

**Route survey wind turbine components from Kalajoki port to site area Moskuankangas in Pyhäjärvi municipality in Finland**

**1.1. Implementation**

Date	10.11-11.11.2023	
Time	08:00 – 16:00	
Weather	-10 C	
Conditions	snow	

Participants	Function	Company
Sami Kivelä	Site Manager	Ville Silvasti Oy

**1.2 WTG type**

Number of WEA	Type WTG	Type tower
23-28	?	?

**1.3 Places of delivery**

Nacelle components	Tower sections	Blades
Kalajoki	Kalajoki	Kalajoki

**1.4. Total dimensions of trucks / dimensions checked on the route**

Component	Length	Width	Height	Weight
Blade	112m	4,50m	4,80m	
Tower	50m	6,50m	7,00m	

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## 2.1. Result

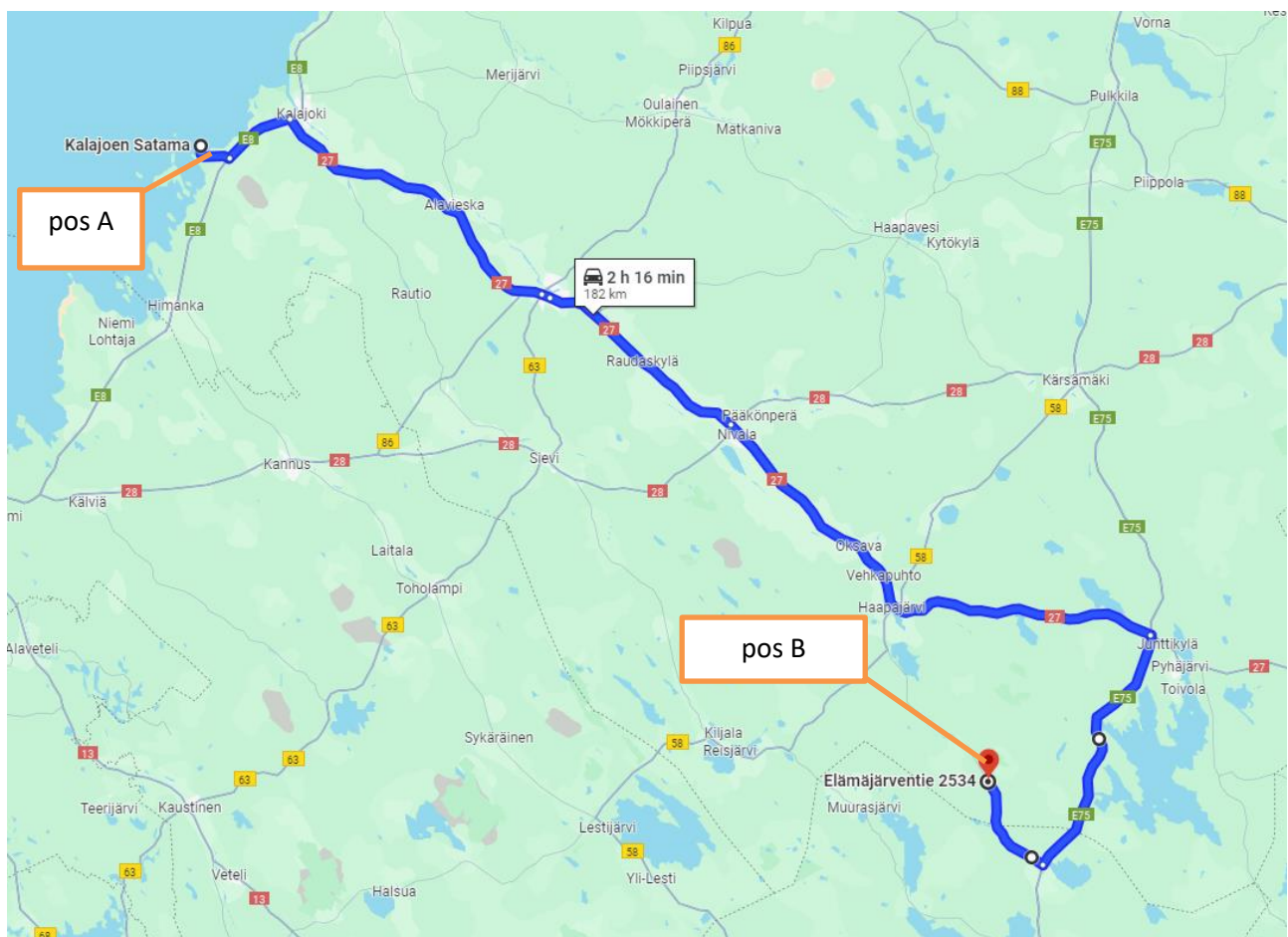
Purpose of this survey was to define a feasible route for transports with total dimensions stated above from port of Kalajoki to site area Moskuankangas in Pyhäjärvi municipality. Location of site entrance is also updated and known.

