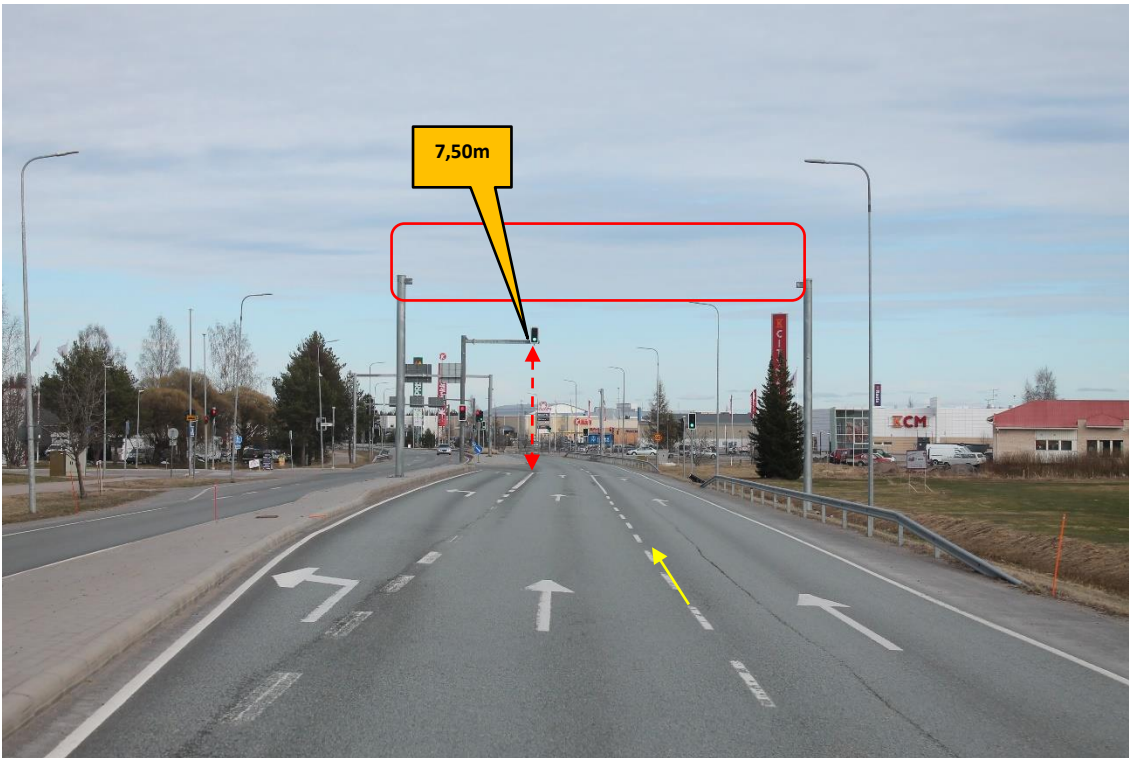
Pos 8/Pic 15. Second roundabout on Road 27.

Continue straight on road 27. Marked signs and lamp post (missing) need to be removed. Marked area need to be filled and drivable.



Pos 8/Pic 16. Second roundabout on Road 27.

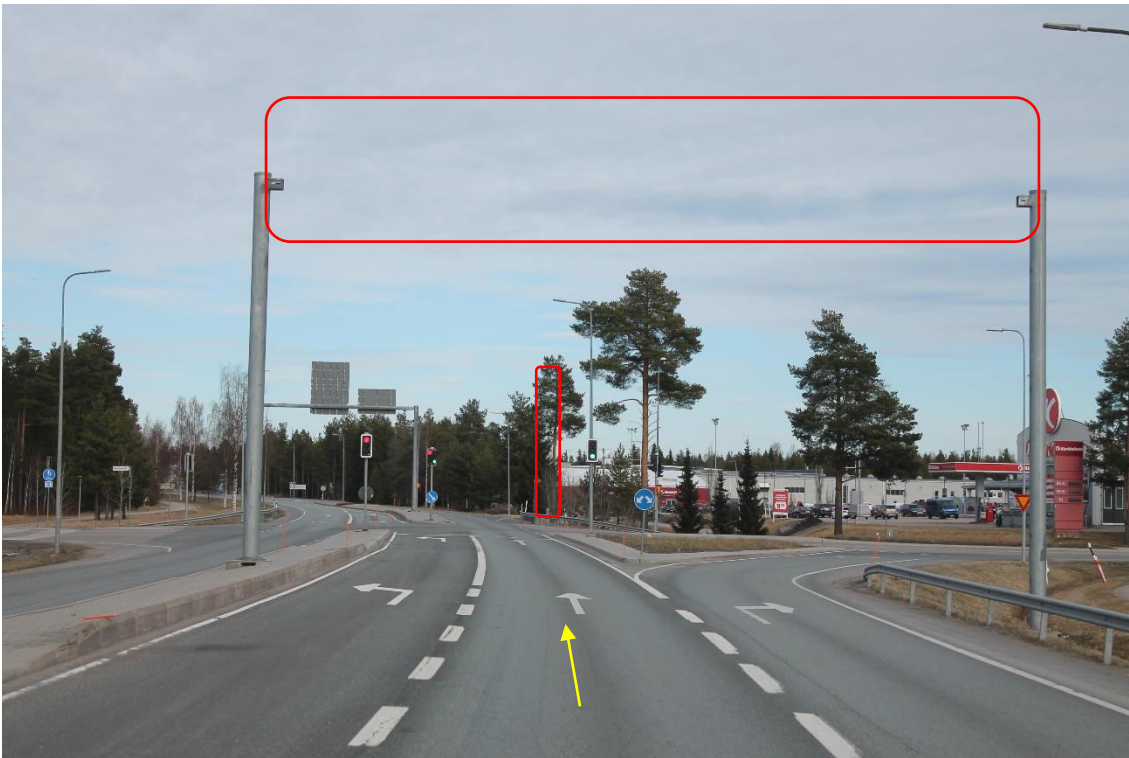
Continue straight on road 27. Marked sign need to be removed. Marked area need to be filled and drivable.



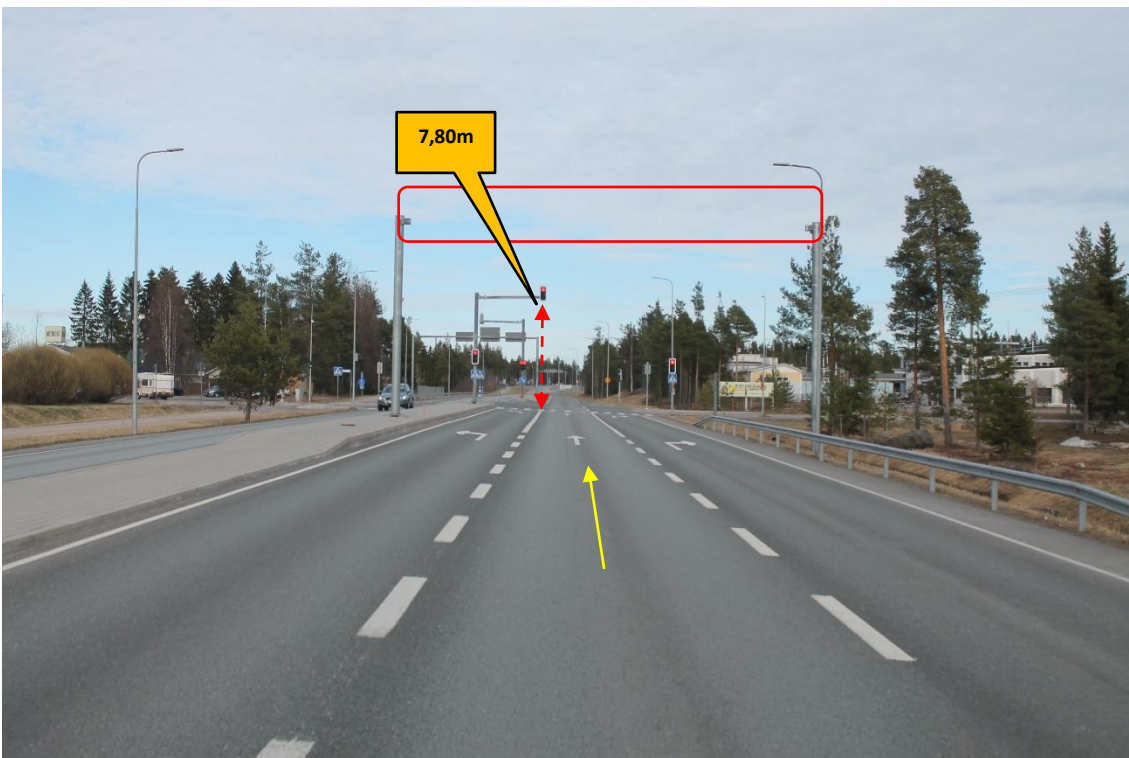
Pos 9/Pic 17. Road 27 in Ylivieska. <https://goo.gl/maps/wv75LEXiS5vCRJSq8>
Marked portal (missing) need to be removed.



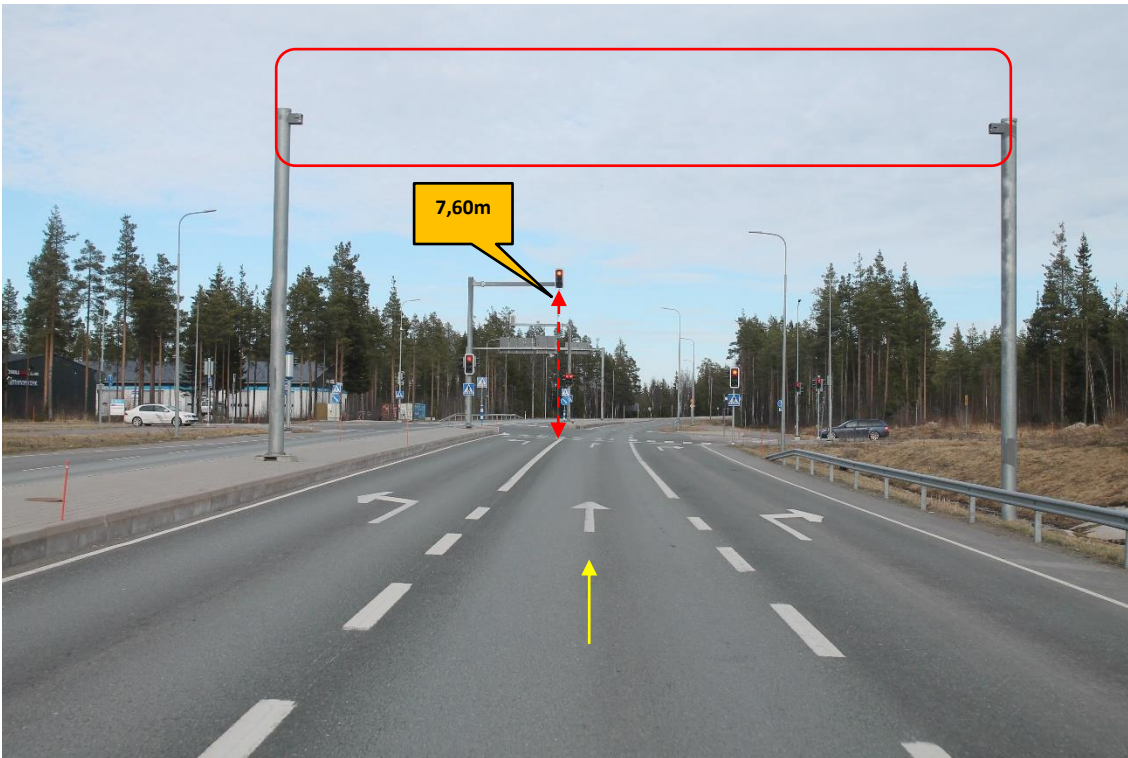
Pos 10/Pic 18. Road 27 in Ylivieska. <https://goo.gl/maps/HB4hU8AYi14DyQkU7>
Marked portal (missing) need to be removed.



Pos 11/Pic 19. Road 27 in Ylivieska. <https://goo.gl/maps/mDYoQtKEMtYKUhuH6>
Marked lamp post (missing) and portal (missing) need to be removed.



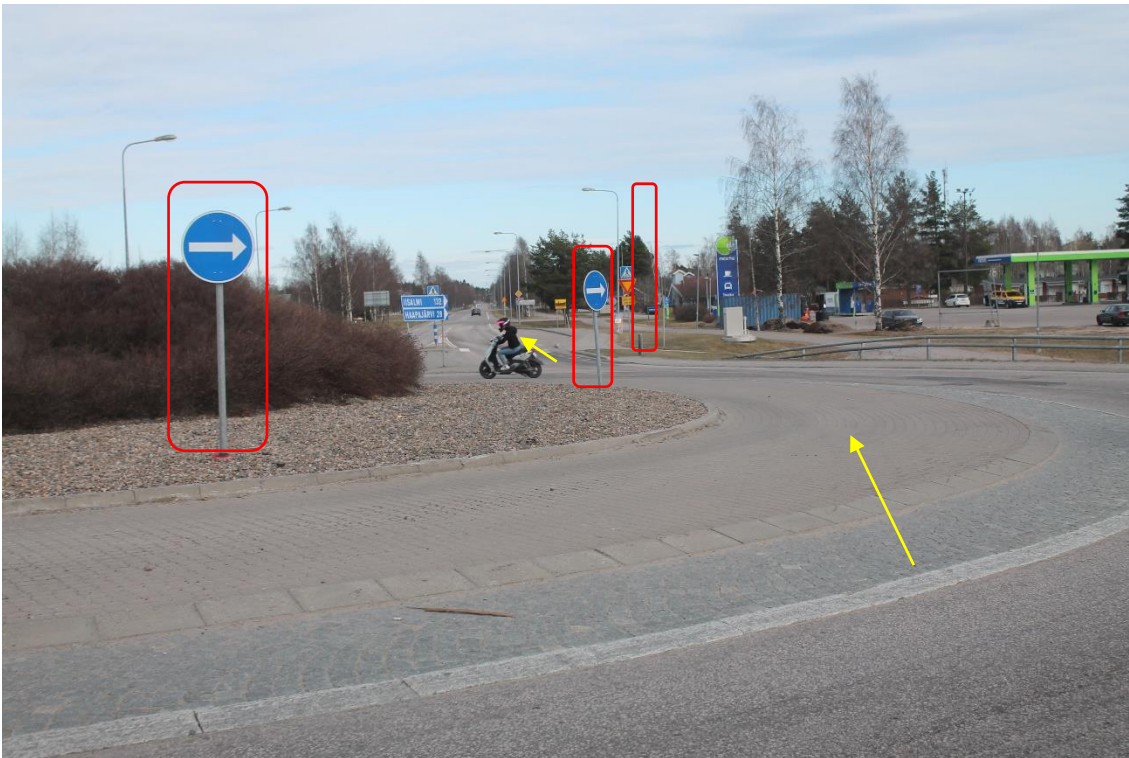
Pos 12/Pic 20. Road 27 in Ylivieska. <https://goo.gl/maps/xRzAgjyK9BYSZxEw5>
Marked portal (missing) need to be removed.



