



GRE CODE  
GRE.EEC.D.25.IT.W.14706.00.076.00

PAGE 1 di/of 24

**TITLE:** Viabilità – Itinerario Trasport

**AVAILABLE LANGUAGE:** EN

IMPIANTO EOLICO DI POTENZA COMPLESSIVA PARI A 78 MW  
COMUNI DI LATIANO E MESAGNE  
PROVINCIA DI BRINDISI

**VIABILITÀ – ITINERARIO TRASPORTI**

File: Viabilità – Itinerario trasporti.docx0

REV.	DATE	DESCRIPTION	PREPARED	VERIFIED	APPROVED
00	20/11/2020	Prima Redazione del Documento	SDB	SDB	A. SERGI

**GRE VALIDATION**

NOME (GRE) COLLABORATORS	A.PUOSI VERIFIED BY	DISCIPLINE VALIDATED BY
-----------------------------	------------------------	----------------------------

PROJECT / PLANT <b>Latiano WF</b>	GRE CODE																		
	GROUP	FUNCION	TYPE	ISSUER	COUNTRY	TEC	PLANT			SYSTEM	PROGRESSIVE	REVISION							
	<b>GRE</b>	<b>EEC</b>	<b>D</b>	<b>2</b>	<b>5</b>	<b>I</b>	<b>T</b>	<b>P</b>	<b>1</b>	<b>4</b>	<b>7</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>6</b>	<b>0</b>

CLASSIFICATION:	COMPANY	UTILIZATION SCOPE
-----------------	---------	-------------------

*This document is property of Enel Green Power S.p.A. It is strictly forbidden to reproduce this document, in whole or in part, and to provide to others any related information without the previous written consent by Enel Green PowerS.p.A.*



**INDICE**

1	INTRODUCTION.....	3
2	PRELIMINARY CARGO DETAILS .....	4
3	PRELIMINARY TRANSPORT CONFIGURATIONS.....	5
4	ROAD ITINERARY DESCRIPTION.....	8
5	ROUTE CRITICAL POINTS / ADJUSTMENT WORKS.....	9
6	CONCLUSIONS.....	24



## 1 INTRODUCTION

This Route Survey report provides a preliminary feasibility report for abnormal transports of wind elements from the Port of Brindisi to the Latiano Wind Farm.

The coordinates of Latiano WF Enter Gate provided by Client is :

Lat. 40.574279° Long. 17.719269°

This document provides a description of the modes of transport, the critical points and the road adaptations necessary to carry out the transports.

SDB recommends to do a transport trial for blades in order to confirm outcomes of this report. Be it noted that the transport trial outcomes can lead to the need of additional civil works or technical studies like topographic study.

Due to abnormal dimensions of main items in the scope of work, notably for blades 83.7m long, the outcomes of this TFS3 Study to be considered theoretical and subject to final check of detailed drawings of cargo to confirm the intended mean of transport, and the Road Authorities approval.

In order to approach local Authorities to receive their feedback on this report the following documents are required.

- Cargo dimensions and weight declaration signed and stamped from Client
- The full set of transportation drawings of cargo (showing dimensions, weight, CoG, supports, lifting points, lashing points, basement/footprint details, etc.)

Time required to get transportation permits is about 90 days starting from the time we receive the full set of documents to approach the local Authorities. This time excludes any specific request coming from local Authorities like make measurements/ engineering analysis of road infrastructures (e.g. bridges), etc.



## 2 PRELIMINARY CARGO DETAILS

Preliminary information provided by this document is based on dimensions and weight stated by Client as per table underneath.

Table hereunder shows preliminary dimensions and weight of main components of SIEMENS SG170 HH115m provided by Client.

<b>Denomination</b>	<b>Length [mm]</b>	<b>Width [mm]</b>	<b>Height [mm]</b>	<b>Unit Weight [Kg]</b>
Section 1	13.540	4.700	4.700	84.941
Section 2	18.190	4.670	4.670	85.087
Section 3	23.740	4.400	4.400	84.979
Section 4	27.000	4.430	4.430	74.187
Section 5	29.945	3.560	3.560	65.517
Nacelle	14.614	4.720	3.405	98.000
Drive Train	6.680	3.200	2.300	76.300
Rotor Hub	4.636	4.184	4.005	54.900
Blade	83.720	4.657	4.321	24.600
Transformer	NA	NA	NA	17700
Generator	NA	NA	NA	16500

For all main items Client has provided drawings like sample type on which we underline it wasn't possible to evaluate the Centre of Gravity, supports, lifting points and lashing points. Hence, all information included in this document assume all main items suitable for the intended main of transport. Support points on trailers, load modes, centre of gravity and anchor points shall be verified once preliminary drawings will be released by Client.