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

## 2.2. GENERAL SURVEY (overview of the whole route)

### 2.2.1. General survey of the route on the map from Kalajoki to site Moskuankangas.

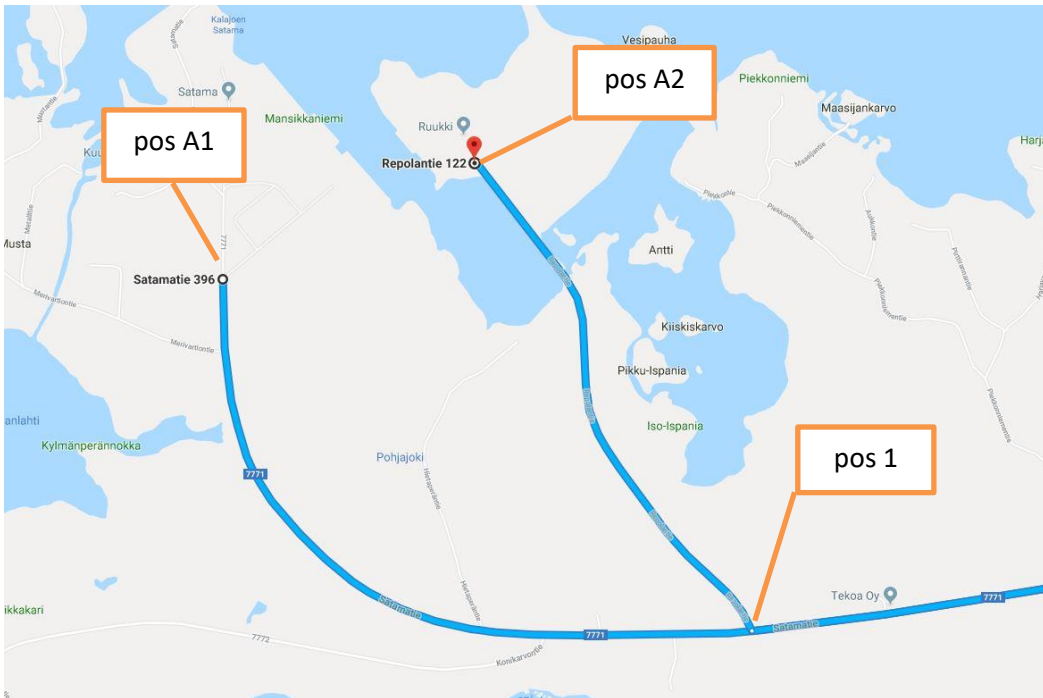
Route: Kalajoki port – Satamatie or Repolantie– road 7771 – road 8 – road 27 – road 4 – road 658 – site entrance (Elämäjärventie 2534)



Map 1. Route 1 from pos A Kalajoki port to pos B site entrance.

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Map 2. First part of the route.



Map 3. Second part of the route.

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Map 4. Third part of the route.



Map 5. Fourth part of the route.

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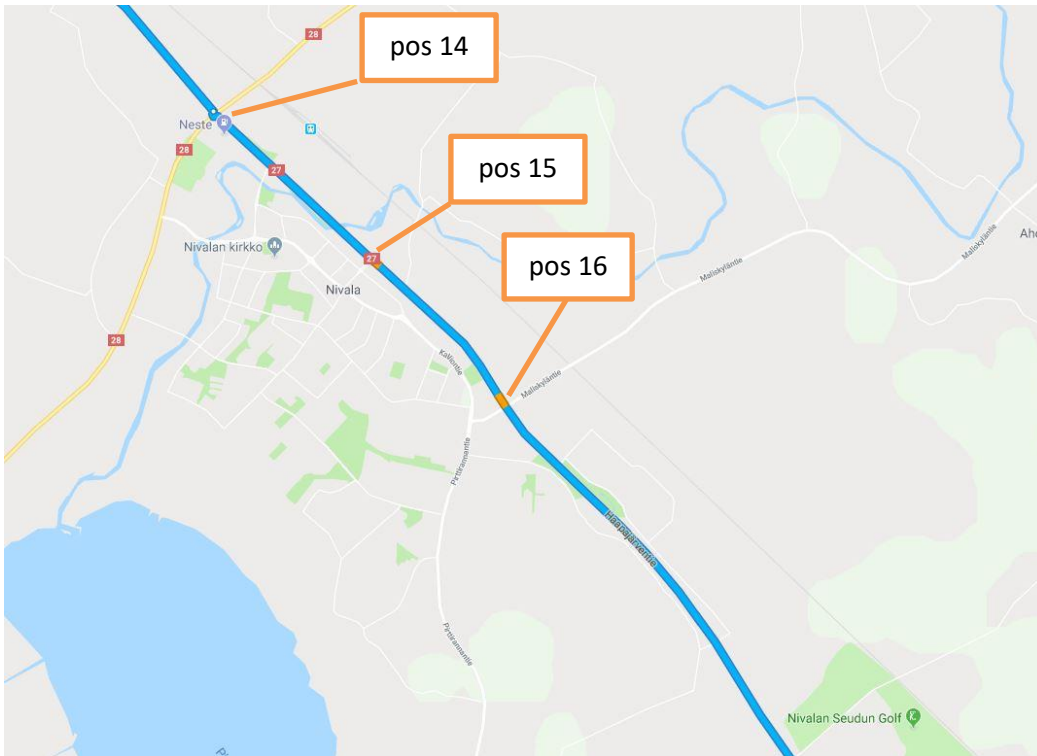
Map 6. Fifth part of the route.



