

Transport Plan Høg Jæren

Wind Turbine components:		Transport mode	
	Foundation parts(bolts, nuts washers, anchor rings)	6	Normal
	Power units	32	Normal
	Tower base	32	oversize
	Tower mid	32	oversize
	Tower top	32	oversize
	Nacelles	32	oversize
	Hub	32	oversize
	Blades	96	oversize
	containers	18	Normal

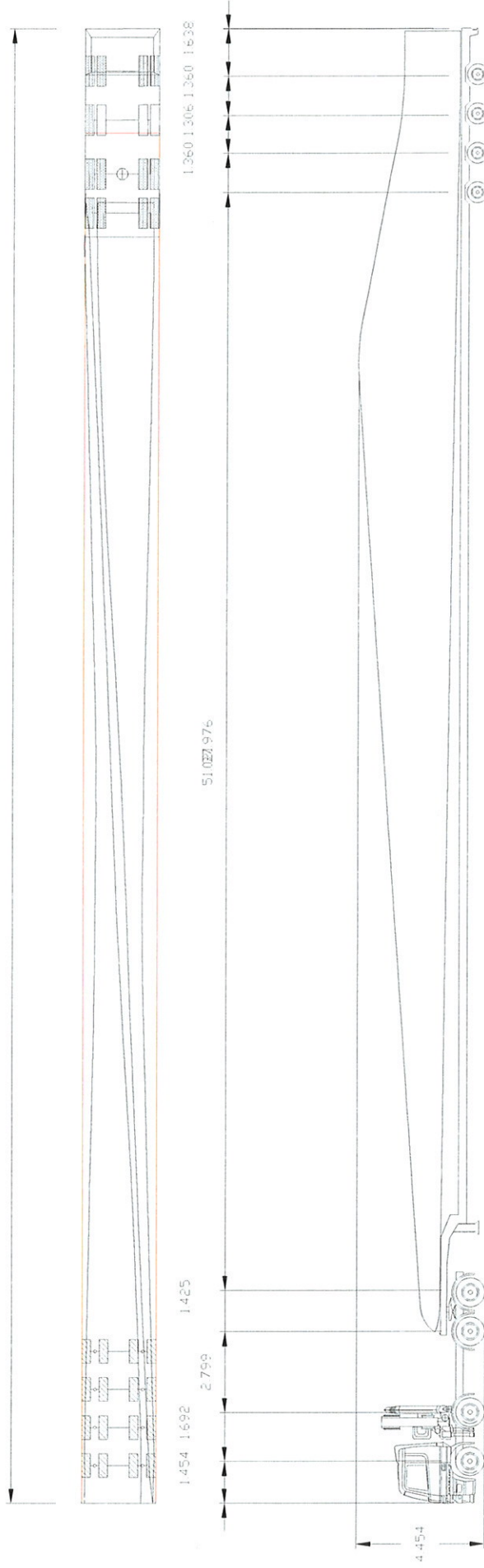
	Month 1	Month 2	Month 3	Month 4
Transport period:	----- --	-----	-----	-----

Port of Discharge: Tananger. All equipment to be trucked from Tananger to site Høg Jæren acc.
To enclosed Route Survey Report

Enclosure: Draft drawings of trailer configurations, Route Survey Report

When the Norwegian driving permits are in place we will be able to issue a more specific Transport Plan for the project