Due to what per above, this report remains only theoretical and shall be checked and verified once technical drawings of the items will be provided by Client.

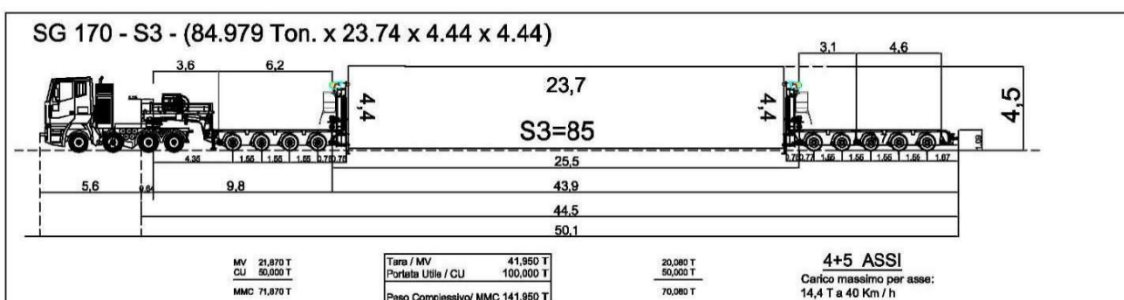
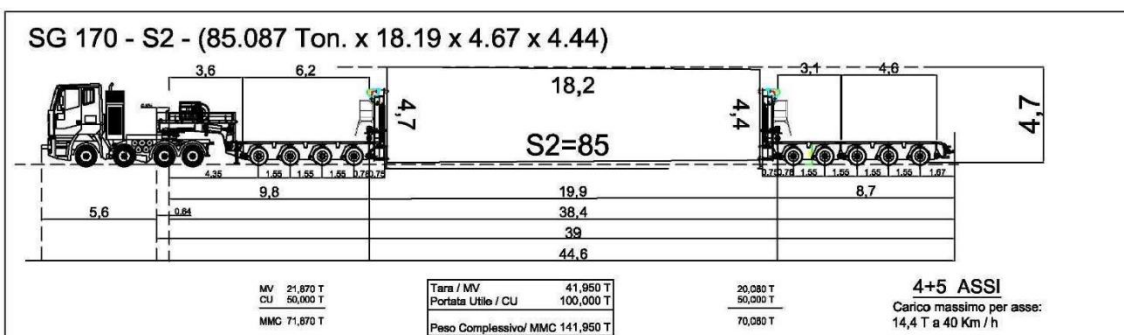
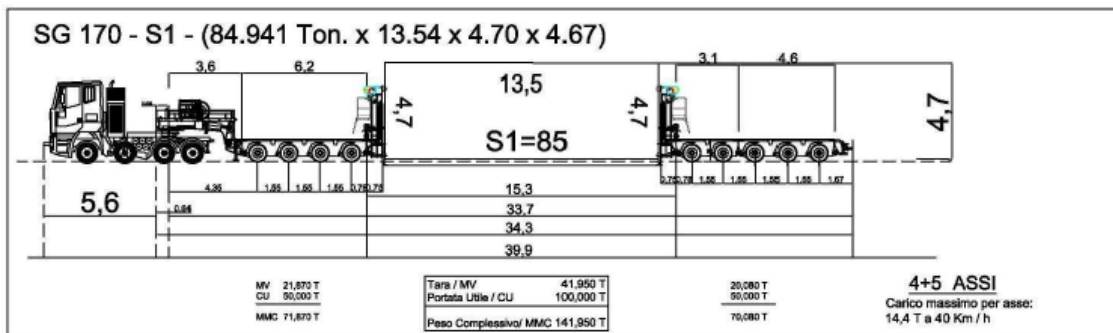
### 3 PRELIMINARY TRANSPORT CONFIGURATIONS