Map 7. Sixth part of the route.

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Map 8. Seventh part of the route.



Map 9. Eighth part of the route.

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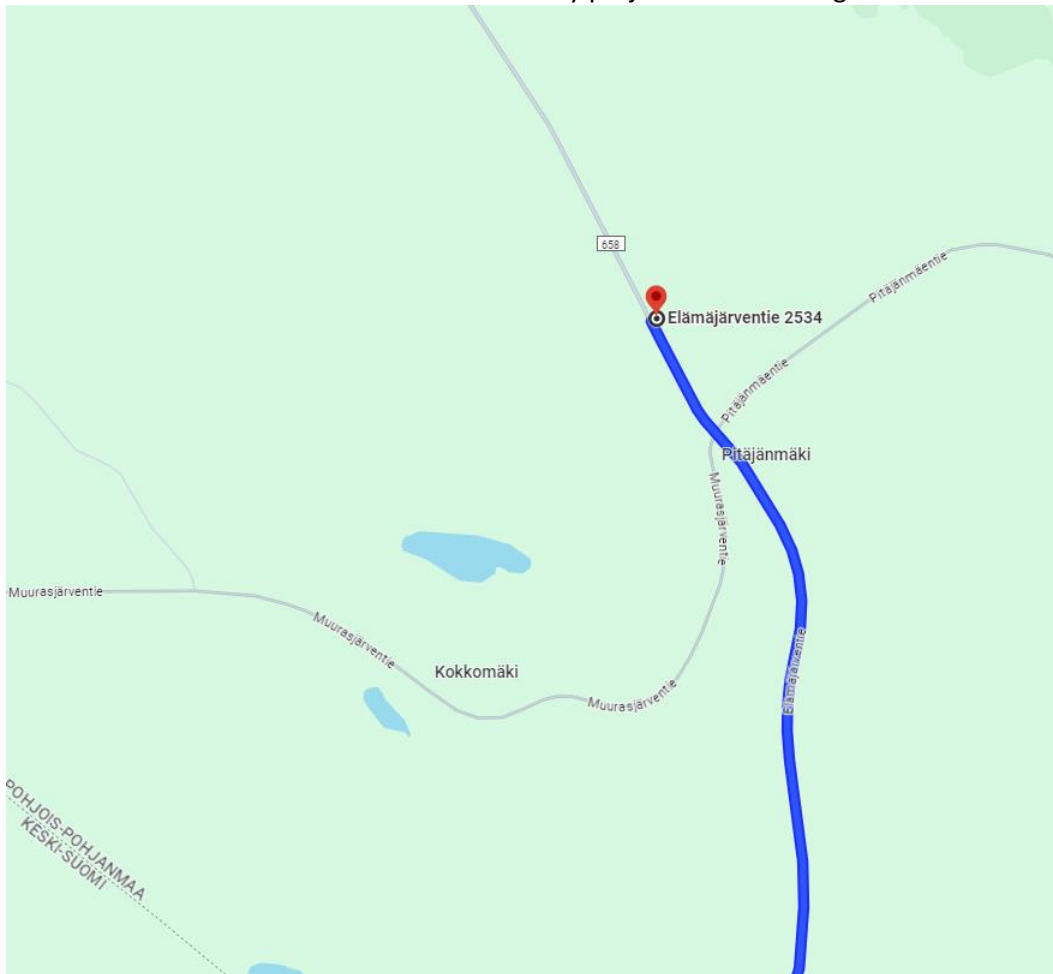
Map 10. Ninth part of the route.



Map 11. Tenth part of the route.