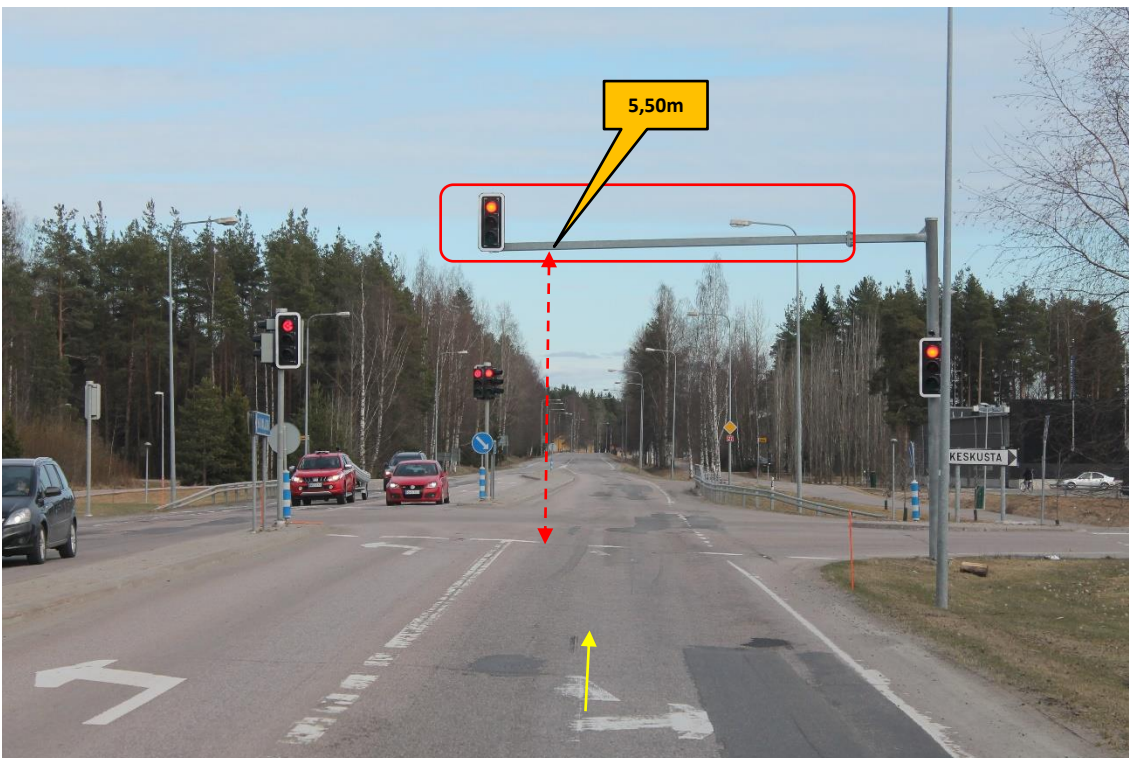
Pos 13/Pic 21. Road 27 in Ylivieska. <https://goo.gl/maps/n9WtYbcS3wfKsRWu5>
Marked portal (missing) need to be removed.



Pos 14/Pic 22. Roundabout on road 27 in Nivala. <https://goo.gl/maps/DmZaZBRWCJhqZoLy6>
Continue straight. Marked signs and lamp post (missing) need to be removed.



Pos 14/Pic 23. Roundabout on road 27 in Nivala.
Continue straight. Marked signs and lamp post (missing) need to be removed.



Pos 15/Pic 24. Road 27 in Nivala. <https://goo.gl/maps/vbmc3SSB4CqMdRN69>
Marked portal need to be removed.



Pos 16/Pic 25. Road 27 in Nivala. <https://goo.gl/maps/koozJ1AvfJ2ir4Hi9>
Marked portal need to be removed.



Pos 17/Pic 26. Road 27 in Nivala. <https://goo.gl/maps/7V5XxLvcW9r4u68t7>
Need to use counter lane or signs need to be removed.



Pos 18/Pic 27. Road 27 in Haapajärvi. <https://goo.gl/maps/AqL5cLpBu11soGA66>
Need to use counter lane.



Pos 19/Pic 28. Road 27 in Haapajärvi. <https://goo.gl/maps/SgsxkaJi9RDHvih79>
Marked portal (missing) and lamp post (missing) need to be removed.



Pos 20/Pic 29. Road 27 in Haapajärvi. <https://goo.gl/maps/7HpqnuQfrn9onqKp6>
Need to build road thru roundabout. Marked signs need to be removed.



Pos 20/Pic 30. Road 27 in Haapajärvi. Need to build road thru roundabout. Marked areas need to be filled and drivable. Marked signs need to be removed.



Pos 20/Pic 31. Road 27 in Haapajärvi. Marked sign need to be removed.



Pos 21/Pic 32. Road 27 in Haapajärvi. <https://goo.gl/maps/D2m5GYWdy3pyZgd4A>
Need to use counter lane.



Pos 22/Pic 33. Road 27 in Haapajärvi. <https://goo.gl/maps/AQ9DrfitjNp9Cs8v9>
Marked sign need to be removed.



Pos 23/Pic 34. Site entrance. Turning from Road 27 toward Murtomäki site area.
<https://goo.gl/maps/cJiUoRQA4bXGdQZQ7>
Site entrance to be constructed according to turbines suppliers specifications.



Pos 23/Pic 35. Site entrance. Turning from Road 27 toward Murtomäki site area. Site entrance to be constructed according to turbines suppliers specifications.



Pos 23/Pic 36. Site entrance. Turning from Road 27 toward Murtomäki site area. Site entrance to be constructed according to turbines suppliers specifications.

5. General notes regarding overhead lines

Based on the survey 8.5.2023 there are following amount of overhead lines between port of Kalajoki and site Entrance Murtomäki 2 :

Low voltage protected height under 7,50m 0 pcs.

Phone cable protected height under 7,50m 0 pcs.

High voltage height under 8,50 m (transport height + safety margin 1,0 m) 3 pcs.

Traffic portal height under 7,60 m 11 pcs.

6. Uncommitted cost estimation for route modifications specified in this document;

In total EUR 145.000,00 vat0%

Which shared as follows prices vat 0%;
Street lightning + trafficlighs etc EUR 27000,00

Civil and construction works EUR 55000,00

Traffic signs and portals EUR 35000,00

Overhead cables and poles EUR 28000,00

Estimated prices based on:

- Silvasti route survey 2023 for route Kalajoki port – site entrances beside road 27 at Haapajärvi
- former project accounting at years 2016-2022
- a- ll obstacles removed/replaced over project with no need to handle them during transportations
- one buildup and teardown of road widening, filling, levelling of areas
- unit rates and circumstances as per former projects at same area/positions
- full acceptance from road authority, road contractors, municipalities, landowners etc
- presently accepted working methods on public roads
- Silvasti handling fee of 10 % included to cost estimates

Cost estimates excluding;

- any further civil engineering like specialist planning, measuring services, static calculations, traffic management on highway areas, strengthening/re-inforcing of roads, bridges etc
- maintenance cost like refilling, snow removal, deicing, moisturing etc during the project
- costs from any construction works at site entrance junctions (pos23 in this case)

ROUTE SURVEY

Hallakallio



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Revision	Date	Changes	Author
01	19.6.2023	First edition	JLa
02	3.7.2023	Written explanations added	SLo

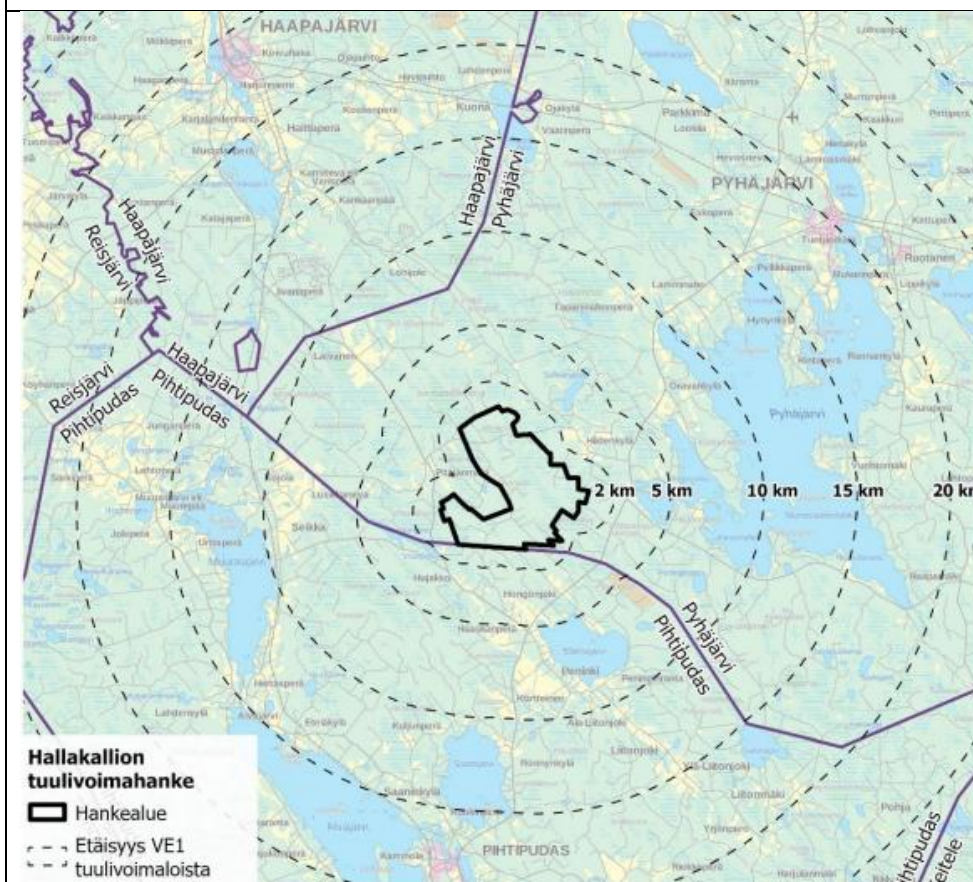
General Information

Customer Details

Company: YIT Suomi Oy
Contact person: Meri Norja
Address: Panuntie 11
ZIP code, City: 00620 Helsinki
Phone: +358 40 724 5793
E-mail: meri.norja@yit.fi

Description of survey and details

The Purpose of this route survey was to find feasible routing from most suitable port to wind park in Hallakallio, in Pyhäjärvi municipality



Scope of works

Starting point	1) Port of Raahe 2) Port of Kalajoki (Rahja)
Destination	Hallakallio Wind Park Pitäjänmäentie FI-86850 Pyhäjärvi

Cargo specifications (dimensions in cms and kgs)