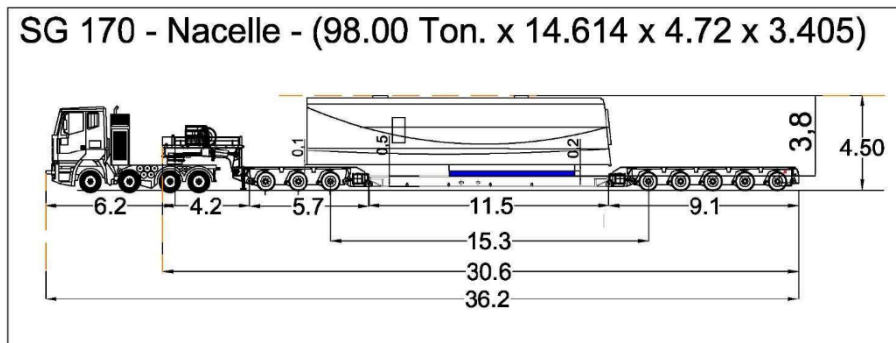
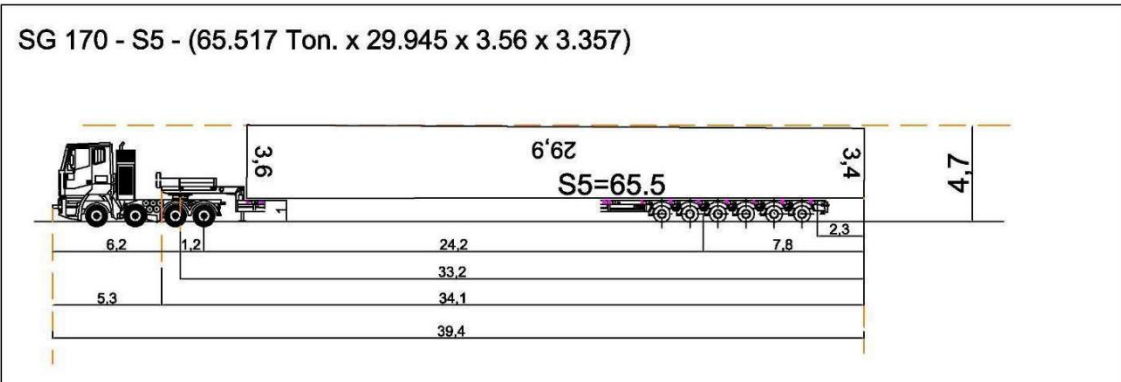
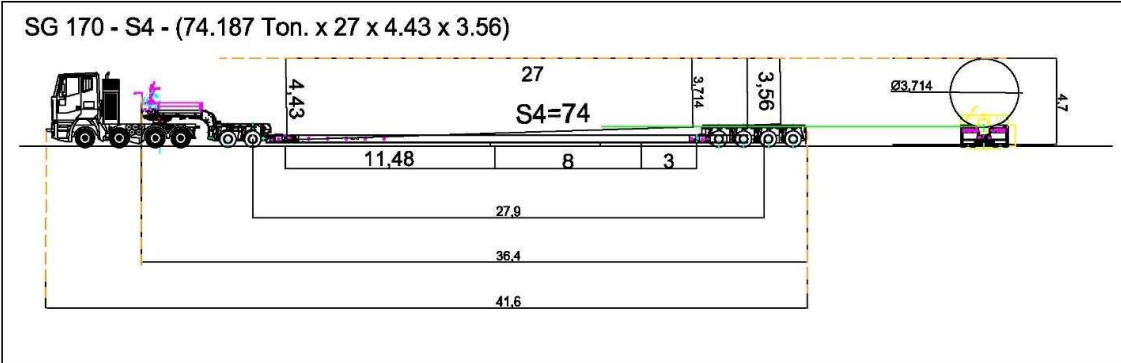
This section provide preliminary transport configurations SDB intend to use for the transports in the scope of work.

The following preliminary transport configurations are proposed based on information on cargo provided by Client at time this survey has been realized. Due to lack of information on centre of gravity, supports, lashing points, the following transport configurations assume the following statement valid.

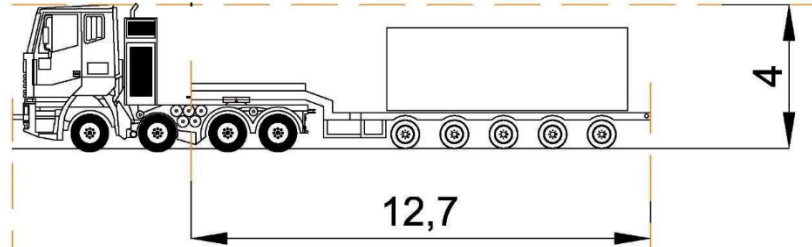
- Items properly designed to spread its own weight around the Centre of Gravity symmetrically
- Items provided with suitable supports for the intended mean of transports
- Items provided with accessible lashing points

The composition of the convoys has been studied not to exceed 12 tons per axle (limited to the trailer) as required by Italian regulations.