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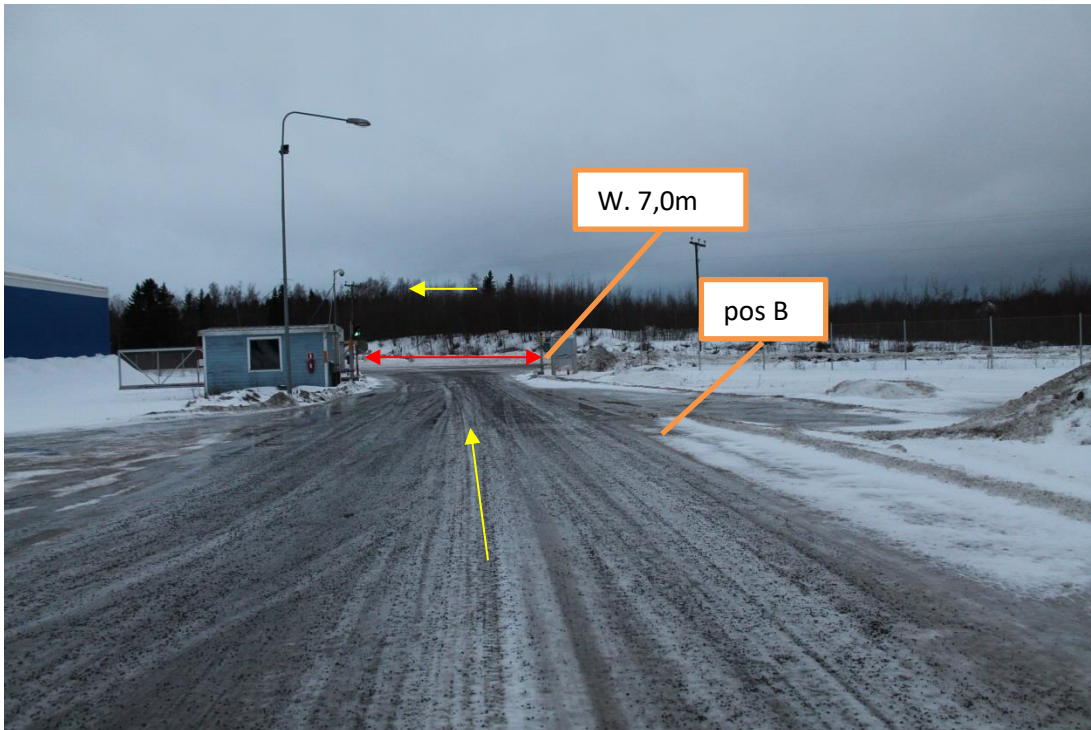


Map 12. Eleventh part of the route. Site entrance somewhere here.



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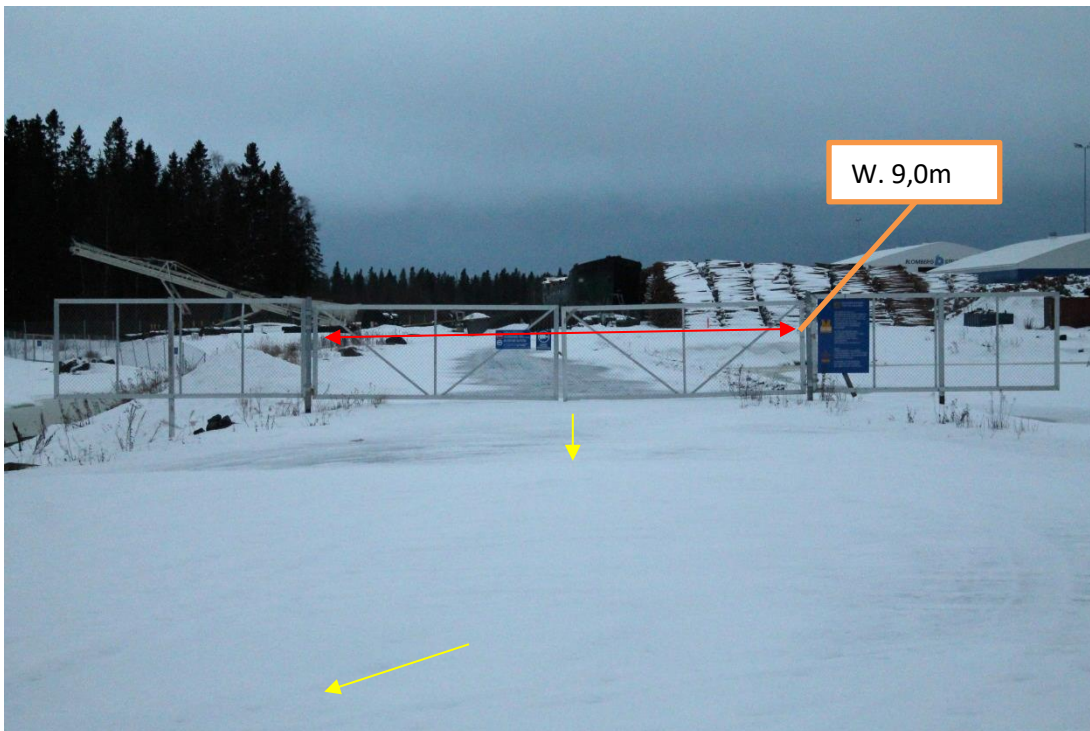
Pic 1/pos A1. Exit at Kalajoki port. Main gate is suitable for nacell, hub and towers. Yellow arrow points driving direction.