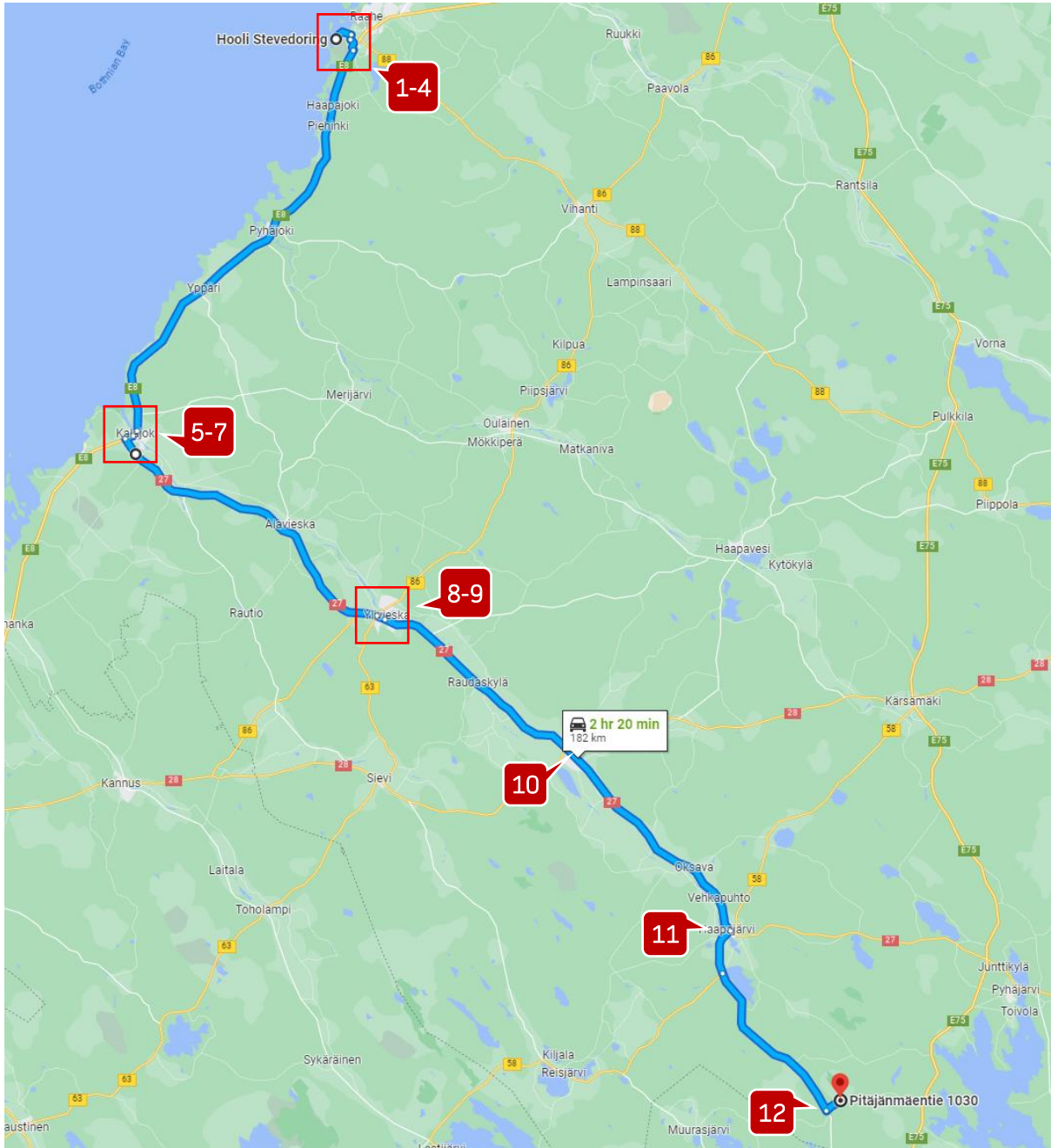
Item	Length	Width	Height	Weight

Information

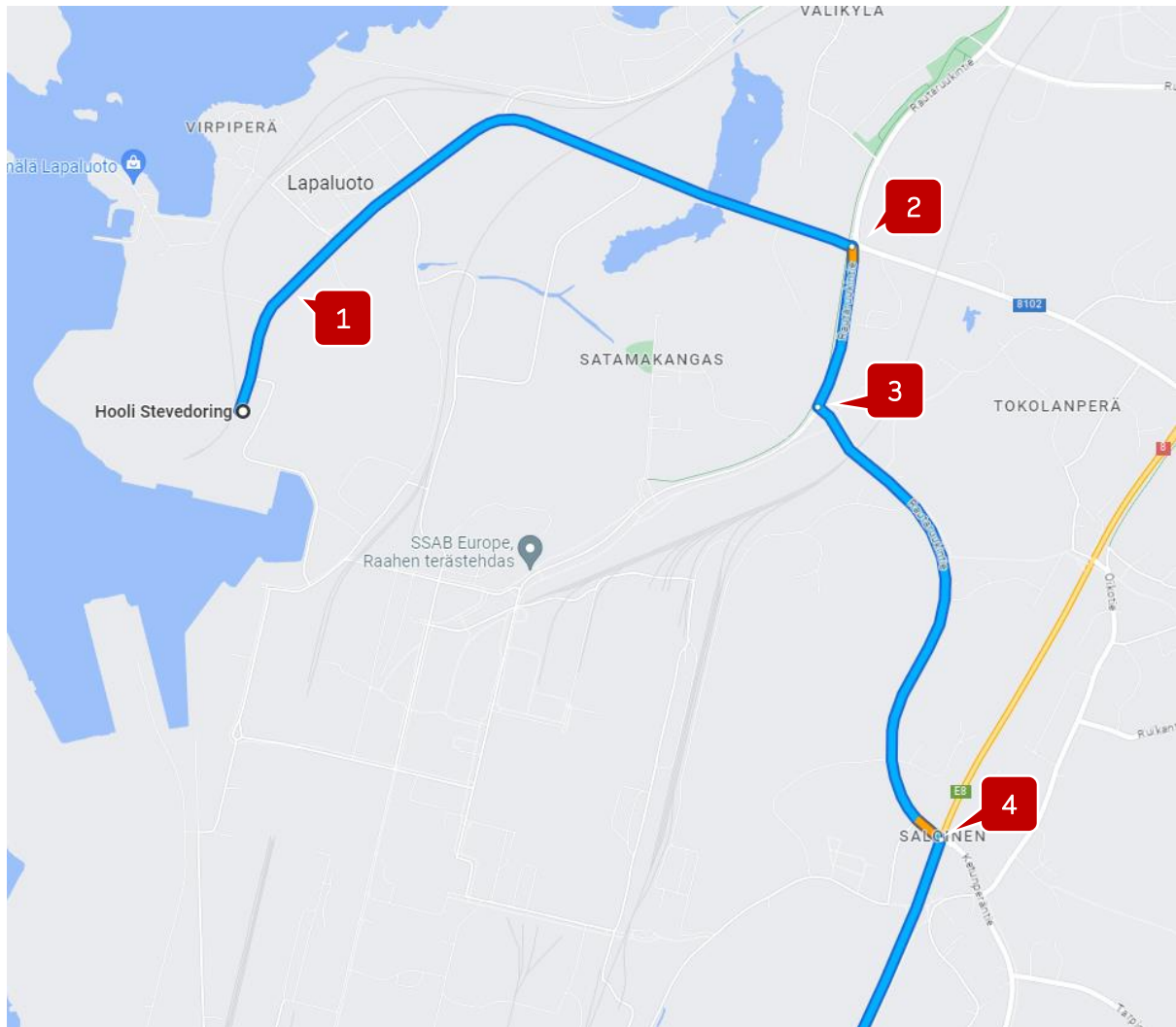
Route survey made by	Sauli Lomakka / Ahola Special Oy Ab
Time of survey	30.5.2023
Weather	Partly cloudy, 15...20°C

Transport route 1	
Starting point	Port of Raahе Lapaluodontie 342 FI-92180 Lapaluoto
Route with road numbers	Distance in km
Lapaluodontie (8102)	2,3 km
Rautaruukintie	1,9 km
Valtatie (E8)	55,4 km
Ylivieskantie (27)	93,9 km
Elämäjärventie (58 / 658)	26,1 km
Pitäjänmäentie	
Total	179,6 km
End point	Hallakallio Wind Park Pitäjänmäentie FI-86850 Pyhäjärvi