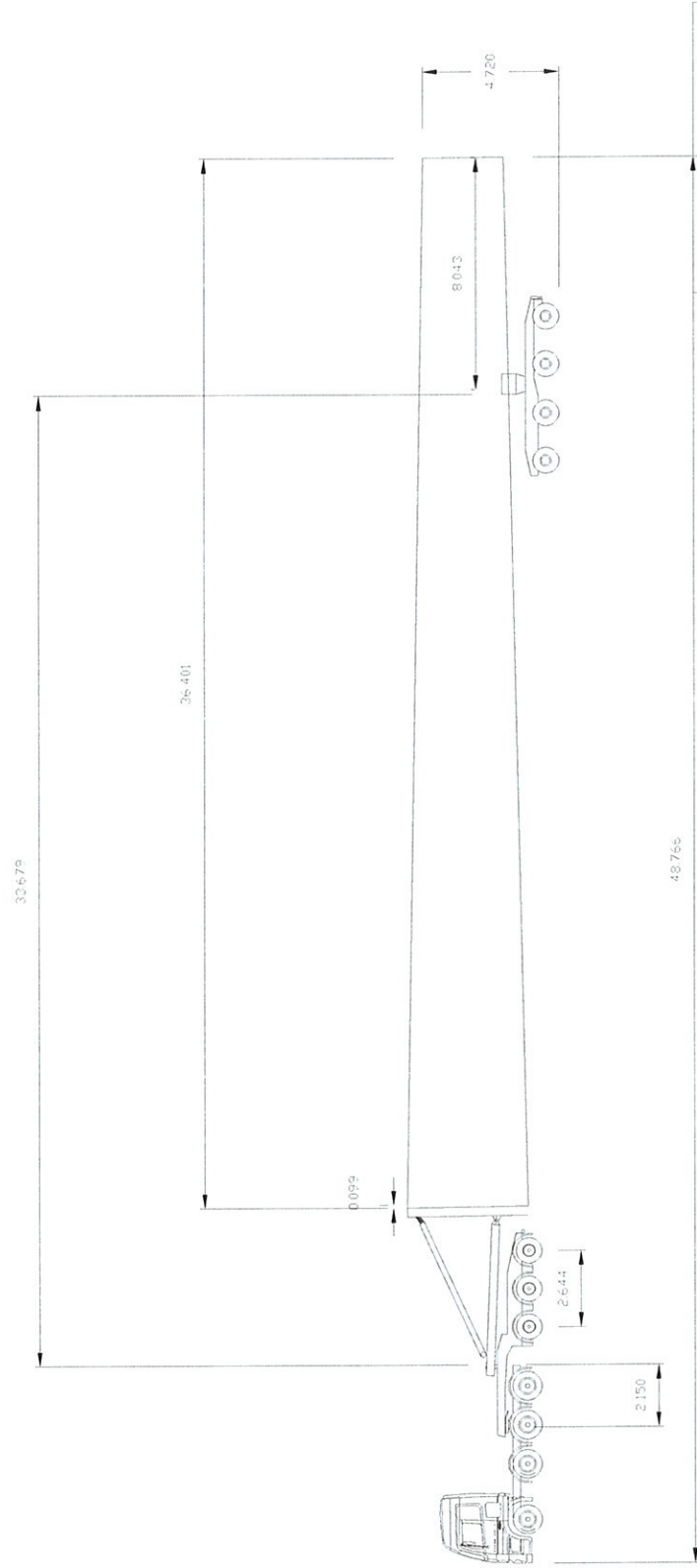
51.021



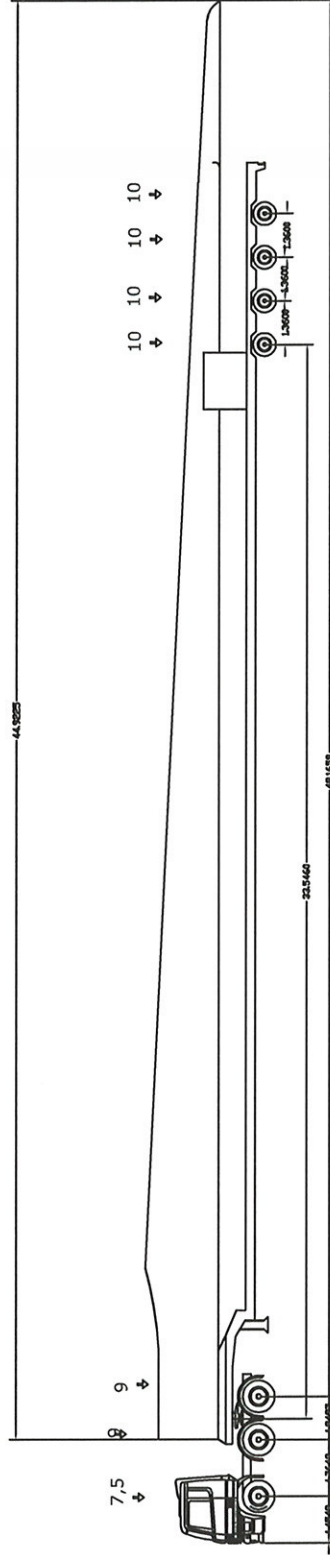
Project: transport af 1 stk B45 vinger	
Date: 12-02-09	Drawn: Siemens
BRANDT MACHINERY A/S	