Pic 2/pos A1. Turning after gate toward Satamatie (road 7771). Marked part of fence and sign need to be removed if transports are longer than 45m. Yellow arrow points driving direction.

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Pic 3/pos A2. Exit at Kalajoki port. This gate is suitable for blades. Turning after gate toward Repolantie. Yellow arrow points driving direction.



Pic 4/pos A2. Exit at Kalajoki port. Turning after gate toward Repolantie. Marked trees need to cut. Yellow arrow points driving direction.

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Pic 5/ pos A2. Repolantie. Some tree branches need to cut on the Repolantie. Yellow arrow points driving direction. Yellow arrow points driving direction.



Pic 6/pos 1. Turning from Repolantie toward Satamatie (road 7771). Marked sign need to be removed. Marked trees need to cut. Yellow arrow points driving direction.

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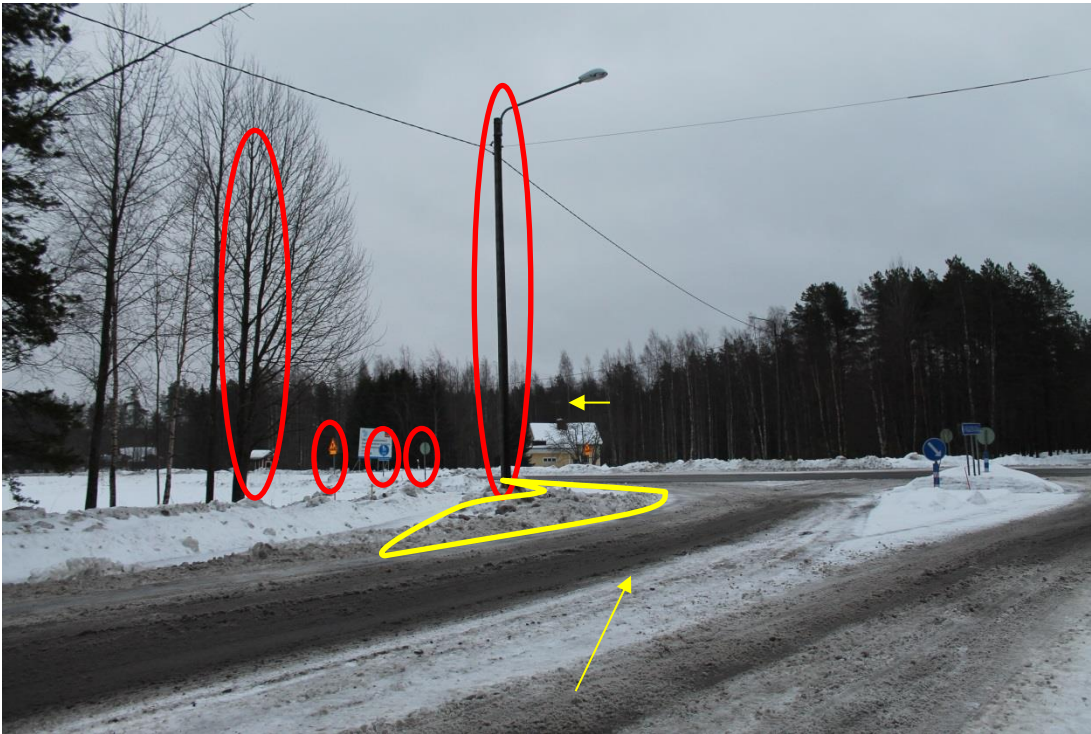
Pic 7/pos 1. Turning from Repolantie toward Satamatie (road 7771). Marked sign and wire need to be removed. Marked trees need to cut. Yellow arrow points driving direction.



Pic 8/pos 2. Turning from Satamatie (road 7771) toward road 8. Marked tree branches need to cut. Yellow arrow points driving direction.

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Pic 9/pos 2. Turning from Satamatie (road 7771) toward road 8. Marked signs and lamp post need to be removed. Marked tree need to cut. Marked area need to be filled. Yellow arrow points driving direction.



Pic 10/pos 3. Road 8. Loads which are wider than 5,5m need to use counter lane. Yellow arrow points driving direction.

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Pic 11/pos 3. Road 8. Transports continue on counter till end of traffic island. Height of the portal is 7,60m. Yellow arrow points driving direction.



Pic 12/pos 4. Turning from road 8 toward road 27. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.

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Pic 13/pos 4. Turning from road 8 toward road 27. Marked lamp posts and signs need to be removed. Marked areas need to be filled. Yellow arrow points driving direction.