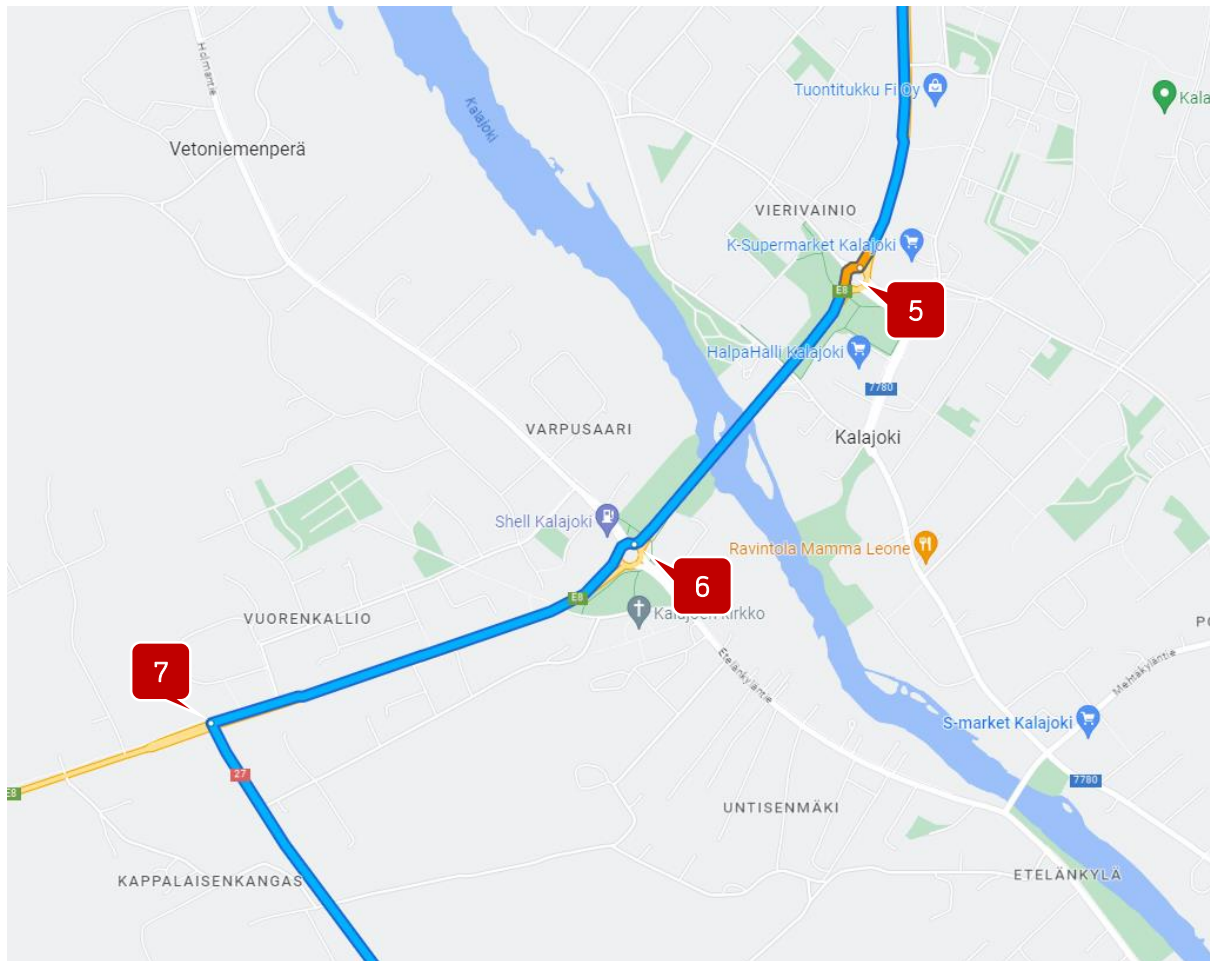
Route on map with route points



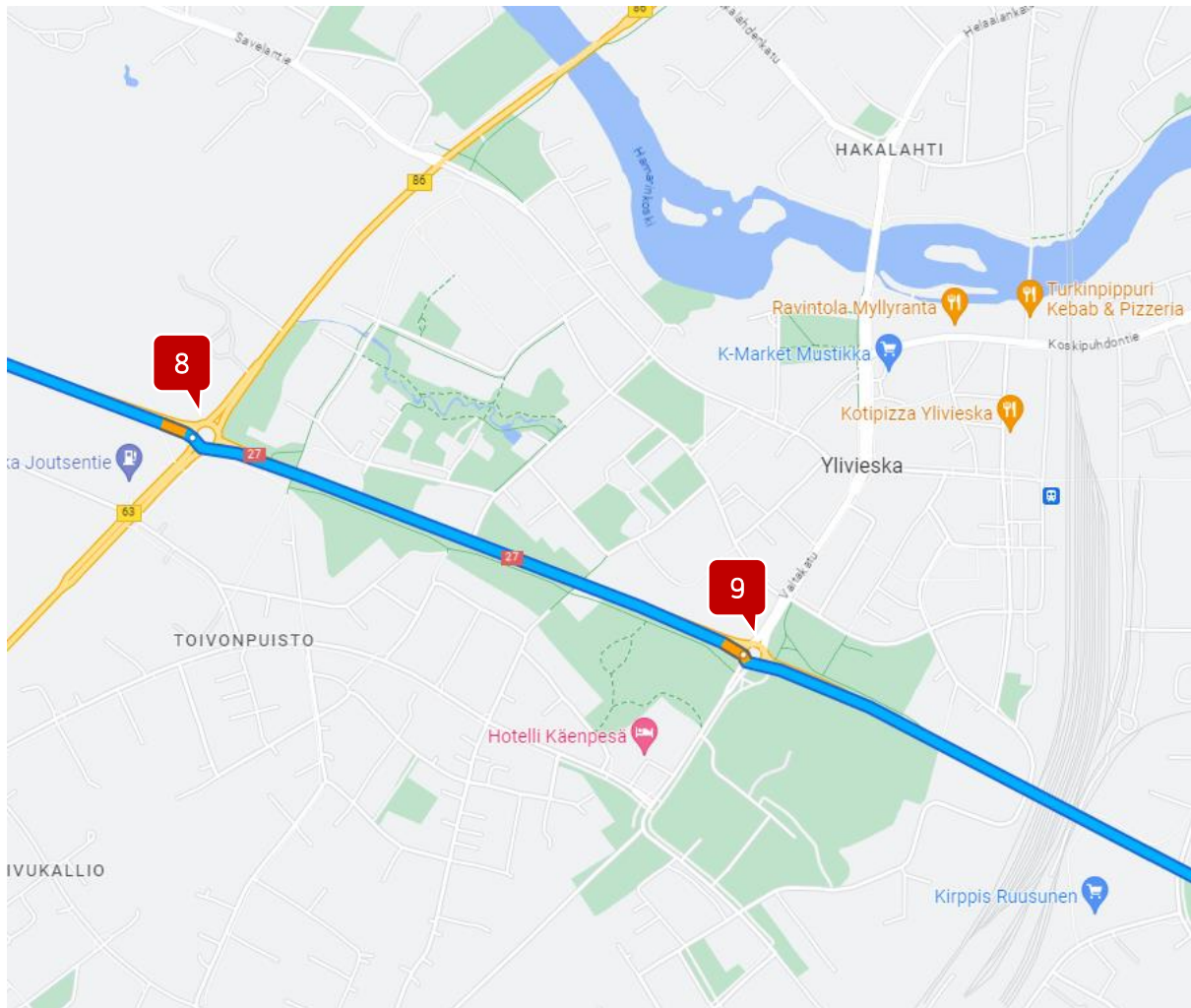
Route points 1-4






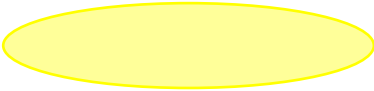





Route points 5-7



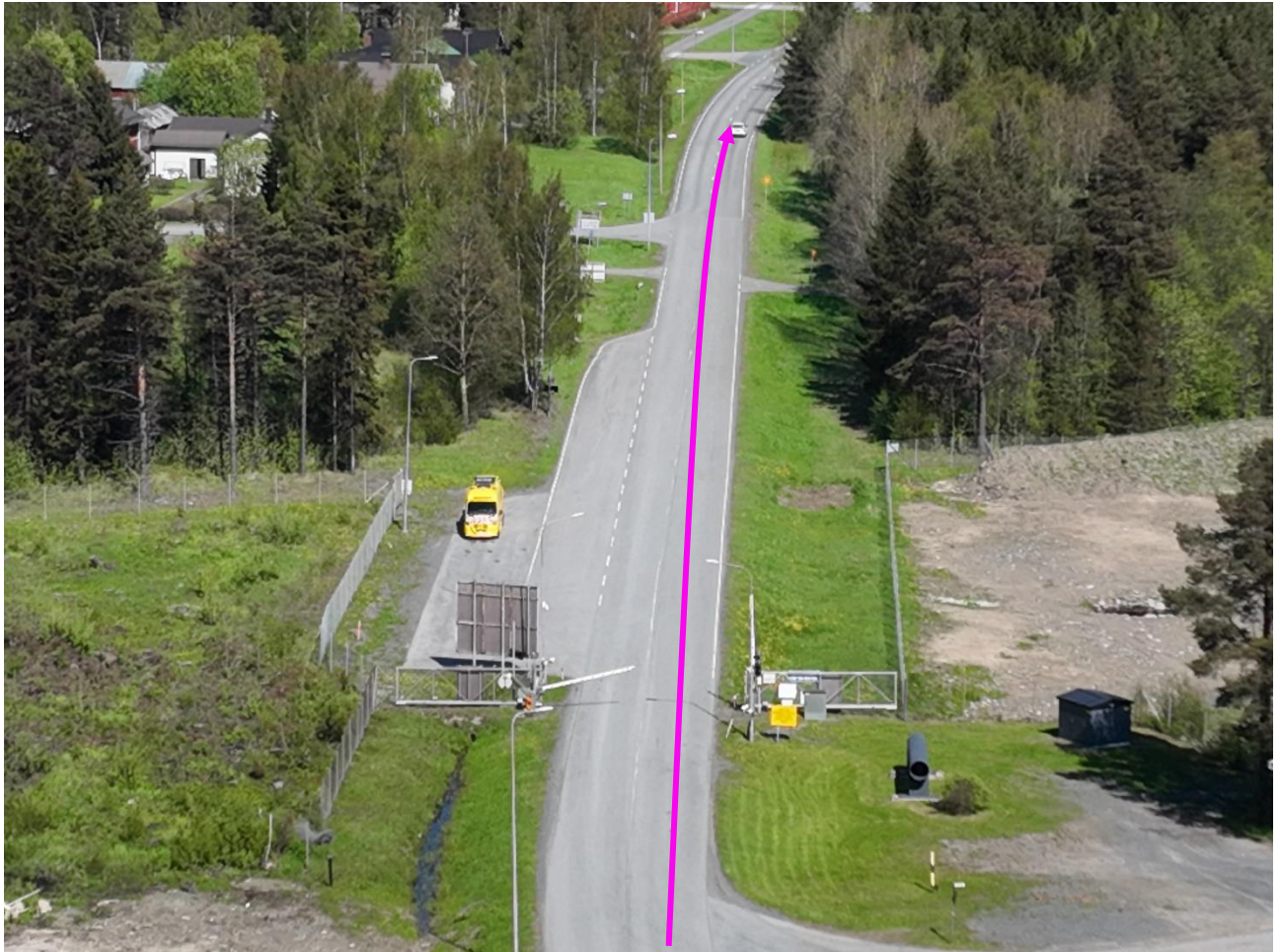
Route points 8-9



Explanations	
	Driving direction, forward
	Driving direction, backwards
	Obstacles to be removed
	Obstacles that were already removed at the time of the survey
	Driveable extension
	Sailing area for trailer's frame (obstacles need to be removed and levelled max. +250 mm from top of road surface)
	Sailing area for blade tip (obstacles removed higher than 2 m from top of road surface)
	Dimensions of obstacles / modification areas in cms
	Borderline of public road / private road

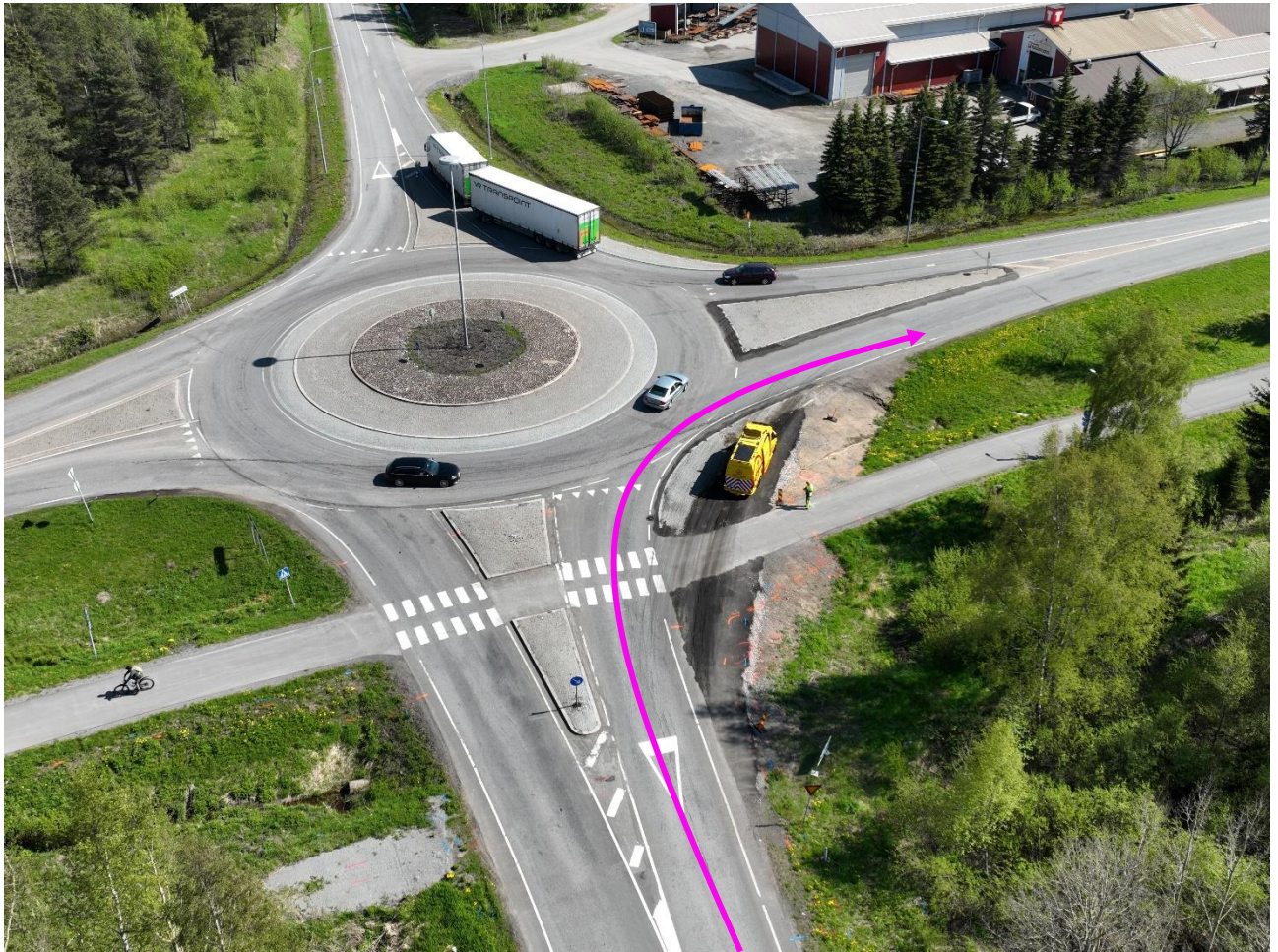
Route point observations (Route 1)

Starting point from Port of Raahе (1) ([64.664980, 24.416540](#))



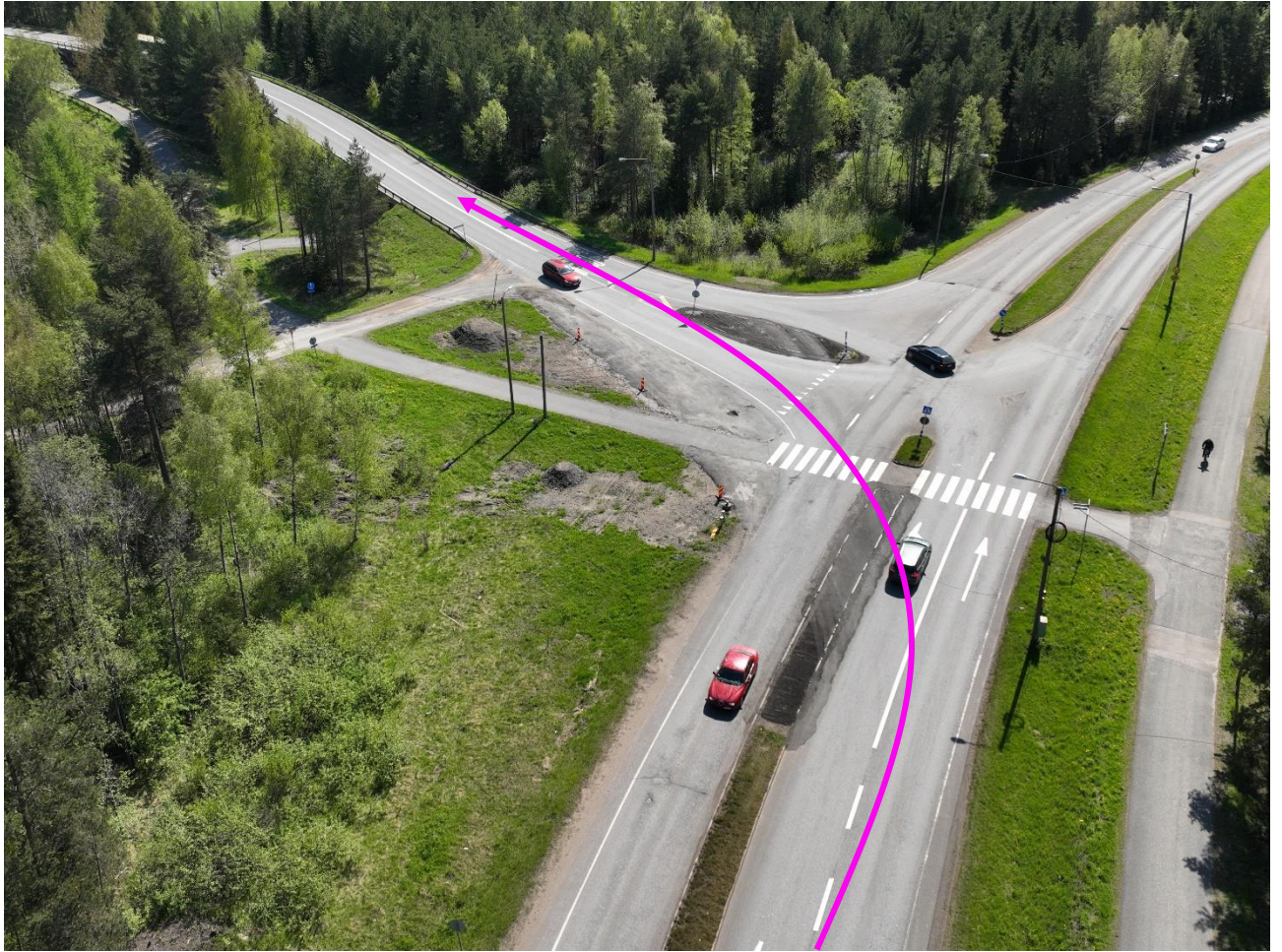
Special transport exit from port of Raahе leads to Lapaluodontie. Free width of gate construction is wide enough for all kind of wind turbine components without any necessities for removals or modifications.