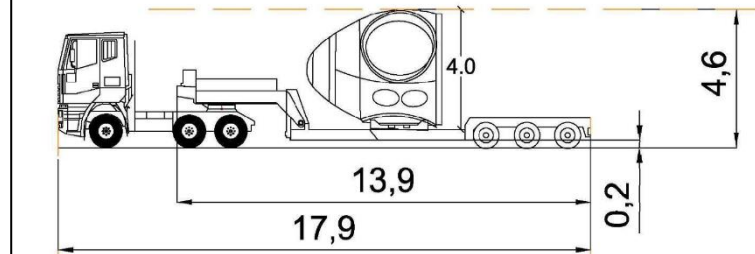




**SG 170 - Drive Train - (76.30 Ton. x 6.680 x 320 x 2.30)**



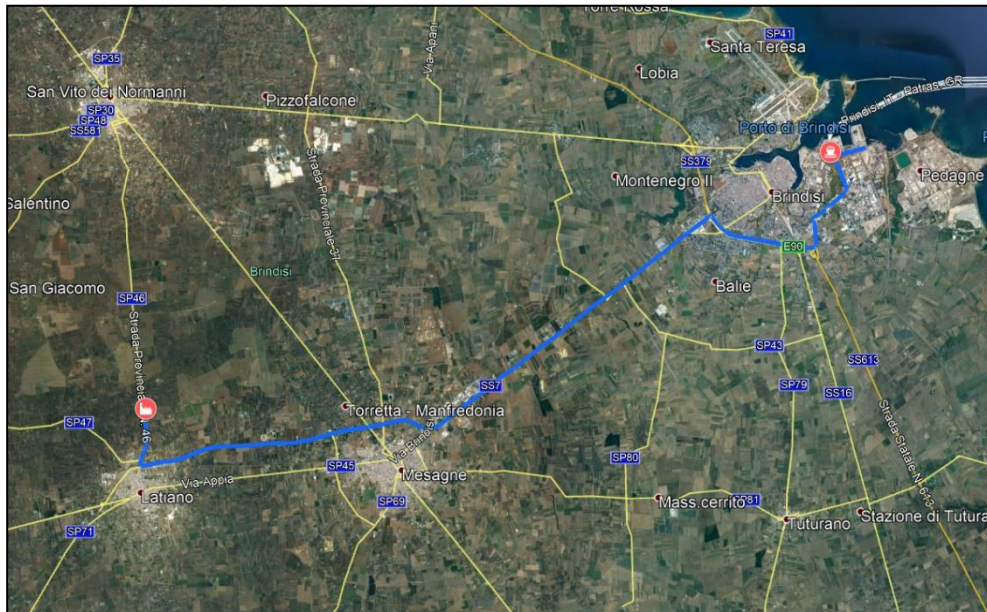
**SG 170 - Hub - (54.90 Ton. x 4.636 x 4.184 x 4.005)**



#### 4 ROAD ITINERARY DESCRIPTION

SDB has considered the items with the most critical dimensions in order to evaluate the routing from Brindisi port to Latiano WF.

SDB has visited and evaluated the following route.



Total Routing from Brindisi port to Latiano Wind Farm (35km):

- Brindisi port
- Viale Albert Einstein;
- Viale Ettore Maiorana;
- Via Enrico Fermi;
- Viale Ettore Maiorana;
- Via Giulio Natta;
- SS 613 – SS Adriatica;
- SS 7 per Mesagne;
- Sp 46 – Ingresso P.E.;

**To transport the blades the blade lifter is required starting from Brindisi port.**



## 5 ROUTE CRITICAL POINTS / ADJUSTMENT WORKS

### LEGEND

- Driving forward      → Driving reverse      → Alternative path for blades
- Area to be arranged obstacle free
- Area to be arranged suitable for trailer transit

<b>ID</b>	<b>01</b>	<b>GPS Coordinate :</b>	<b>40°38'42.85"N - 17°58'31.14"E</b>
	<b>Road</b>	Viale Albert Einstein.	
	<b>Place</b>	Brindisi.	
	<b>Road adjustments / Remarks :</b>	<p>Blades need to be drive out Brindisi port using the blade lifter.</p> <p>The blade lifted needs to cross the gate in front of the port entrance. Then, drive reverse and turn right lifting the blade. Finally get the road forward.</p>	

ID 01

GPS Coordinate :

40°38'42.85"N  
17°58'31.14"E



<b>ID</b>	<b>02</b>	<b>GPS Coordinate :</b>	<b>40°38'31.12"N</b> - <b>17°57'45.48"E.</b>
<b>Road :</b>	Viale Albert Einstein / Viale Ettore Majorana		
<b>Place :</b>	Brindisi.		
<b>Road adjustments /</b>	Enter inside the parking area ,		
<b>Remarks :</b>	then driving back to Viale Majorana, and finally forward again to Viale Majorana.		