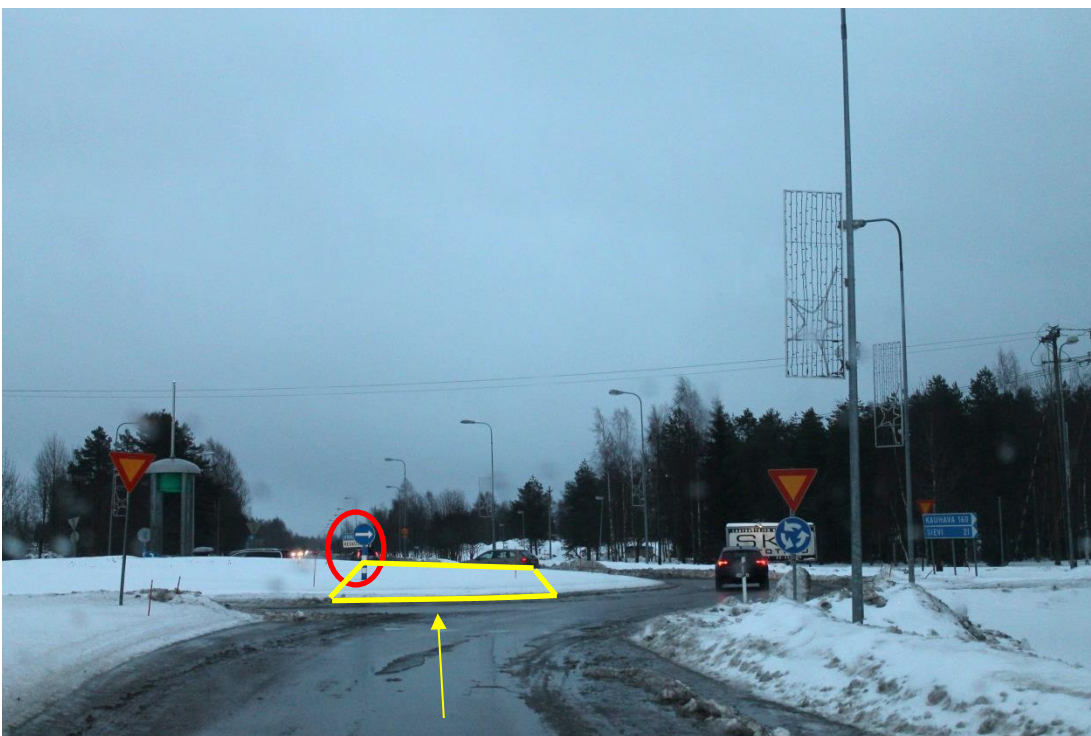
Pic 14/pos 5. Road 27. Marked portal need to be removed. Portal height 6,15m. Yellow arrow points driving direction.

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Pic 15/pos 6. Road 27. Marked sign need to be removed. Portal height 5,70m. Yellow arrow points driving direction.



Pic 16/pos 7. First roundabout in Ylivieska. Marked signs need to be removed. Marked area need to be filled. Yellow arrow points driving direction.



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Pic 17/pos 7. First roundabout in Ylivieska. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.



Pic 18/pos 8. Second roundabout in Ylivieska. Marked signs need to be removed. Marked area need to be filled. Yellow arrow points driving direction.

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Pic 19/pos 8. Second roundabout in Ylivieska. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.



Pic 20/pos 9. Road 27 in Ylivieska. Marked sign need to be removed. Yellow arrow points driving direction.

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Pic 21/pos 10. Road 27 in Ylivieska. Marked sign need to be removed. Yellow arrow points driving direction.



Pic 22/pos 11. Road 27 in Ylivieska. Marked sign need to be removed. Yellow arrow points driving direction.