Route point 2 (64.666063, 24.450676)



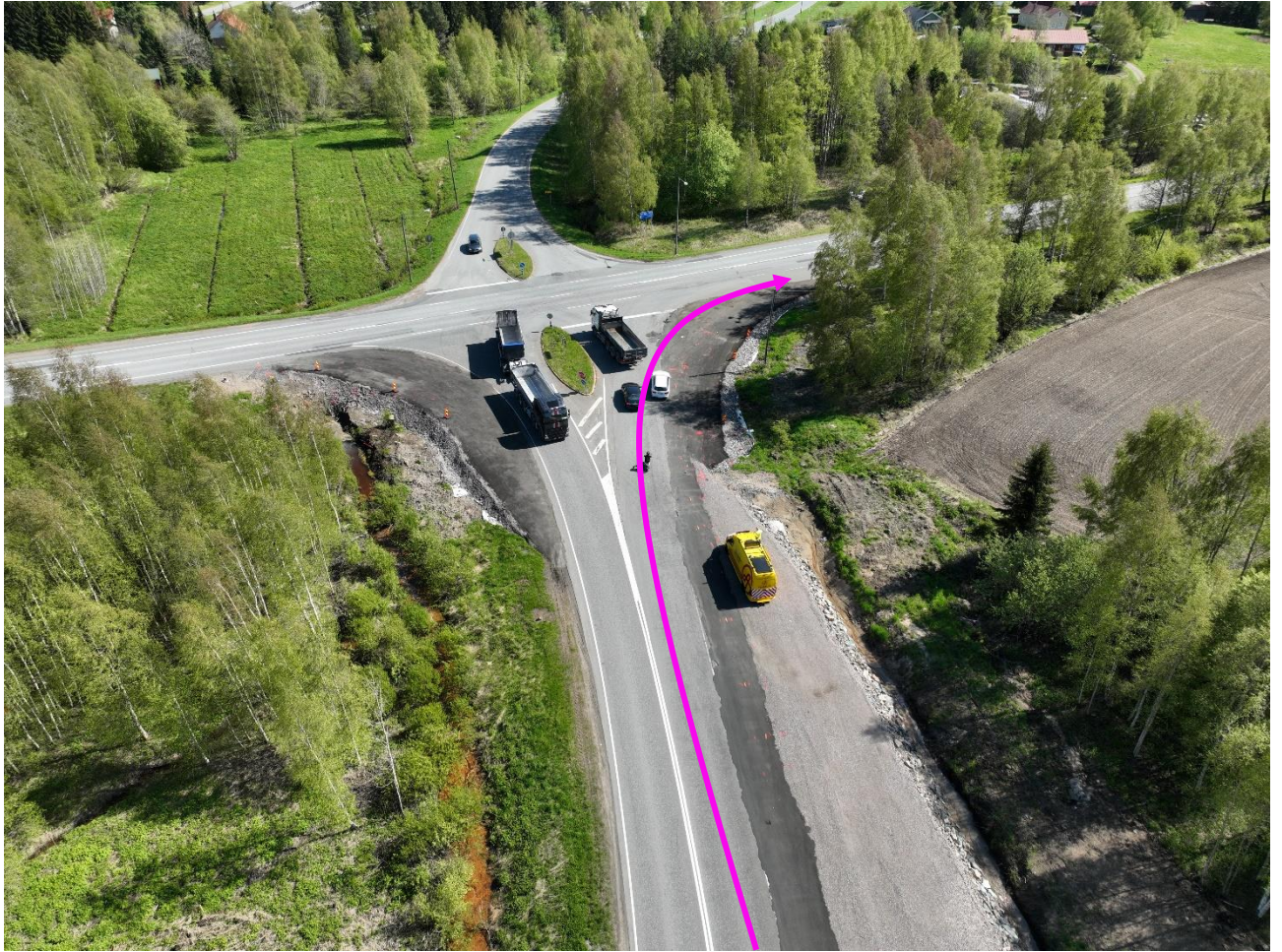
Turning on roundabout from Lapaluodontie to Rautaruukintie has been temporary widened. Traffic island on Rautaruukintie is modified driveable and light poles has been removed.

Route point 3 ([64.661906, 24.448694](#))



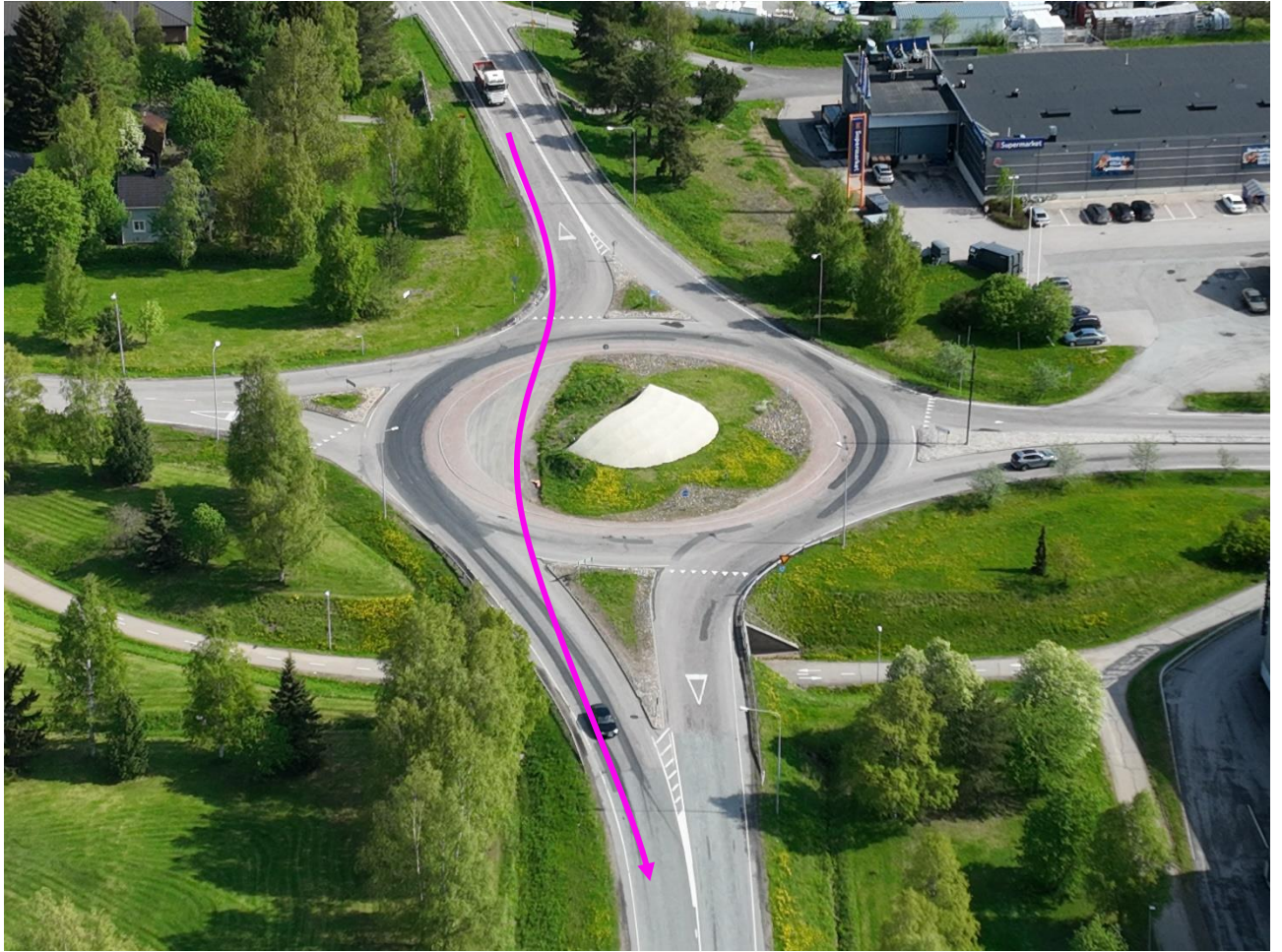
Turning at Rautaruukintie to left has been modified by driveable traffic islands and removals of light poles. Inner corner has driveable extension to make long blade transports possible.

Route point 4 (64.650703, 24.455991)



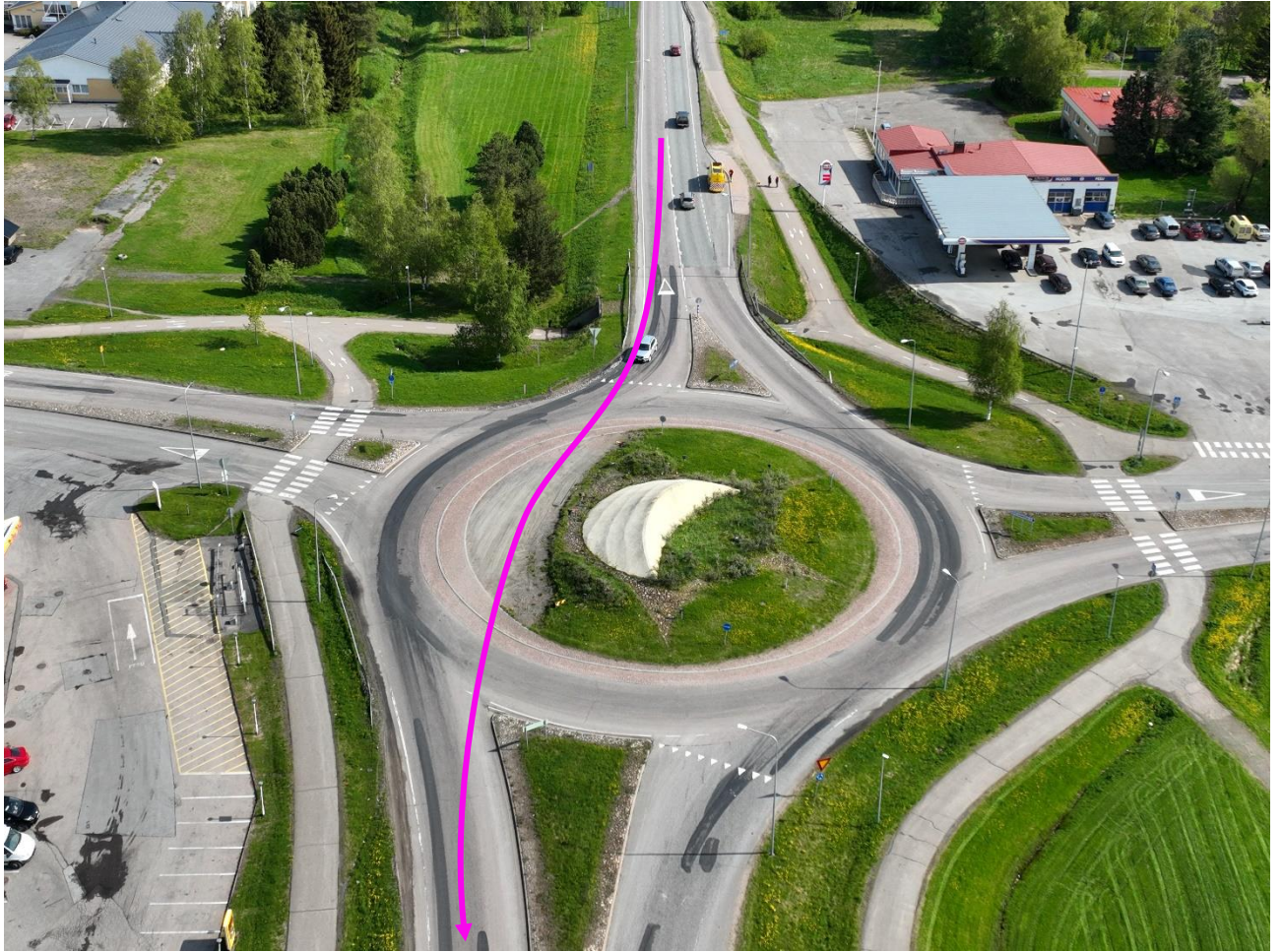
Turning from Rautaruukintie to highway E8 has necessary modifications on place.

Route point 5 (64.261106, 23.947271)



First roundabout on highway E8 in Kalajoki has been modified by driving direction from north to south.

Route point 6 (64.255891, 23.937511)



Second roundabout on highway E8 in Kalajoki has been modified by driving direction from north to south.

Route point 7 (64.252509, 23.919107)



Turning from highway E8 to highway VT27 in Kalajoki has been modified for wind power transports.

Route point 8 (64.072806, 24.510515)



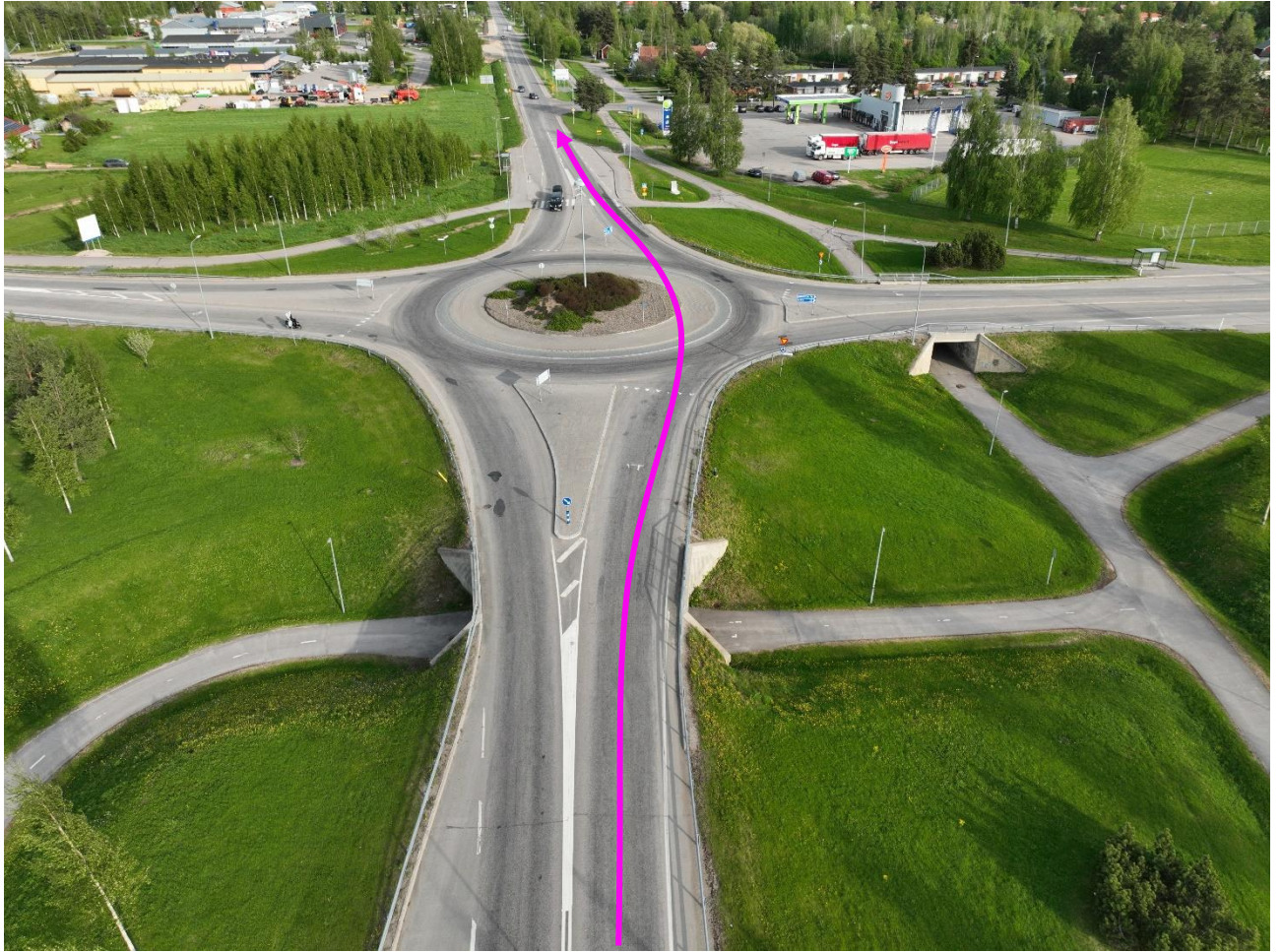
First roundabout in Ylivieska is suitable when driveable extension is on it's place on right side when entering roundabout and light poles are removed.