<b>ID</b>	<b>03</b>	<b>GPS Coordinate :</b>	<b>40°38'26.94"N - 17°57'53.15"E</b>
<b>Road</b> :	Viale Ettore Maiorana / Via Enrico Fermi		
<b>Place</b> :	Brindisi.		

**Road adjustments /** At the roundabout the blade lifter turn right to Taranto while tower sections proceed onward and by-pass Via Fermi.  
**Remarks :** By-pass required to avoid additional civil works.



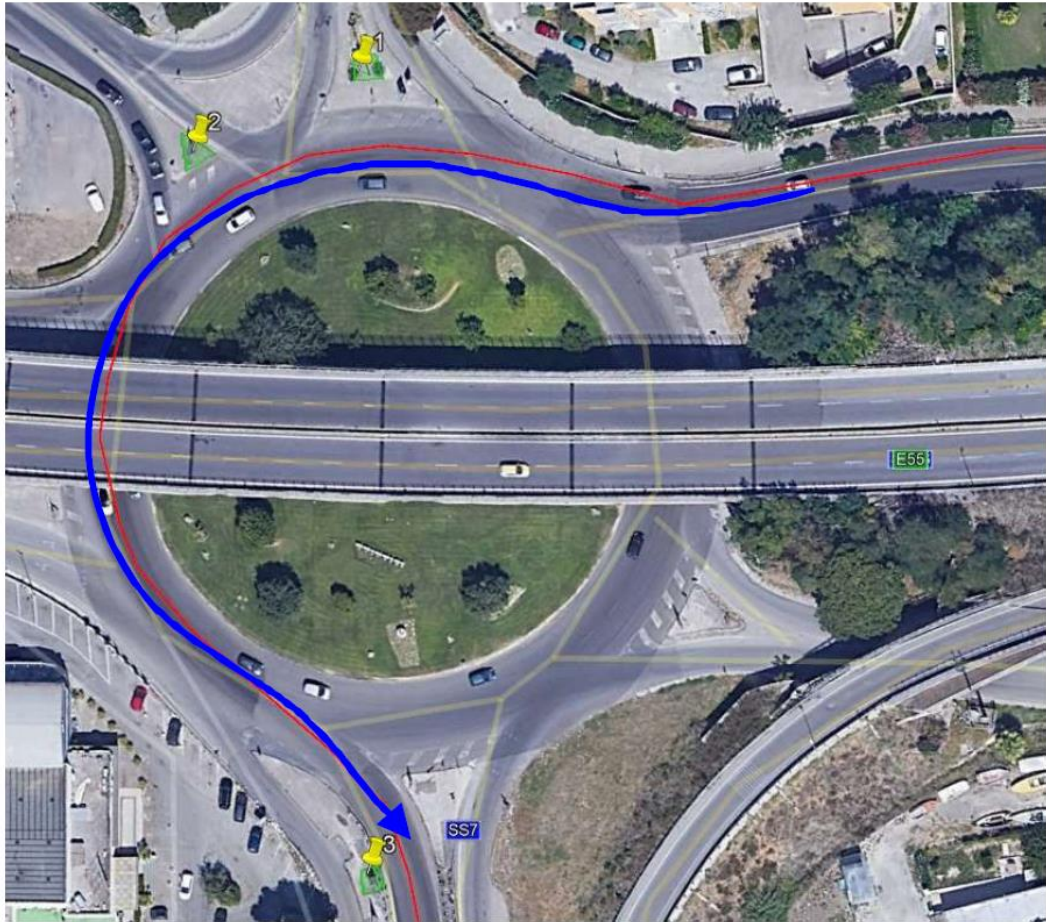
<b>ID</b>	<b>04</b>	<b>GPS Coordinate :</b>	<b>---</b>
<b>Road</b>	Via Enrico Fermi – Via Giulio Natta – SS613		
<b>Place</b>	Brindisi.		
<b>Road adjustments / Remarks :</b>	At the roundabout the blade lifter turn right to Taranto while tower sections proceed onward and by-pass Via Fermi. By-pass required to avoid additional civil works.		
			

<b>ID</b>	<b>05</b>	<b>GPS Coordinate :</b>	<b>40°37'3.18"N - 17°57'16.27"E</b>
<b>Road</b> :	SS613		
<b>Place</b> :	Brindisi.		
<b>Road adjustments</b> <b>Remarks :</b>	/	Tree trimming required. At least 2 meters.	