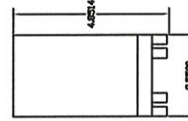
4+3+5 bodajm 33.5 m	
21-11-08	
BRUNNEN WERKE GMBH & CO. KG	



Erre:	Top tower
Dati:	10-02-09
Kunde:	Siemens
BRUNDE MASCHINENFABRIK 4/3	



E-type: 45 mtr Vinge	
Desc:	23-10-08
BRANDE MASKINTRANSPORT A/S	



ROUTE SURVEY
Høggjæren Site
From
Port of Tananger

Revision

Rev	Date	Change	Responsible	Checked
01	28-01-2009		CP/ BMT	

- Evaluation

1	No Cost
2	Some Work
3	Urgent Modification
4	Extreme amount of work

1. Harbour :
2. Road Modification
- 2.B (Roundabout - Signs - Lamp post – Trees – Power Cables)
3. On Site
4. Site Entrance
5. Bridge Calculations
6. Iron Plates
7. Other

1	2	3	4
X			
X			
	X		

1. Introduction
2. Project data
3. First time Visit / Participants at the survey
4. Travel arrangements, driving directions
5. Site Location – Distance to nearest town/Harbour
6. Next actions
7. Route Survey (Photos – Route description)
8. Conclusion

1. Introduction.

This document describes observations on route and explain the transport to site entrance/storage from Factory / Harbour.

The Route survey does not include any studies on site.

The Route survey does not include investigations bearing capacity of any bridges. This have to be investigated.

The route survey is based on an usual inspection on the date shown on next page, an is not to be regarded as a conclusive statement on suitability .

2. Project Data.

- Date of Route Study: 28- 01- 2009
- Project name Høggjæren from Port of Tanager
- Location Norway
- Quantity. 32 x SWT-2,3-93
- Configuration.
- Hub Height 80 M hub height
- Length - Dim - Weight
- Tower sections.
- 1: 15,66 m x 4,50 m – 4,200 m, weight 65 tonnes
- 2: 26,88 m x 4,200 m-4,200 m, weight 62 tonnes
- 3: 36 m x Ø 4,200 - -2,392 m, weight 55 tonnes
- Blades: 45,20 x 2,20 x 3,70, weight 12,2 tonnes
- Nacelles: 11,4 m x 3,50 m x 3,85 m, weight 87,5 tonnes
- Hubs: 4,15 m x 3,65 m x 2,89 m, weight 26 tonnes
- Spinners: 3,00 m x 3,00 m x 3,89 m, weight 0,5 tonnes
- Power unit (2 pcs. pr. Truck): 3,50 x 3,00 x 3,84 m, weight 7,6 tonnes

3. First time visit.

Describe your first hand impression and the participates at the survey

In General the access route is suitable for the delivery.

Modifications is necessary.

Participants:

Carsten Pedersen / BMT

Jan Noergaard / Siemens Wind power

4. Travel arrangements

Flight from DK to Sola Stavanger

Rental Car

SIEMENS		Transport / Route Survey Document route survey rev 01 Restricted Release Swp Project No E-7422.
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5. Site location.

The Site is placed on route 504 approximately 6 Km East of Varhaug

The distance from Port of Tananger to Site Høgjæren is approximately 31 Km.