Route point 9 (64.069499, 24.529541)



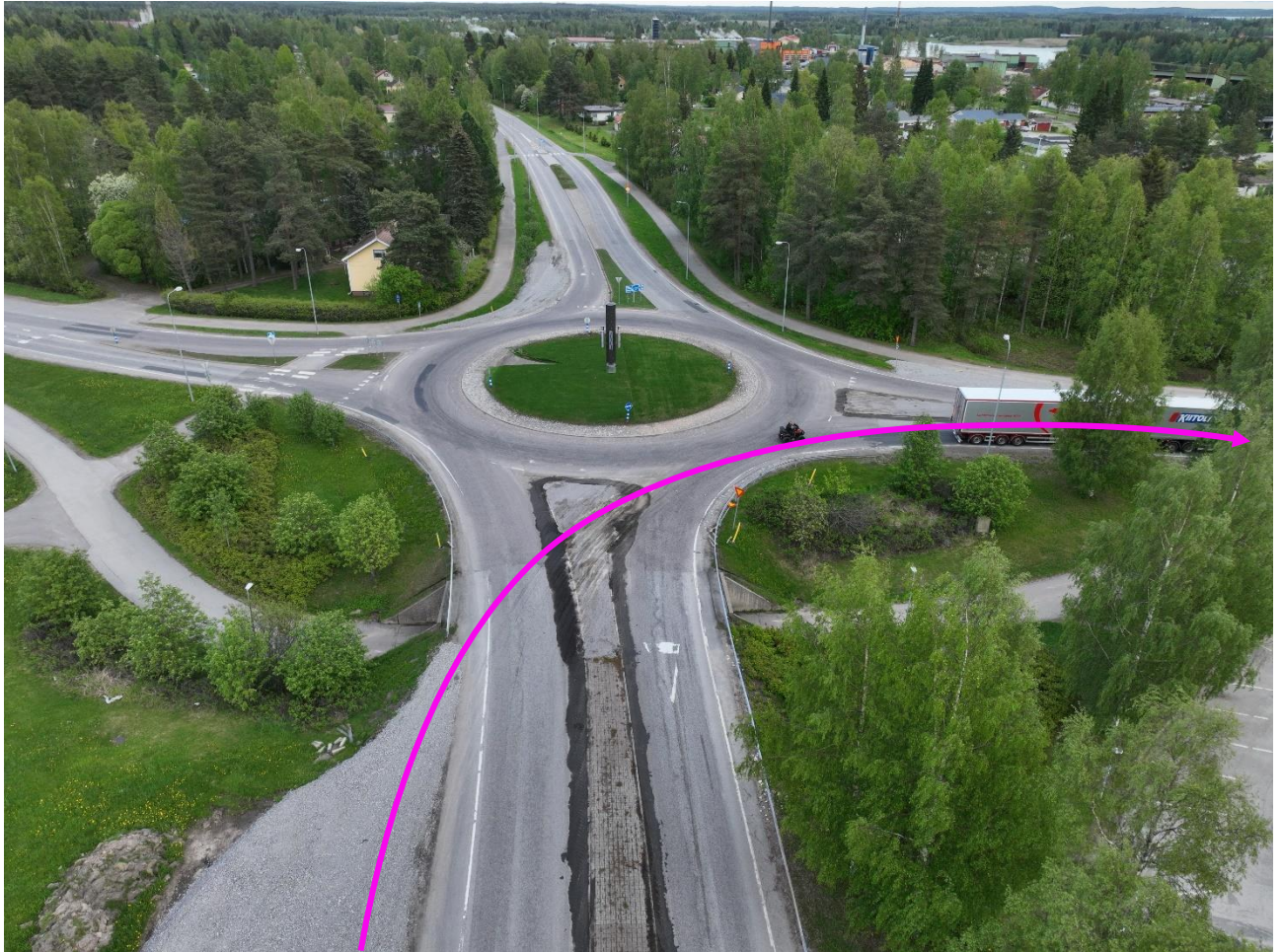
Second roundabout in Ylivieska has been modified in center part by driveable extension and removals of light poles.

Route point 10 (63.937412, 24.949384)



Roundabout in Nivala is wide enough. Light poles need to be removed from swept area.

Route point 11 (63.748785, 25.324758)



Turning right in roundabout in Haapajärvi was modified for windpower transports. Traffic islands were modified driveable, necessary drivable extensions were build and light poles / trees were removed from swept area.

Route point 12 ([63.562878, 25.541293](#))

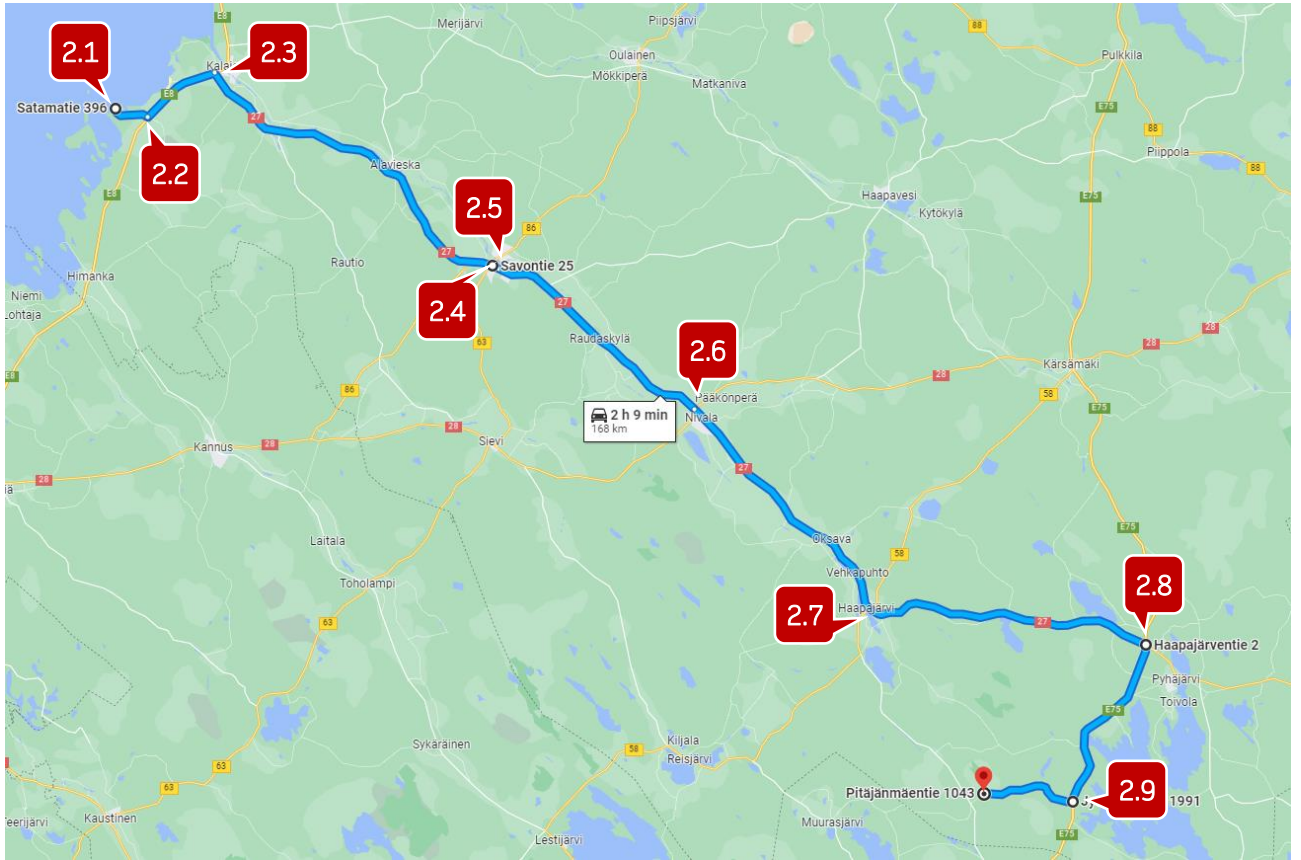


Turning from road #658 to Pitäjänmäentie. Inner curve on left side needs drivable extension. Swept area for blade transports needs to be modified clear from trees.

Transport route 2 (option from Kalajoki, via E75 from Haapajärvi)

Starting point	Port of Kalajoki (Rahja) Satamatie 433 FI-85180 Kalajoki	
Route with road numbers	Distance in km	
Satamatie (7771)	4,3 km	
Valtatie (E8)	8,5 km	
Ylivieskantie/Haapajärventie (27)	125 km	
Jyväskyläntie (E75)	19,9 km	
Pitäjänmäentie	8,6 km	
Total	166,3 km	
End point	Hallakallio Wind Park Pitäjänmäentie FI-86850 Pyhäjärvi	

Route 2 with route points



Starting point from Port of Kalajoki 2.1 (64.219423, 23.707557)



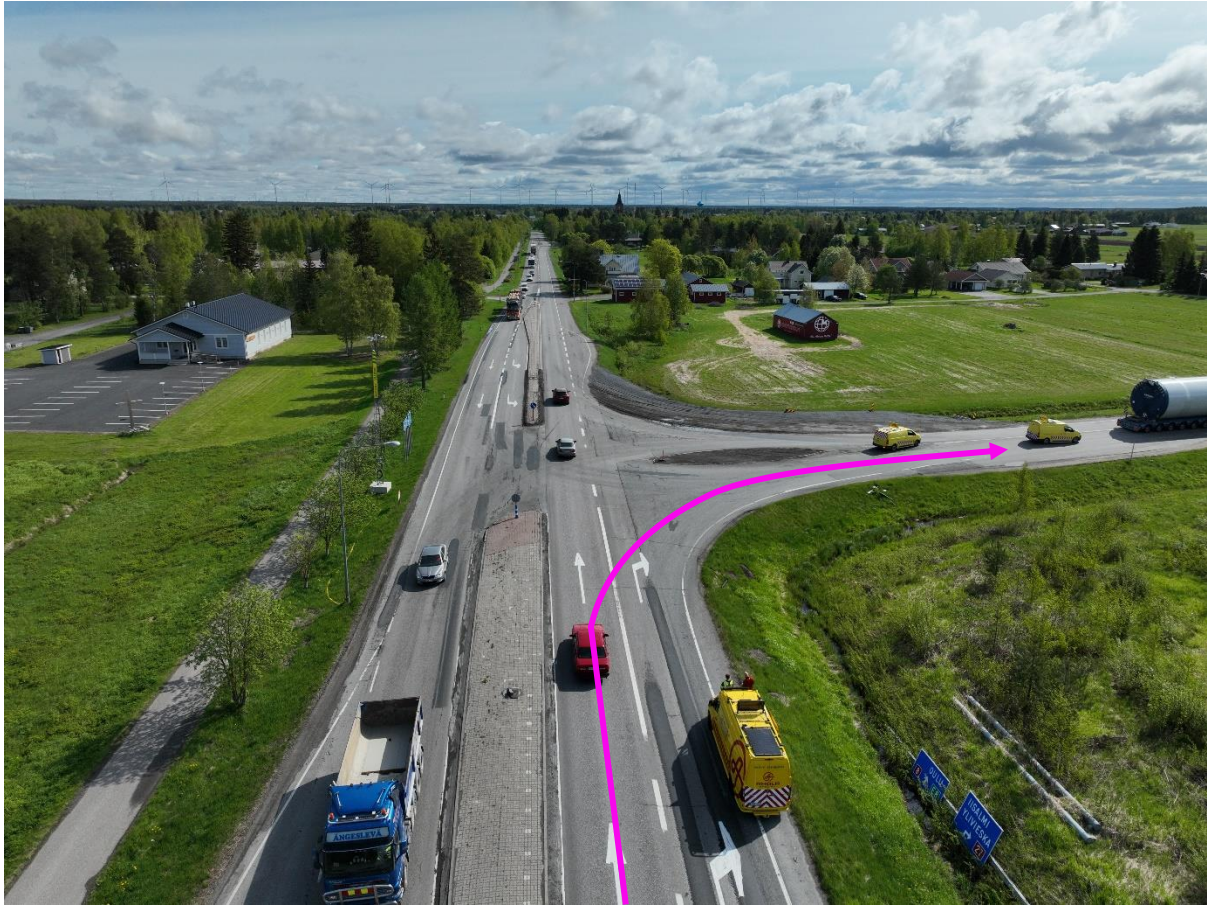
Exit from port of Kalajoki (Rahja) has been made especially for windpower transport. There's plenty of space without any necessities for any modifications or removals.