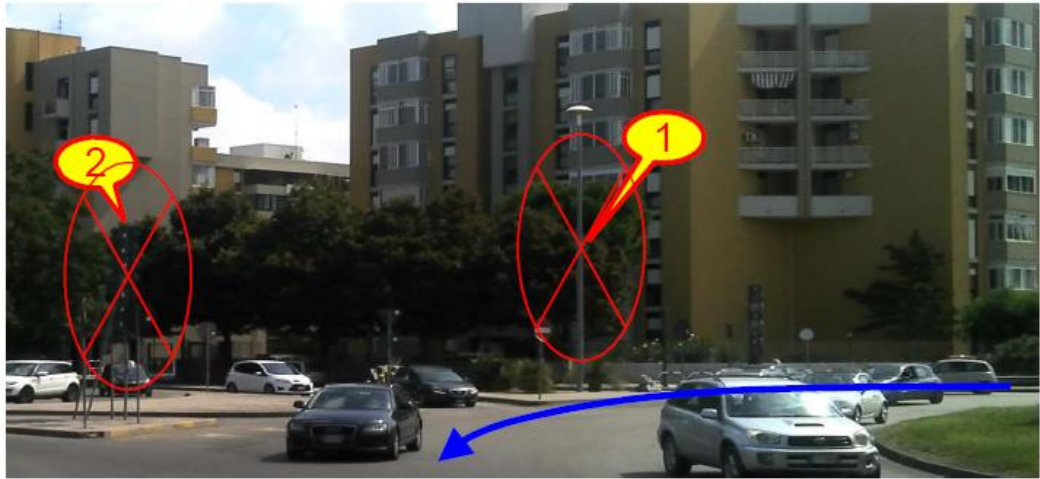
<b>ID</b>	<b>06</b>	<b>GPS Coordinate :</b>	<b>40°37'34.94"N - 17°55'13.05"E.</b>
<b>Road</b> :	SS 613 -SS 7 Mesagne		
<b>Place</b> :	Brindisi.		
<b>Road adjustments</b> <b>Remarks :</b>	/	<ol style="list-style-type: none"><li>1. Light pole to be removed</li><li>2. Traffic signs to be removed/lowered</li><li>3. Traffic signs to be removed</li></ol>	



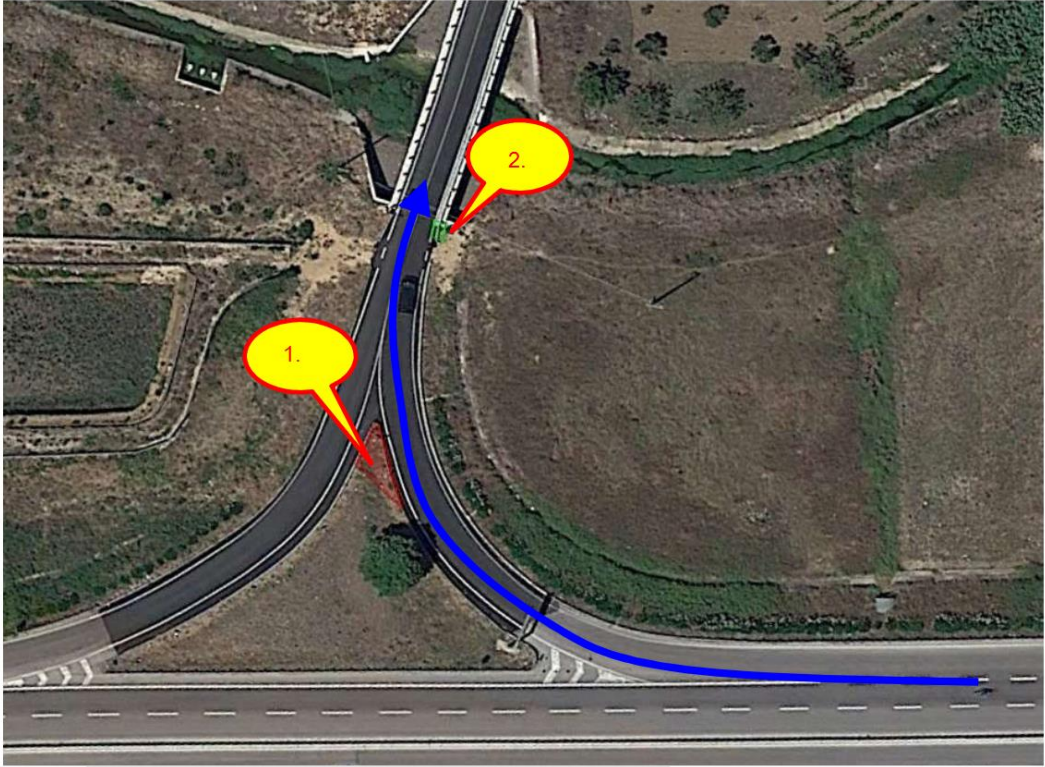

ID 06

GPS Coordinate :

40°37'34.94"N  
17°55'13.05"E.