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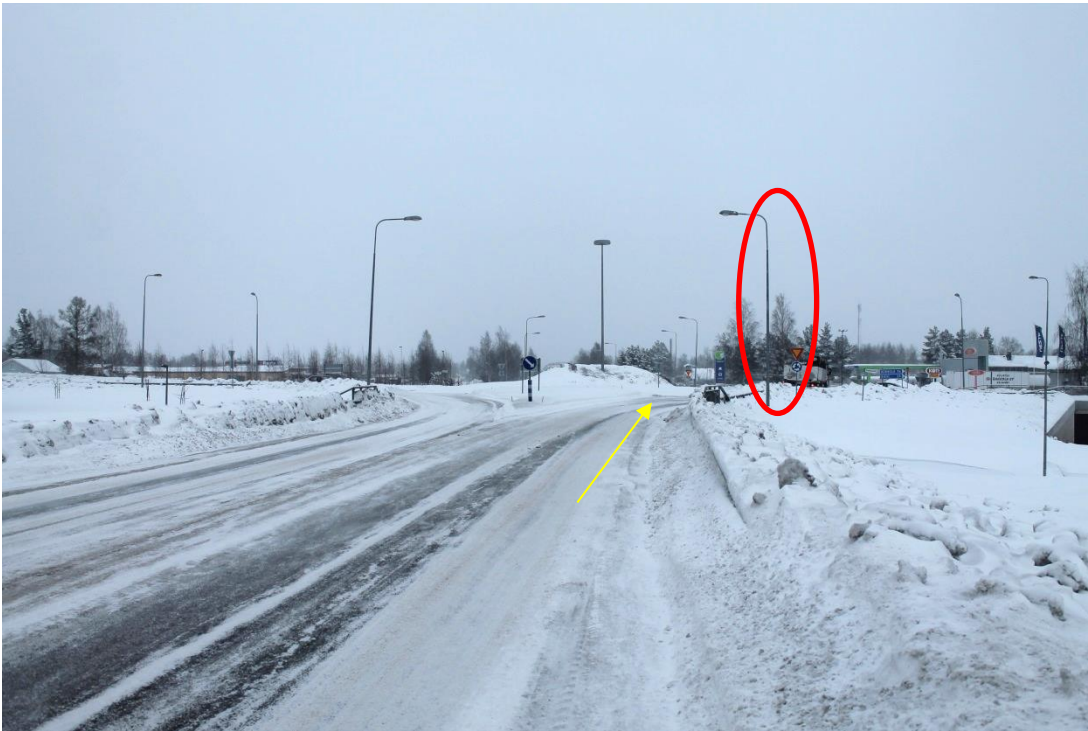
Pic 23/pos 12. Road 27 in Ylivieska. Marked sign need to be removed. Yellow arrow points driving direction.



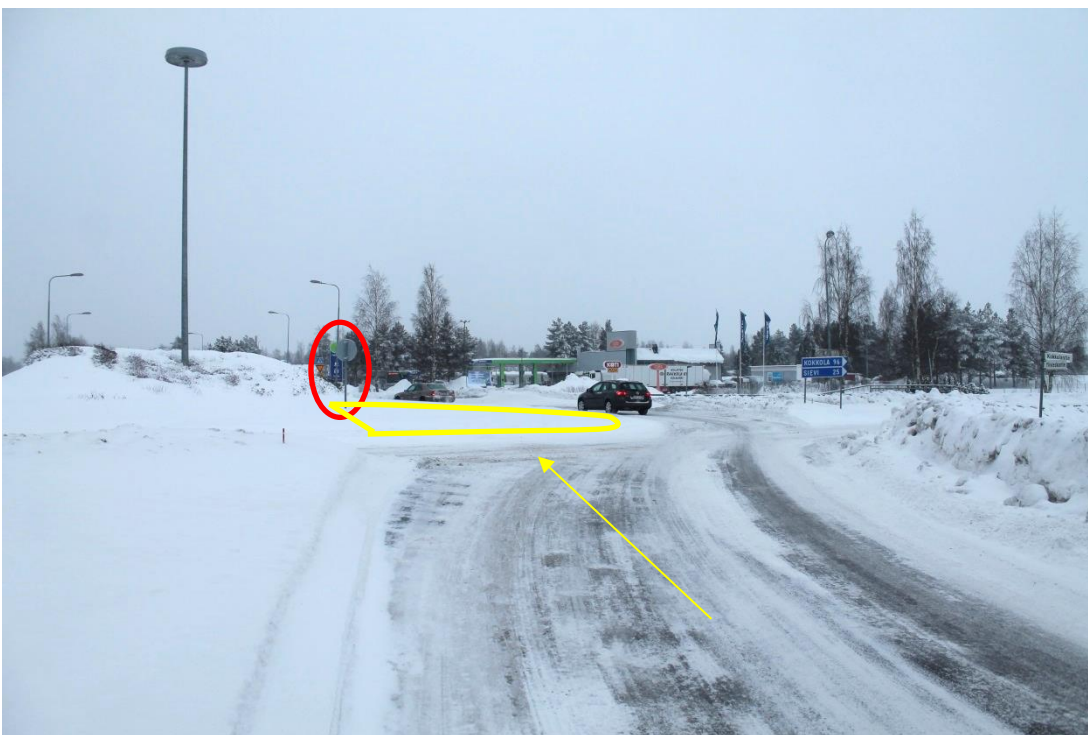
Pic 24/pos 13. Road 27 in Ylivieska. Marked sign need to be removed. Yellow arrow points driving direction.

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Pic 25/pos 14. Roundabout in Nivala. Marked sign and lamp post need to be removed. Marked area need to be filled. Yellow arrow points driving direction.



Pic 26/pos 14. Roundabout in Nivala. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.