Route point 2.2 ([64.211082](#), [23.776536](#))



Turning from road #7771 (Satamatie) to highway E8 was widened by drivable extension in inner curve on left side. As well trees and light poles were removed from swept area.

Route point 2.3 (64.252426, 23.919173)



Turning from highway E8 to road VT27 in Kalajoki was modified by removing traffic sign gantry. If blades should be transported on this route, drivable extension shall be made in inner curve on right side.

From this point routing will be equal with Transport Route 1 up to roundabout in Haapajärvi.

Route point 2.4 (64.072806, 24.510515)



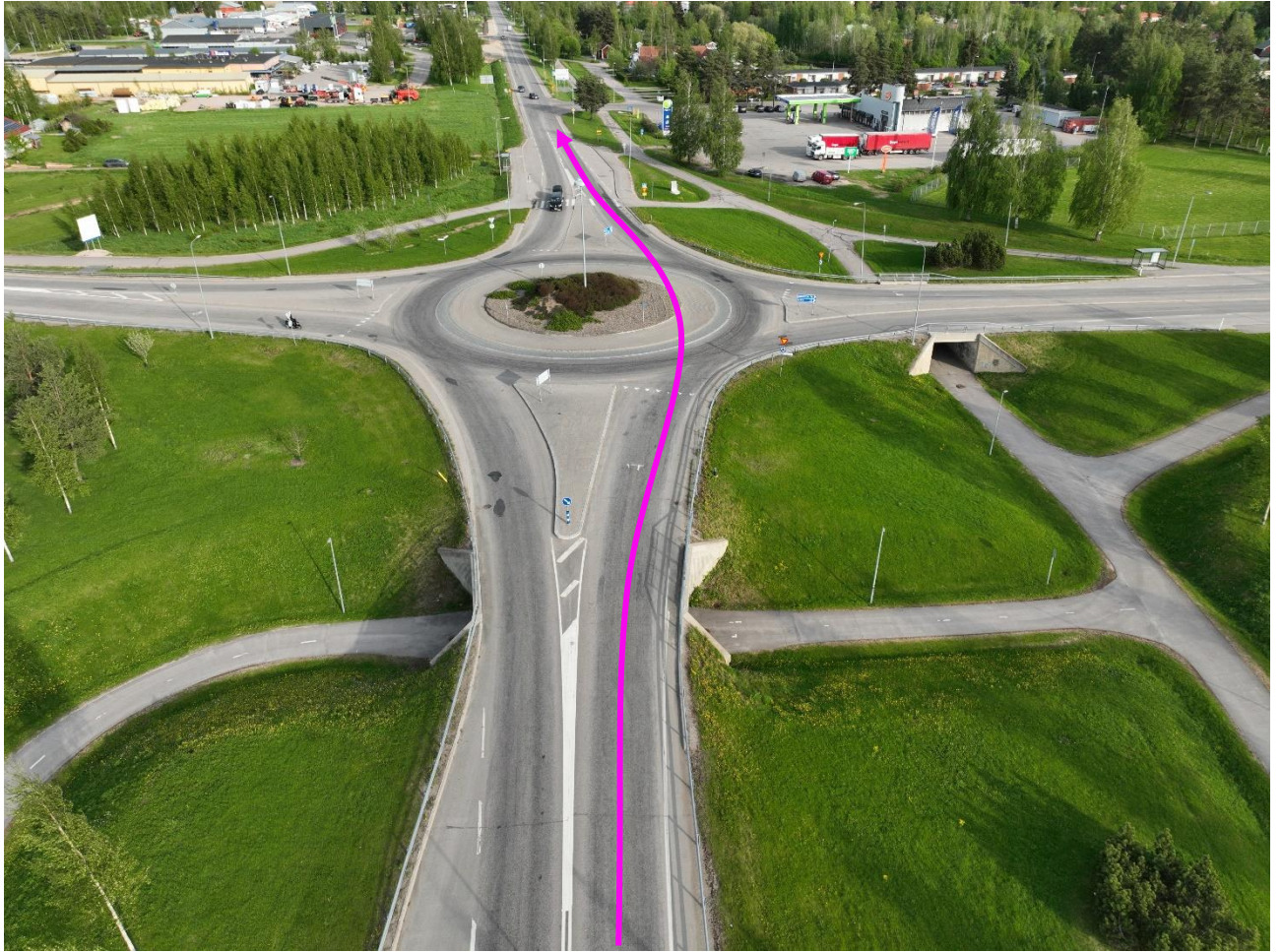
First roundabout in Ylivieska is suitable when driveable extension is on it's place on right side when entering roundabout and light poles are removed.

Route point 2.5 (64.069499, 24.529541)



Second roundabout in Ylivieska has been modified in center part by driveable extension and removals of light poles.

Route point 2.6 (63.937412, 24.949384)



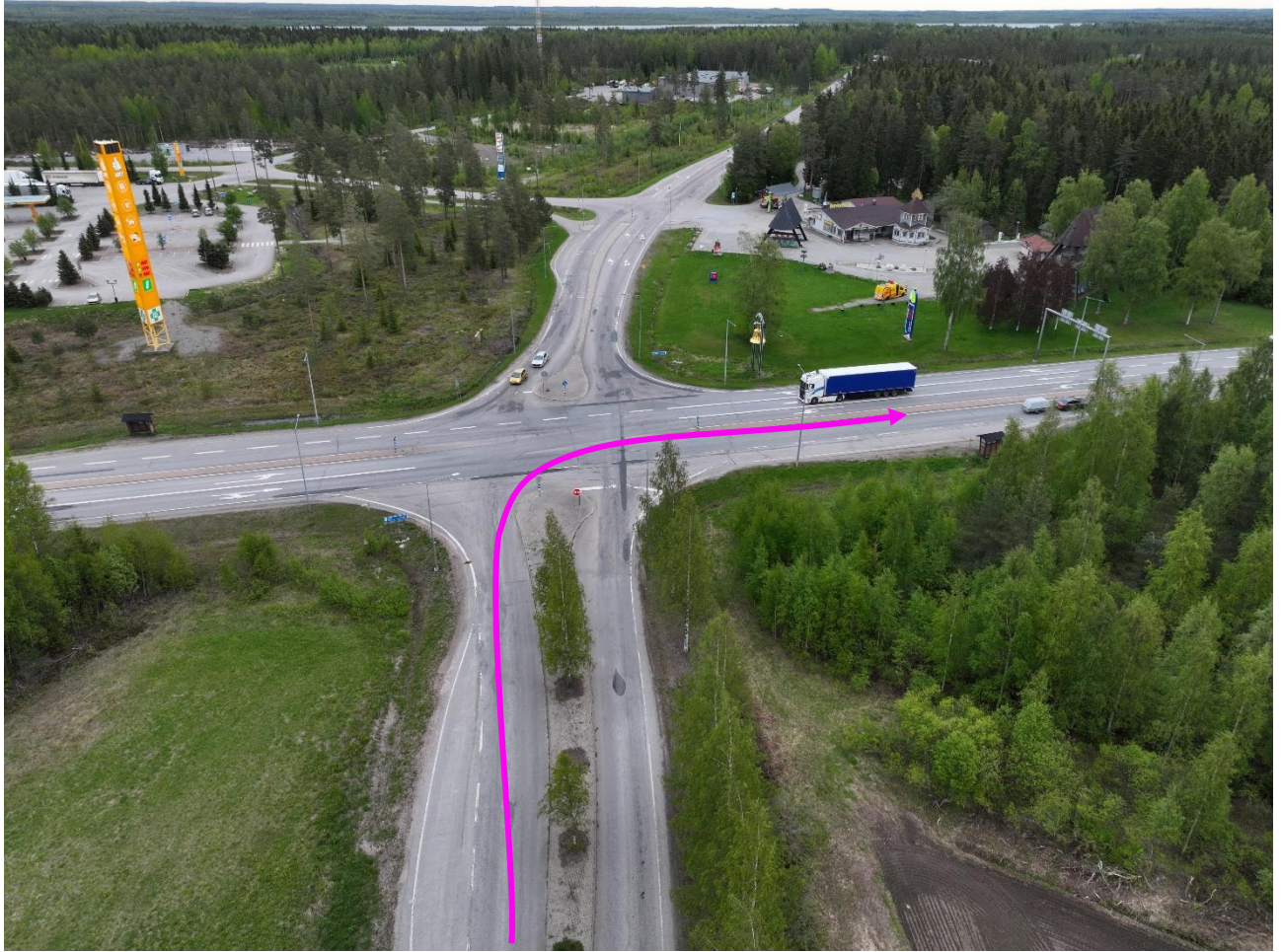
Roundabout in Nivala is wide enough. Light poles need to be removed from swept area.

Route point 2.7 (63.748837, 25.324805)



Roundabout in Haapajärvi will be passed by own lane. Right side of roundabout center needs to be modified driveable by rolling turf away. Obstacles from swept area need to be removed.

Route point 2.8 (63.714454, 25.917090)



Turning from VT27 to highway E75 in Pyhäjärvi will be made from counter lane. Drivable extension is necessary on left side and light poles from swept area need to be removed.

Route point 2.9 (63.565067, 25.760908)



Turning from highway E75 to Pitäjänmäentie needs to be modified by building drivable extension in inner curve.

From this direction Pitäjänmäentie would require modifications until it would be suitable especially for blade transports. Some of modification areas are located on private owned land and even in garden areas.



Conclusions

There are two possible routes to end destination, either from Port of Raahe or Kalajoki. Mainly the route is the same for both options, but there are also two possible approaches to wind mill sites – from West via road 58/658 or from East via road E75.

Both ports, Raahe and Kalajoki are on same level subject to access on main road network. Both ports have been used already for many wind power projects and this can be foreseen to be the same also in the future.

Access to Pitjännäentie would be recommendable to arrange via road 58/658 due to those narrow route points in the other access from E75.

Overhead cables from both ports up to Haapajärvi have been already raised enough high so that transportation of tower diameter up to 6,5 meters on top of axles are possible without any cable lifting. In the last leg on the road 658 there are some cables which would need to be lifted higher. Overhead traffic sign gantries need to be removed as they were on the time point when this survey was done.

Pitjännäentie is gravel road, which may cause some challenges if transports would be scheduled on thaw season when road is too soft for heavy transports. This needs to be discussed with road authorities beforehand.

Terms and conditions

This route survey is valid on route conditions at the time of survey (30.5.2023), and future / upcoming route modifications / road works are not considered.



	tienumero	Tieosuus	Tyyppi	Korkeus	Sijainti	Info
1	7771	Rahja - Kalajoki	low voltage	899	64.21247, 23.72583	
2	E8	Rahja - Kalajoki	20 kV	1248	64.22639, 23.80848	
3	E8	Rahja - Kalajoki	portaali	767	64.22981, 23.81649	
4	E8	Rahja - Kalajoki	portaali	162	64.25232, 23.91863	removed
5	E8	Rahja - Kalajoki	portaali	162	64.25265, 23.92037	removed
6	E8	Kalajoki - Pyhäjoki	20 kV	997	64.30799, 23.93572	
7	E8	Kalajoki - Pyhäjoki	20 kV	1060	64.31836, 23.93191	
8	E8	Kalajoki - Pyhäjoki	20 kV	1043	64.32750, 23.93793	
9	E8	Kalajoki - Pyhäjoki	low voltage	948	64.33584, 23.95547	
10	E8	Kalajoki - Pyhäjoki	low voltage	965	64.33941, 23.96534	
11	E8	Kalajoki - Pyhäjoki	20 kV	1100	64.34041, 23.96817	
12	E8	Kalajoki - Pyhäjoki	low voltage	817	64.34390, 23.97735	
13	E8	Kalajoki - Pyhäjoki	20 kV	1052	64.34390, 23.98024	
14	E8	Kalajoki - Pyhäjoki	20 kV	1184	64.34657, 23.98771	
15	E8	Kalajoki - Pyhäjoki	low voltage	803	64.34657, 23.98771	
16	E8	Kalajoki - Pyhäjoki	low voltage	823	64.34903, 23.99636	
17	E8	Kalajoki - Pyhäjoki	low voltage	870	64.35182, 24.00270	
18	E8	Kalajoki - Pyhäjoki	20 kV	960	64.35182, 24.00270	
19	E8	Kalajoki - Pyhäjoki	20 kV	1081	64.39345, 24.05790	
20	E8	Kalajoki - Pyhäjoki	20 kV	924	64.39692, 24.06817	
21	E8	Kalajoki - Pyhäjoki	low voltage	162	64.40285, 24.09029	removed
22	E8	Kalajoki - Pyhäjoki	20 kV	1060	64.41267, 24.11927	
23	E8	Kalajoki - Pyhäjoki	20 kV	1105	64.43371, 24.17222	
24	E8	Kalajoki - Pyhäjoki	low voltage	903	64.43916, 24.18781	
25	E8	Kalajoki - Pyhäjoki	low voltage	854	64.44087, 24.19189	
26	E8	Kalajoki - Pyhäjoki	low voltage	837	64.44556, 24.20535	
27	E8	Kalajoki - Pyhäjoki	low voltage	912	64.44904, 24.21527	
28	E8	Kalajoki - Pyhäjoki	portaali	744	64.45439, 24.24369	
29	E8	Kalajoki - Pyhäjoki	portaali	162	64.45498, 24.24663	removed
30	E8	Pyhäjoki - Raahe	low voltage	819	64.45495, 24.24635	
31	E8	Pyhäjoki - Raahe	portaali	777	64.46468, 24.26225	
32	E8	Pyhäjoki - Raahe	portaali	162	64.46520, 24.26243	removed
33	E8	Pyhäjoki - Raahe	portaali	769	64.47166, 24.26682	
34	E8	Pyhäjoki - Raahe	portaali	162	64.47261, 24.26731	removed
35	E8	Pyhäjoki - Raahe	portaali	794	64.51443, 24.36126	
36	E8	Pyhäjoki - Raahe	low voltage	938	64.52662, 24.37159	
37	E8	Pyhäjoki - Raahe	low voltage	839	64.53889, 24.38958	
38	E8	Pyhäjoki - Raahe	20 kV	1021	64.54945, 24.38985	
39	E8	Pyhäjoki - Raahe	low voltage	841	64.55696, 24.38835	
40	E8	Pyhäjoki - Raahe	20 kV	966	64.55808, 24.38812	
41	E8	Pyhäjoki - Raahe	low voltage	824	64.55892, 24.38792	
42	E8	Pyhäjoki - Raahe	20 kV	978	64.56472, 24.38921	
43	E8	Pyhäjoki - Raahe	low voltage	853	64.56813, 24.39108	
44	E8	Pyhäjoki - Raahe	low voltage	931	64.57331, 24.39700	
45	E8	Pyhäjoki - Raahe	20 kV	984	64.57331, 24.39700	
46	E8	Pyhäjoki - Raahe	low voltage	819	64.58782, 24.40478	
47	E8	Pyhäjoki - Raahe	low voltage	882	64.58782, 24.40478	
48	E8	Pyhäjoki - Raahe	low voltage	891	64.59425, 24.40792	