<b>ID</b>	<b>07</b>	<b>GPS Coordinate :</b>	<b>40°33'32.54"N - 17°43'2.03"E</b>
<b>Road :</b>	SS 7 - SP 46.		
<b>Place :</b>	Latiano.		
<b>Road adjustments</b>	/ 1. Guardrail/obstacle to be removed to allow trailer transit		
<b>Remarks :</b>	2. Light pole to be removed		
			
			

ID 07

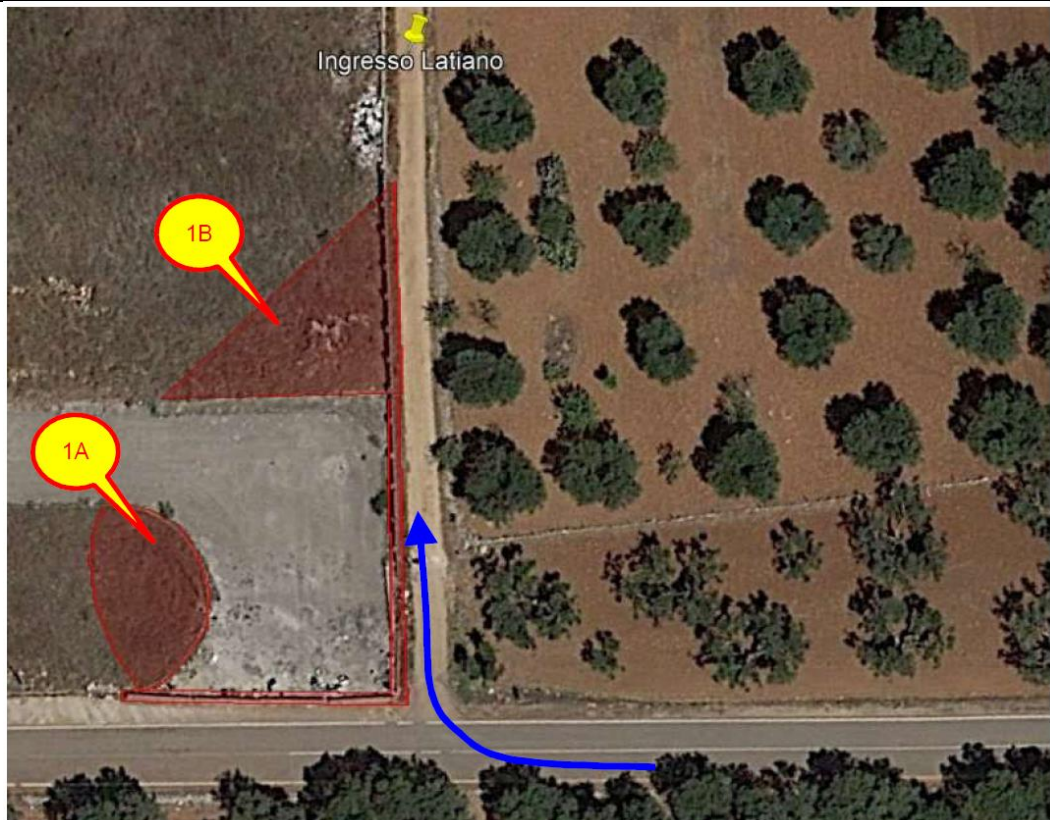
GPS Coordinate :

40°33'32.54"N  
17°43'2.03"E





<b>ID</b>	<b>08</b>	<b>GPS Coordinate :</b>	<b>40°34'27.52"N - 17°43'9.22"E</b>
<b>Road</b> :	SP46 / Latiano WF Entrance		
<b>Place</b> :	Latiano		
<b>Road adjustments</b> / <b>Remarks :</b>	<p>To enter inside Latiano WF both below mentioned areas 1A and 1B to be arranged for the trailers transit.</p> <p>AREA 1A – 11 x 18 m to be arranged suitable for the trailer transit and one pole to be removed</p> <p>AREA 1B – 20 x 22 x 15 m to be arranged suitable for the trailer transit</p> <p>New Jerseys to be removed.</p> <p>For both 40 meters of wall to be remove</p>		



ID 08

GPS Coordinate :