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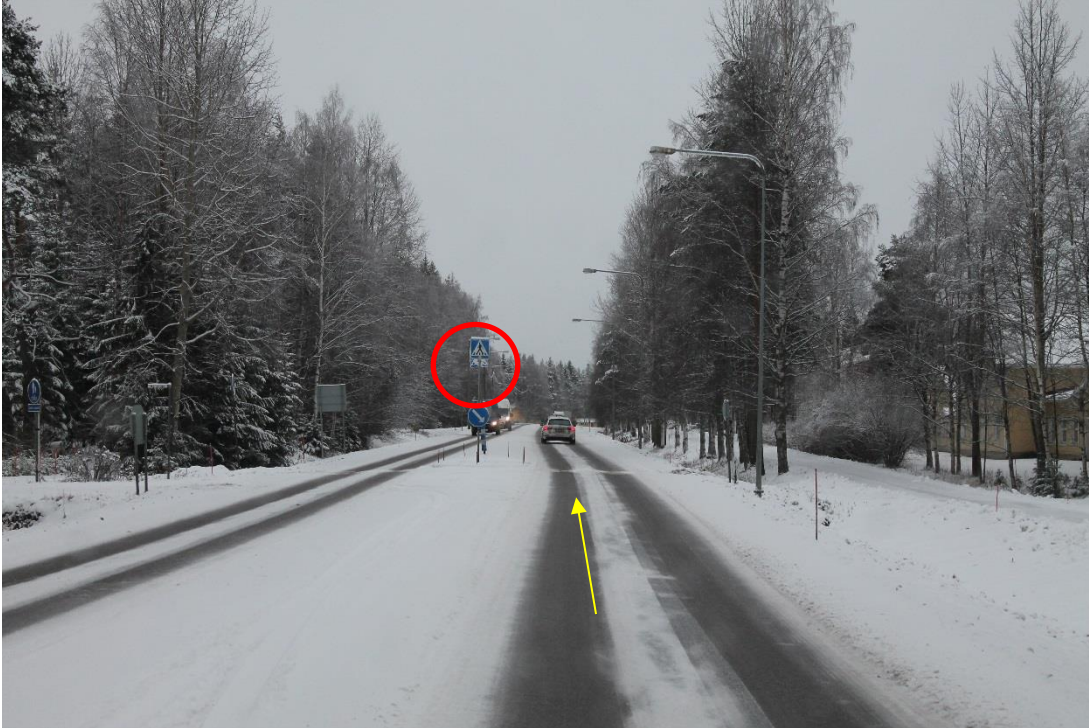
Pic 27/pos 14. Roundabout in Nivala. Marked area need to be flat. Yellow arrow points driving direction.



Pic 28/pos 15. Road 27 in Nivala. Marked portal need to be removed. Height 5,50m. Yellow arrow points driving direction.

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Pic 29/pos 15. Road 27 in Nivala. Marked signs upper part need to be removed. Yellow arrow points driving direction.



Pic 30/pos 16. Road 27 in Nivala. Marked portal need to be removed. Height 5,70m. Yellow arrow points driving direction.

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Pic 31/pos 16. Road 27 in Nivala. Marked signs need to be removed. Yellow arrow points driving direction.



Pic 32/pos 17. Road 27 in Haapajärvi. Marked portal need to be removed. Yellow arrow points driving direction.



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Pic 33/pos 18. Roundabout in Haapajärvi. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.



Pic 34/pos 18. Roundabout in Haapajärvi. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.

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Pic 35/pos 18. Roundabout in Haapajärvi. Marked sign need to be removed. Marked area need to be filled. Yellow arrow points driving direction.



Pic 36/pos 19. Turning from road 27 toward road 4. Transports take counter lane. Marked lamp post and sign need to be removed. Yellow arrow points driving direction.

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Pic 37/pos 19. Turning from road 27 toward road 4. Marked lamp post and signs need to be removed. Marked areas need to be filled. Yellow arrow points driving direction.



Pic 38/pos 19. Turning from road 27 toward road 4. Transports continue on counter lane till end of traffic island. Marked signs need to be removed. Yellow arrow points driving direction.

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Pic 39/pos 20. Road 4 in Elämäjärvi. Turning right and removing traffic signs. PHOTO FAILED, USED GOOGLE MAPS STREET VIEW IMAGE



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### **2.3. General notes regarding overhead lines**

Based on the survey there are following amount of overhead lines between port of Kalajoki and site entrance:

Low voltage protected height under 7,5m 28 pcs

Phone cable protected height under 7,5m 25 pcs

**High voltage height under 8,5m (transport height + safety margin 1,0m) 5 pcs**

**Traffic portal height under 7,5m 11 pcs**

Some of low voltage/phone cables are so low that lifting them during transport can be a problem. The lowest ones need to be taken down completely.

A test permit needs to be applied in order to define if tower transport with total weight of 140ton is possible on the defined route.

### **2.4. Disclaimer of liability**

<b>Disclaimer of liability</b>
<b>The proposed route is subject to permission of the local authorities.</b>
<b>The proposed route is only valid under condition it was at the time of the executed survey.</b>
<b>The proposed route is subject to permission for road modifications.</b>
<b>A second feasibility check of the proposed route will be done after awarding the transport contract to respective transport supplier min 8 weeks before start of deliveries by means of a test run.</b>