	tienumero	Tieosuus	Tyyppi	Korkeus	Sijainti	Info
49	E8	Pyhäjoki - Raahe	20 kV	992	64.59605, 24.40741	
50	E8	Pyhäjoki - Raahe	20 kV	1051	64.59967, 24.40791	
51	E8	Pyhäjoki - Raahe	low voltage	939	64.60812, 24.41322	
52	E8	Pyhäjoki - Raahe	20 kV	919	64.60900, 24.41404	
53	E8	Pyhäjoki - Raahe	portaali	730	64.60900, 24.41404	
54	E8	Pyhäjoki - Raahe	portaali	162	64.61019, 24.41493	removed
55	E8	Pyhäjoki - Raahe	20 kV	895	64.61242, 24.41676	
56	E8	Pyhäjoki - Raahe	low voltage	867	64.61491, 24.41873	
57	E8	Pyhäjoki - Raahe	harus	852	64.61987, 24.42186	
58	E8	Pyhäjoki - Raahe	low voltage	903	64.62070, 24.42239	
59	E8	Pyhäjoki - Raahe	low voltage	852	64.62378, 24.42435	
60	E8	Pyhäjoki - Raahe	low voltage	938	64.62733, 24.42749	
61	E8	Pyhäjoki - Raahe	low voltage	841	64.62733, 24.42749	
62	E8	Pyhäjoki - Raahe	20 kV	912	64.63608, 24.43714	
63	E8	Pyhäjoki - Raahe	portaali	739	64.63771, 24.43959	
64	27	Kalajoki - Ylivieska	low voltage	1031	64.22713, 23.97161	
65	27	Kalajoki - Ylivieska	110 kV	1388	64.20250, 24.02153	
66	27	Kalajoki - Ylivieska	110 kV	1539	64.20222, 24.02228	
67	27	Kalajoki - Ylivieska	low voltage	860	64.19925, 24.03547	
68	27	Kalajoki - Ylivieska	low voltage	932	64.19925, 24.03547	
69	27	Kalajoki - Ylivieska	20 kV	1218	64.19878, 24.05492	
70	27	Kalajoki - Ylivieska	400 kV	1410	64.18187, 24.19632	
71	27	Kalajoki - Ylivieska	20 kV	891	64.18105, 24.21118	
72	27	Kalajoki - Ylivieska	low voltage	879	64.17845, 24.24518	
73	27	Kalajoki - Ylivieska	low voltage	968	64.17642, 24.25310	
74	27	Kalajoki - Ylivieska	20 kV	962	64.17432, 24.25893	
75	27	Kalajoki - Ylivieska	low voltage	862	64.17065, 24.26628	
76	27	Kalajoki - Ylivieska	low voltage	964	64.16357, 24.28175	
77	27	Kalajoki - Ylivieska	20 kV	874	64.15865, 24.29458	
78	27	Kalajoki - Ylivieska	20 kV	1076	64.15788, 24.30122	
79	27	Kalajoki - Ylivieska	portaali	162	64.15755, 24.30662	removed
80	27	Kalajoki - Ylivieska	low voltage	849	64.15395, 24.32038	
81	27	Kalajoki - Ylivieska	low voltage	885	64.13132, 24.34373	
82	27	Kalajoki - Ylivieska	20 kV	1062	64.12468, 24.35078	
83	27	Kalajoki - Ylivieska	low voltage	868	64.11445, 24.36763	
84	27	Kalajoki - Ylivieska	low voltage	911	64.08267, 24.42225	
85	27	Kalajoki - Ylivieska	20 kV	979	64.07828, 24.43525	
86	27	Kalajoki - Ylivieska	low voltage	1064	64.07715, 24.44120	
87	27	Kalajoki - Ylivieska	20 kV	898	64.07686, 24.44300	
88	27	Kalajoki - Ylivieska	20 kV	980	64.07678, 24.44352	
89	27	Kalajoki - Ylivieska	low voltage	825	64.07640, 24.44645	
90	27	Kalajoki - Ylivieska	portaali	162	64.07555, 24.46482	removed
91	27	Kalajoki - Ylivieska	110 kV	1500	64.07537, 24.48615	
92	27	Ylivieska - Nivala	20 kV	934	64.07537, 24.48652	
93	27	Ylivieska - Nivala	portaali	162	64.06538, 24.54813	removed
94	27	Ylivieska - Nivala	portaali	162	64.06477, 24.55087	removed
95	27	Ylivieska - Nivala	portaali	162	64.06370, 24.55828	removed
96	27	Ylivieska - Nivala	portaali	162	64.06368, 24.57022	removed



	tienumero	Tieosuus	Tyyppi	Korkeus	Sijainti	Info
97	27	Ylivieska - Nivala	portaali	162	64.06435, 24.58257	removed
98	27	Ylivieska - Nivala	20 kV	924	64.06392, 24.59647	
99	27	Ylivieska - Nivala	low voltage	786	64.01435, 24.71800	
100	27	Ylivieska - Nivala	low voltage	1027	64.00605, 24.73933	
101	27	Ylivieska - Nivala	low voltage	941	63.99595, 24.76800	
102	27	Ylivieska - Nivala	low voltage	919	63.99445, 24.77232	
103	27	Ylivieska - Nivala	low voltage	913	63.99272, 24.77628	
104	27	Ylivieska - Nivala	20 kV	986	63.99063, 24.78102	
105	27	Ylivieska - Nivala	low voltage	988	63.99032, 24.78168	
106	27	Ylivieska - Nivala	20 kV	1200	63.98037, 34.80517	
107	27	Ylivieska - Nivala	20 kV	1150	63.97503, 24.82070	
108	27	Ylivieska - Nivala	low voltage	1123	63.95623, 24.86033	
109	27	Ylivieska - Nivala	220 kV	1548	63.95397, 24.86828	
110	27	Ylivieska - Nivala	220 kV	1372	63.95382, 24.86897	
111	27	Ylivieska - Nivala	20 kV	1180	63.95267, 24.87395	
112	27	Ylivieska - Nivala	20 kV	1159	63.95148, 24.87938	
113	27	Ylivieska - Nivala	low voltage	894	63.84417, 24.89467	
114	27	Ylivieska - Nivala	110 kV	1267	63.94135, 24.94180	
115	27	Nivala - Haapajärvi	traffic light gantry	557	63.93017, 24.96725	
116	27	Nivala - Haapajärvi	portaali	163	63.92292, 24.98237	removed
117	27	Nivala - Haapajärvi	110 kV	1102	63.91132, 24.00588	
118	27	Nivala - Haapajärvi	low voltage	834	63.86993, 24.08128	
119	27	Nivala - Haapajärvi	110 kV	1201	63.84022, 25.14633	
120	27	Nivala - Haapajärvi	low voltage	816	63.84010, 25.14645	
121	27	Nivala - Haapajärvi	low voltage	790	63.82527, 25.18678	
122	27	Nivala - Haapajärvi	20 kV	972	63.82527, 25.18678	
123	27	Nivala - Haapajärvi	low voltage	987	63.82395, 25.19117	
124	27	Nivala - Haapajärvi	harus	902	63.79998, 25.26025	
125	27	Nivala - Haapajärvi	low voltage	1011	63.79588, 25.26660	
126	27	Nivala - Haapajärvi	110 kV	1683	63.78892, 25.28635	
127	27	Nivala - Haapajärvi	400 kV	1940	63.78863, 25.28710	
128	27	Nivala - Haapajärvi	portaali	163	63.75528, 25.31355	removed
129	27	Haapajärvi - Pyhäjärvi	20 kV	907	63.75088, 25.40495	
130	27	Haapajärvi - Pyhäjärvi	20 kV	887	63.75047, 25.46350	
131	27	Haapajärvi - Pyhäjärvi	20 kV	991	63.74870, 25.47243	
132	27	Haapajärvi - Pyhäjärvi	low voltage	828	63.74077, 25.57365	
133	27	Haapajärvi - Pyhäjärvi	20 kV	953	63.74445, 25.60118	
134	27	Haapajärvi - Pyhäjärvi	low voltage	835	63.74463, 25.60523	
135	27	Haapajärvi - Pyhäjärvi	low voltage	859	63.74375, 25.62382	
136	27	Haapajärvi - Pyhäjärvi	low voltage	853	63.74270, 25.63027	
137	27	Haapajärvi - Pyhäjärvi	20 kV	1018	63.73835, 25.65375	
138	27	Haapajärvi - Pyhäjärvi	low voltage	881	63.73678, 25.68085	
139	27	Haapajärvi - Pyhäjärvi	20 kV	1052	63.73357, 25.71628	
140	27	Haapajärvi - Pyhäjärvi	110 kV	1059	63.73417, 25.75852	
141	E75	Pyhäjärvi - Pihtipudas	low voltage	1147	63.70707, 25.91610	
142	E75	Pyhäjärvi - Pihtipudas	20 kV	1259	63.70137, 25.91125	
143	E75	Pyhäjärvi - Pihtipudas	110 kV	1120	63.70137, 25.91125	
144	E75	Pyhäjärvi - Pihtipudas	low voltage	1019	63.69800, 25.90843	



	tienumero	Tieosuus	Tyyppi	Korkeus	Sijainti	Info
145	E75	Pyhäjärvi - Pihtipudas	low voltage	1145	63.68577, 25.89793	
146	E75	Pyhäjärvi - Pihtipudas	20 kV	1153	63.67910, 25.89220	
147	E75	Pyhäjärvi - Pihtipudas	low voltage	1014	63.67773, 25.89100	
148	E75	Pyhäjärvi - Pihtipudas	20 kV	1054	63.66170, 25.87268	
149	E75	Pyhäjärvi - Pihtipudas	20 kV	1154	63.65198, 25.84708	
150	E75	Pyhäjärvi - Pihtipudas	low voltage	1008	63.64628, 25.83223	
151	E75	Pyhäjärvi - Pihtipudas	low voltage	1058	63.64128, 25.81572	
152	E75	Pyhäjärvi - Pihtipudas	20 kV	1190	63.62968, 25.78508	
153	E75	Pyhäjärvi - Pihtipudas	low voltage	945	63.58705, 25.78307	
154	Pitäjämäentie	Pitäjänmäentie	low voltage	814	63.57338, 25.71010	
155	Pitäjämäentie	Pitäjänmäentie	low voltage	742	63.57400, 25.70763	
156	Pitäjämäentie	Pitäjänmäentie	low voltage	857	63.57952, 25.69810	
157	58	Haapajärvi - Elämäjärvi	20 kV	891	63.73112, 25.30032	
158	58	Haapajärvi - Elämäjärvi	low voltage	933	63.72530, 25.30000	
159	58	Haapajärvi - Elämäjärvi	low voltage	889	63.72050, 25.29922	
160	58	Haapajärvi - Elämäjärvi	20 kV	918	63.71915, 25.29930	
161	58	Haapajärvi - Elämäjärvi	20 kV	931	63.70565, 25.30628	
162	658	Haapajärvi - Elämäjärvi	low voltage	634	63.70177, 25.30980	
163	658	Haapajärvi - Elämäjärvi	low voltage	644	63.70118, 25.31033	
164	658	Haapajärvi - Elämäjärvi	low voltage	624	63.67533, 25.35093	
165	658	Haapajärvi - Elämäjärvi	low voltage	811	63.67312, 25.35128	
166	658	Haapajärvi - Elämäjärvi	20 kV	736	63.64233, 25.36995	
167	658	Haapajärvi - Elämäjärvi	low voltage	590	63.61450, 25.45740	
168	658	Haapajärvi - Elämäjärvi	low voltage	520	63.61340, 25.45985	
169	658	Haapajärvi - Elämäjärvi	low voltage	599	63.61030, 25.46680	
170	658	Haapajärvi - Elämäjärvi	low voltage	634	63.60572, 25.47713	
171	658	Haapajärvi - Elämäjärvi	low voltage	598	63.60443, 25.48008	
172	658	Haapajärvi - Elämäjärvi	low voltage	651	63.60230, 25.48532	
173	658	Haapajärvi - Elämäjärvi	20 kV	889	63.60102, 25.48853	
174	Pitäjämäentie	Pitäjänmäentie	low voltage	771	63.56320, 25.54190	