6. Next actions.

Not Estimated

Apply for road permits in order to receive information and carrying capacity for roads, bridges and other restriction from authority.

7. Route Survey.

- 1) Road / route description. The points indicated are approximately.
- 2) Map
- 3) Photos (point 1 - 12 on route)

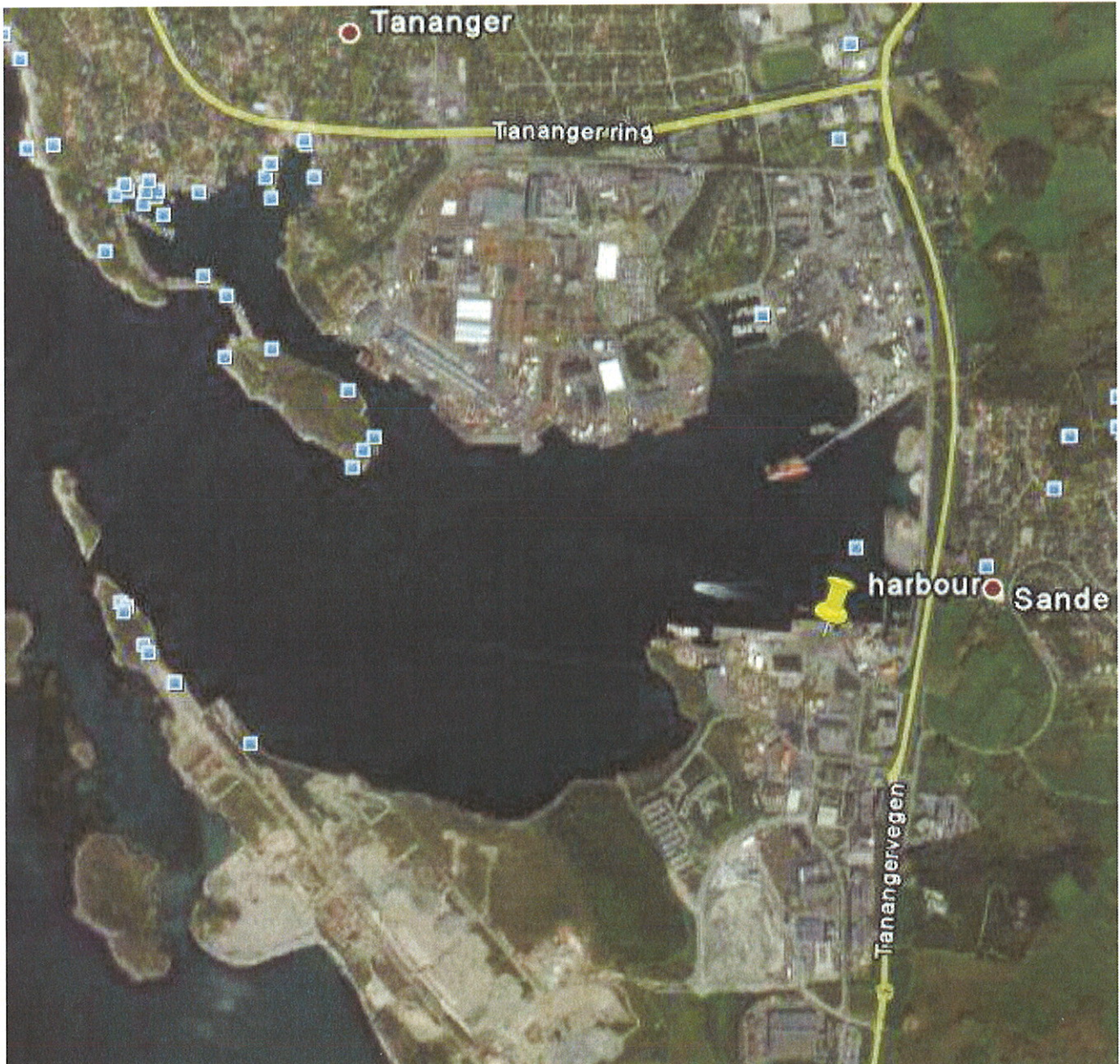
road/route description.