40°34'27.52"N -  
17°43'9.22"E





Risk Description	Brief Summary Description	Kind of Risk	Level of Risk	Impact Severity without actions	Actions Required / Recommendations
<b>Port of Arrival</b>	<p><u>Brindisi port :</u> Max draft 11 m. From berth the Exit Gate can be reached driving straight, the manoeuvrings shall be discussed with local Port Authorities due to over-length dimensions of tower section 5 (29.95 m). In case other berths should be used, the manoeuvrings to exit need to be evaluated consulting local ports Authorities.  For further information on ports see TFS2 Study.</p>	P R C S	LOW	HIGH	<p>Vessel to be instructed to call berth. Direct delivery is recommended. In case final lot composition consists of more than one tower, direct delivery to be checked consulting both Ports Authorities and local Roads Authorities. In case via Place of Rest of towers is required this operations to be planned timely approaching local port Authorities.</p>
<b>Bridges</b>	<p>On the routings there are some structures to overcross.</p>	P R C S	MEDIUM	HIGH	<p>It is recommended to consult timely the local Road Authorities with an official permit application in order to receive their feedback on feasibility. (*)</p>
<b>Underpasses</b>	<p>On the routings there are several bridges to undercross with a total height 5m.</p>	P R C S	MEDIUM	HIGH	<p>It is recommended to consult timely the local Road Authorities with an official permit application in order to receive their feedback on feasibility. (*) In alternative case it is recommended to reduce the height of the critical elements.</p>



Risk Description	Brief Summary Description	Kind of Risk	Level of Risk	Impact Severity without actions	Actions Required / Recommendations
<b>Improvement works</b>	On the roads several improvement works like road enlargement will be required.	C S	MEDIUM	HIGH	It is recommended to consult timely the local Road Authorities with an official permit application in order to receive their feedback on feasibility. (*)
<b>Obstacle removal</b>	On the roads several civil works to remove obstacles will be required.	C S	MEDIUM	HIGH	It is recommended to consult timely the local Road Authorities with an official permit application in order to receive their feedback on feasibility. (*)
<b>Wires</b>	MV/LV cables along the route.	C S	LOW	LOW	
<b>Tree trimming</b>	On the roads tree trimming could be required from hard manoeuvrings.	PR C S	MEDIUM	HIGH	It is recommended to consult timely the local Environmental Authorities in order to receive their feedback on feasibility for tree trimming.
<b>Access to Site</b>	According with information provided by Client, SDB has considered as Final Delivery Place the Coordinates: 40°34'27.52"N - 17°43'9.22"E	NA	NA	NA	Internal roads not in the scope of this TFS3 Study.



Risk Description	Brief Summary Description	Kind of Risk	Level of Risk	Impact Severity without actions	Actions Required / Recommendations
<b>Special equipment</b>	Blade lifter is required to transport the blade from Brindisi port to Latiano.  The use of blade lifter is subject to check of COG position of blades and final dwg drawings of blades providing full technical details.	<b>PR C S</b>	<b>HIGH</b>	<b>CRITICAL</b>	It is recommended to provide timely complete set of technical drawings in order to check/confirm technical solution proposed.  It is recommended to consult timely the local Road Authorities with an official permit application in order to receive their feedback on feasibility. (*)

(\*) To approach local Authorities for their feedback on the routing proposed the full set of transportation drawings of cargo (showing dimensions, weight, CoG, supports, lifting points, lashing points, basement/footprint details, etc.) is required.



## 6 CONCLUSIONS

SDB has evaluated the road transport of main items of Latiano Wind Farm project.

To transport blades from Brindisi to Latiano Wind Farm the blade lifter is required from Brindisi port.

In order to execute the transports road enlargement and obstacle removals shall be required. This is notable for the blades transport which need of more invasive road adjustments (as described above). Obstacles to be removed consisting generally of islands, traffic islands, signs, wires. Also tree trimming is required in order to get the necessary clearance for the overflight area of the blades. All road adjustments listed in this document shall be approved by local Authorities.

The use of lands which according to this report may require improvement works in order to allow the convoy passage is subject to landowners approval. In order to check this SDB needs to know the actual time of shipment and official power of attorney from Client.

As far as the bridge over-crossing is considered, bridges along the routing were found out in good sound conditions at time of this survey. Anyhow, for our experience, the road owners will require engineering studies for the over-weight items in the scope of work.

Due to road adjustments and the engineering studies may be required, SDB suggest to plan with an adequate notice the road transports and submit to Authorities an application for road permits in order to get their preliminary response as soon as possible. Be it reminded in order to submit an application to local Authorities a full-detailed transportation drawings of all main items shall be provided by Client.

This report to be updated/confirmed at time of shipment.

**IMPORTANT :** the outcomes of this TFS3 Study are subject to approval from local Road Authorities and check/verification final drawings of main items showing all relevant information for transportation purposes (CoG, saddle/support position, lashing points, lifting points, etc.).