- 0,0 km 1 Depart near Tananger on Local road(s) (East) for 0,1 k...
- 0,1 km 2 At near Tananger, turn LEFT (East) onto Risavikahavnering for 0,2 ...
- 0,3 km 3 At Hamrasletta 10, 4050 Sola, stay on Risavikahavnering (East) for 0,2 k...
- 0,5 km Enter roundabout for 20 m
- 0,5 km 4 At roundabout, take the FOURTH exit onto 509 [Tanangervegen] for 3,9 ...
- 4,4 km Enter roundabout for 30 m
- 4,4 km 5 At 509, 4050 Sola, bear RIGHT (North-East) onto 509 [Flyplassvegen] for 0,4 k...
- 4,8 km Enter roundabout for 30 m
- 4,8 km 6 At roundabout, take the SECOND exit onto 509 [510] for 1,7 ...
- 6,6 km 7 At roundabout, take the FIRST exit onto 509 [510] for 1,3 ...
- 7,8 km Turn LEFT (East) onto 509 for 10 m
- 7,8 km 8 At Sandnesvegen 19, 4050 Sola, stay on 509 [510] (North) for 0,8 ...
- 8,7 km At roundabout, take the FIRST exit onto 443 [Forusbeen] for 2,9 ...
- 11,6 km At roundabout, take the SECOND exit onto 349 [Løwenstrasse] for 1,3 ...
- 12,9 km At roundabout, take the FIRST exit onto Ramp for 0,3 km towards E39 / Kristiansand / Sandn...
- 13,2 km Merge onto E39 for 3,2 k...
- 16,4 km 9 At near Sandnes, stay on E39 (South) for 12,0 k...
- 28,4 km Keep RIGHT onto Ramp for 0,2 km
- 28,6 km Bear RIGHT (South) onto E39 [Sandnesveien] for 2,0 km
- 30,6 km Enter roundabout for 10 m
- 30,6 km 10 At roundabout, take the FIRST exit onto E39 [Sandnesveien] for 15,2 k...
- 45,8 km Turn RIGHT (South-West) onto 504 for 40 m
- 45,8 km 11 At 504, 4389 Bjerkreim, stay on 504 (South-West) for 12,0 k...
- 57,8 km 12 At 504, 4342 Time, turn LEFT to stay on 504 for 2,1 ...
- 59,9 km 13 Arrive 504, 4342 Ti...

Map:

Picture 1:

Map indicate Port for unloading, new area is being build with 30.000 m2 storage



Map:



Map:

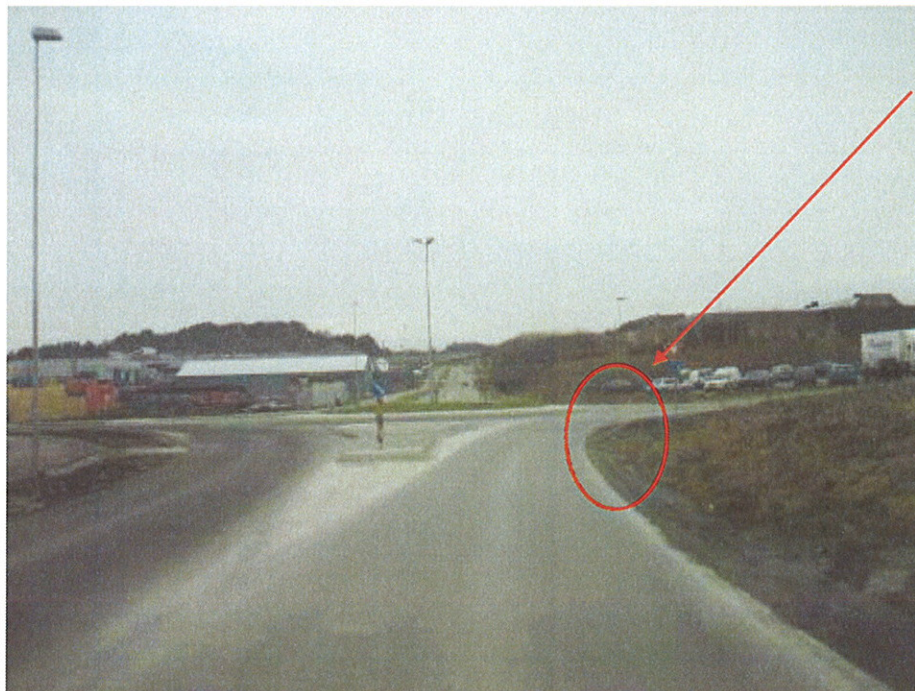




Picture 2:

Exit from Port

Tree in middle of the roundabout has to be removed



Picture 3:

Corner have to be modified for heavy haulage transport.



Picture 4:

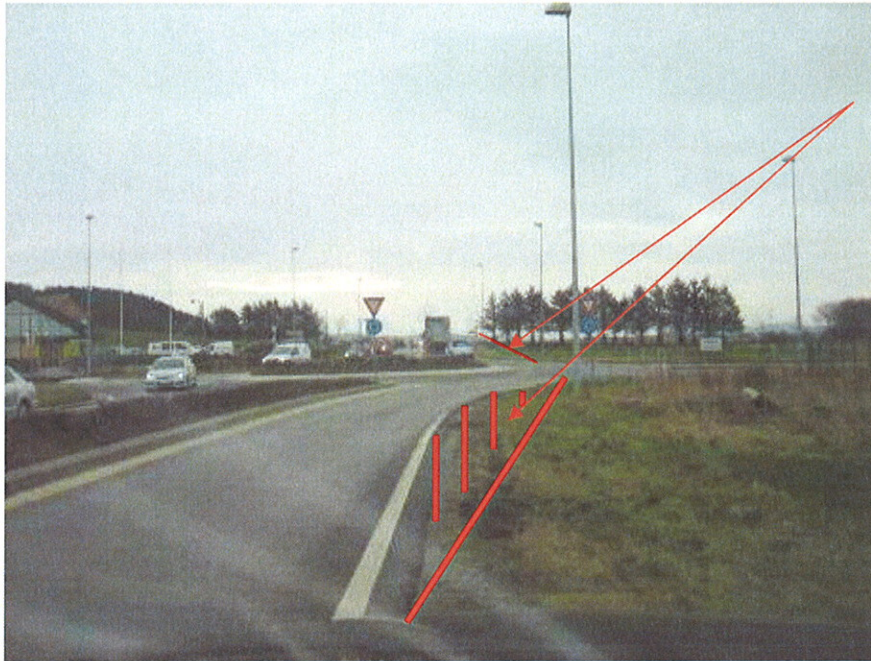
3 signs have to be removed, or modified to be removable.

Yellow arrow indicate driving direction



Picture 5:

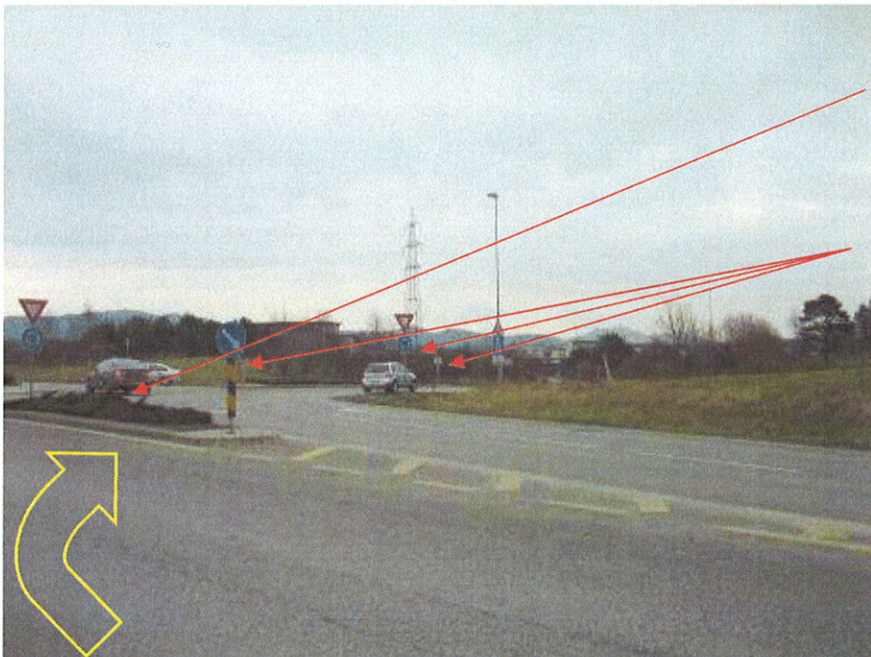
Roadwork will have to be finished before start of delivery to site



Picture 6:

Marked area will have to be modified for heavy haulage transport, the same on exit of the roundabout

From 25 m before and 2 m in the width. And 25 m after and 2 m in the width.



Picture 7:

Road island has to be modified to drive over with heavy haulage transport.

Signs will have to be removed or made to remove by hand, to make transport able to pass.

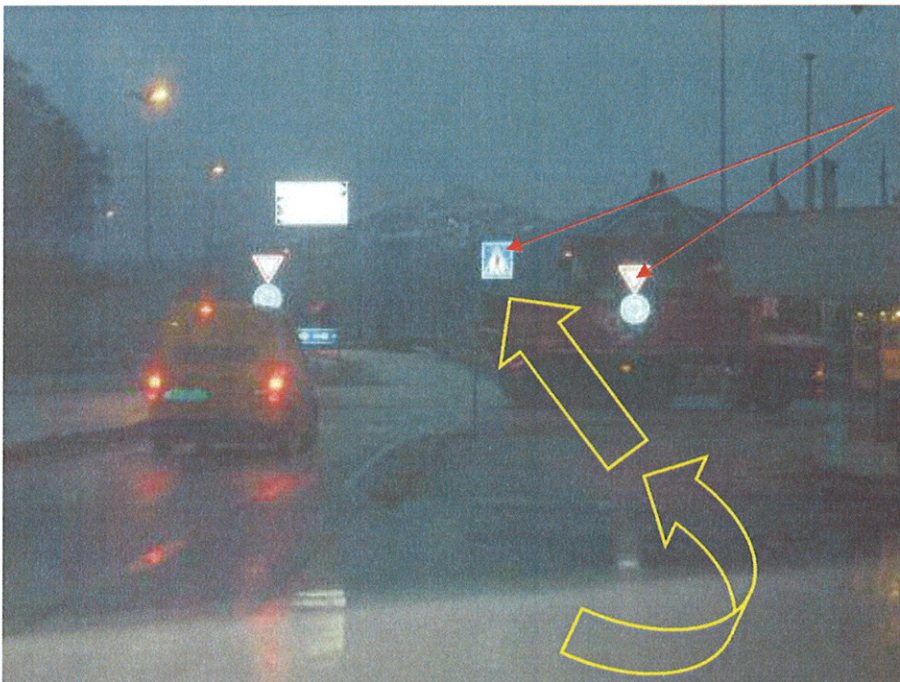
Yellow arrow indicate driving direction.



Picture 8:

Sign has be removed or modified to be removable

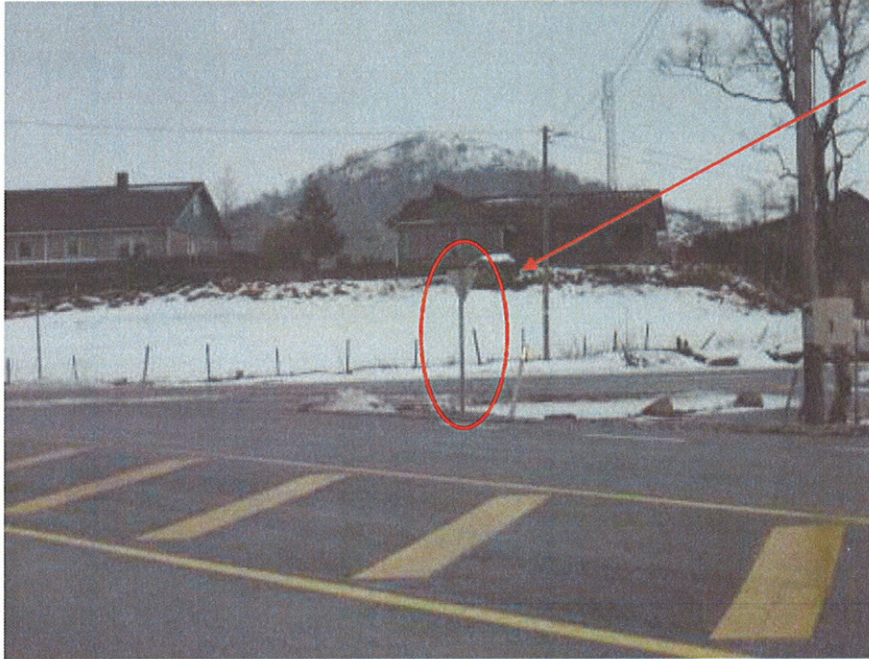
Marked area 25 m before the roundabout, and 2 m in the width, will have to be drive able for heavy haulage transport.



Picture 9:

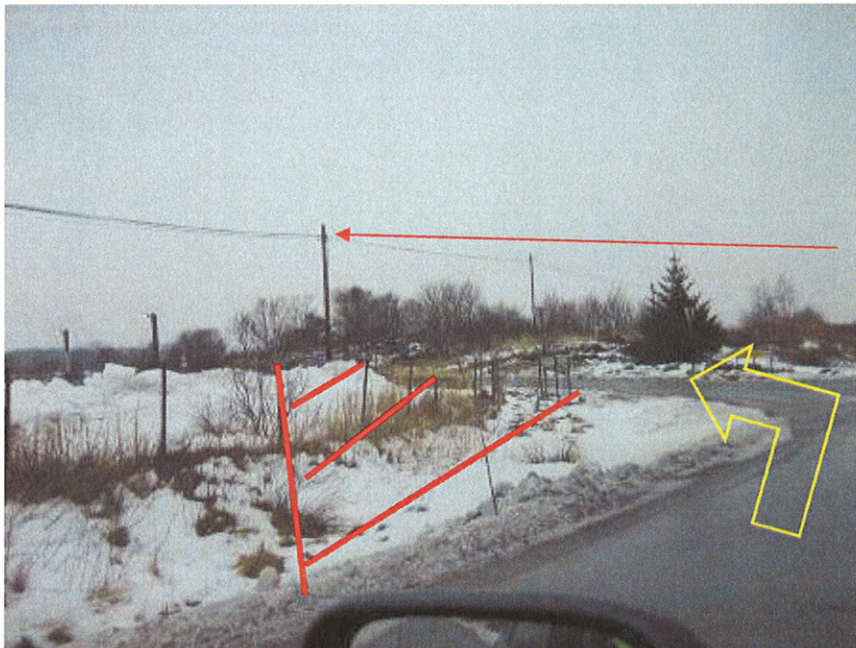
2 Signs have to be removed, or modified to be removable.

Yellow arrows indicate where trucks will have to drive.



Picture 10:

Sign has to be removed, or modified to be removable, to allow overhang.



Picture 11:

From 25 m before road turn, and to 25 m after the marked land, will have to be level with road to allow overhang

Electric mast will have to be moved

Yellow arrow indicate driving direction.



Picture 12:

Indicated site entrance.

Road and exit from tarmac road will have to be after Siemens indications for site roads.

8. Conclusion

The selected route is suitable for transporting wind turbines.

The route will have some modifications to be carried out.

1

Bridge calculations will be carried out during the permit-application process.

Electrical wires needs to be in 5 meters height.

Branches will have to be in 5 meters height.