

Class I

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Approver: Francesco DRAGONE

Customer: ABN Wind Energy

Transport Road Survey Report

Project: Esterzili (CA)

History of this document

Doc. and Rev. no.:	Date:	Description of changes	Exec.	Appr.
MED TTT001	01/04/2021	First issue	Leanzio GAMBUTI	FRADR

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Summary

According to Customer requested it has been analyzed turbine type nr 10 V162 6mw HH 125 m tower configuration transport feasibility for catching up to the Escalaplano Wind Park Site.

Road Survey date: **29/03/2021**

Transport Supervisor: **Francesco DRAGONE (Vestas Italia)**

Attendants:

Transporter Representative: **Riccardo DI PALMA (La Molisana Trasporti)**

Specs Description

Project	Esterzili
Country	Italy
Location	Esterzili (CA) Sardegna region
Scope	Planning Stage – Transport Logistic – Feasibility Study
Turbine	<u>V162 125m</u>
Delivery rate (WTG's/week)	1/week
Transport Mode	☐ Standard ☒ Transshipment ☒ Blade Lifter ☒ Tower ☒ Nacelle
Start From	port of Arbatax

Weight and Dimention

V162 6MW

Nacelle	length mm	width mm	height mm	Weight kgs
	18176	4200	4350	83670

Single blade	length mm	width mm	height mm	Weight kgs
	79350	4320	3294	21700

Hub	length mm	width mm	height mm	Weight kgs
	4980	4401	4040	64000

Drive train	length mm	width mm	height mm	Weight kgs
	7500	2700	3000	94040

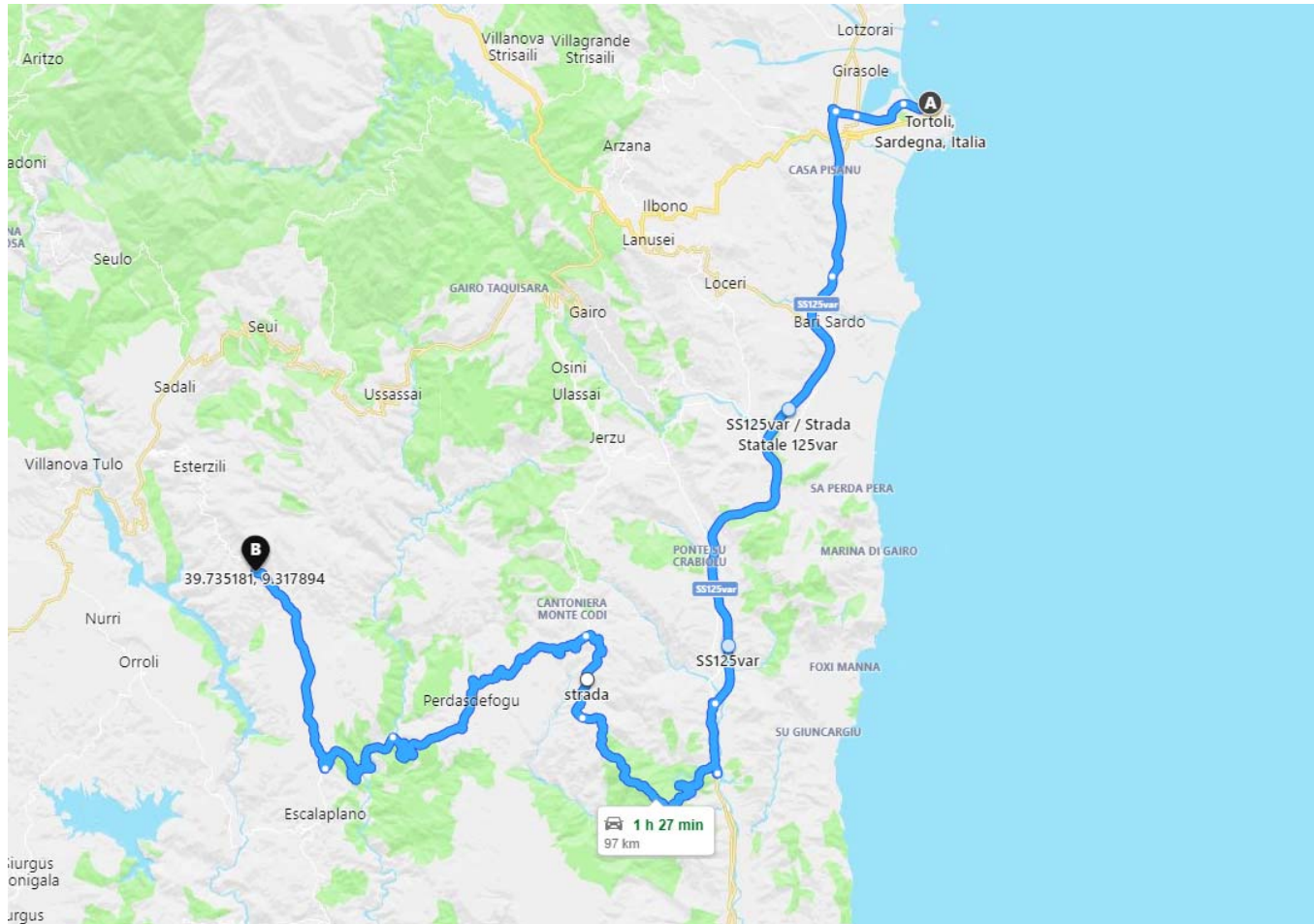
HH125m

Tower	Bottom end mm.	top end mm.	length mm.	weight kgs.
Section 1	4500	4150	12500	80000
Section 2	4150	4150	14280	77000
Section 3	4150	4150	16800	77000
Section 4	4150	4150	20720	75000
Section 5	4150	4150	28000	73000
Section 6	4150	4000	30000	53000

General Route Description

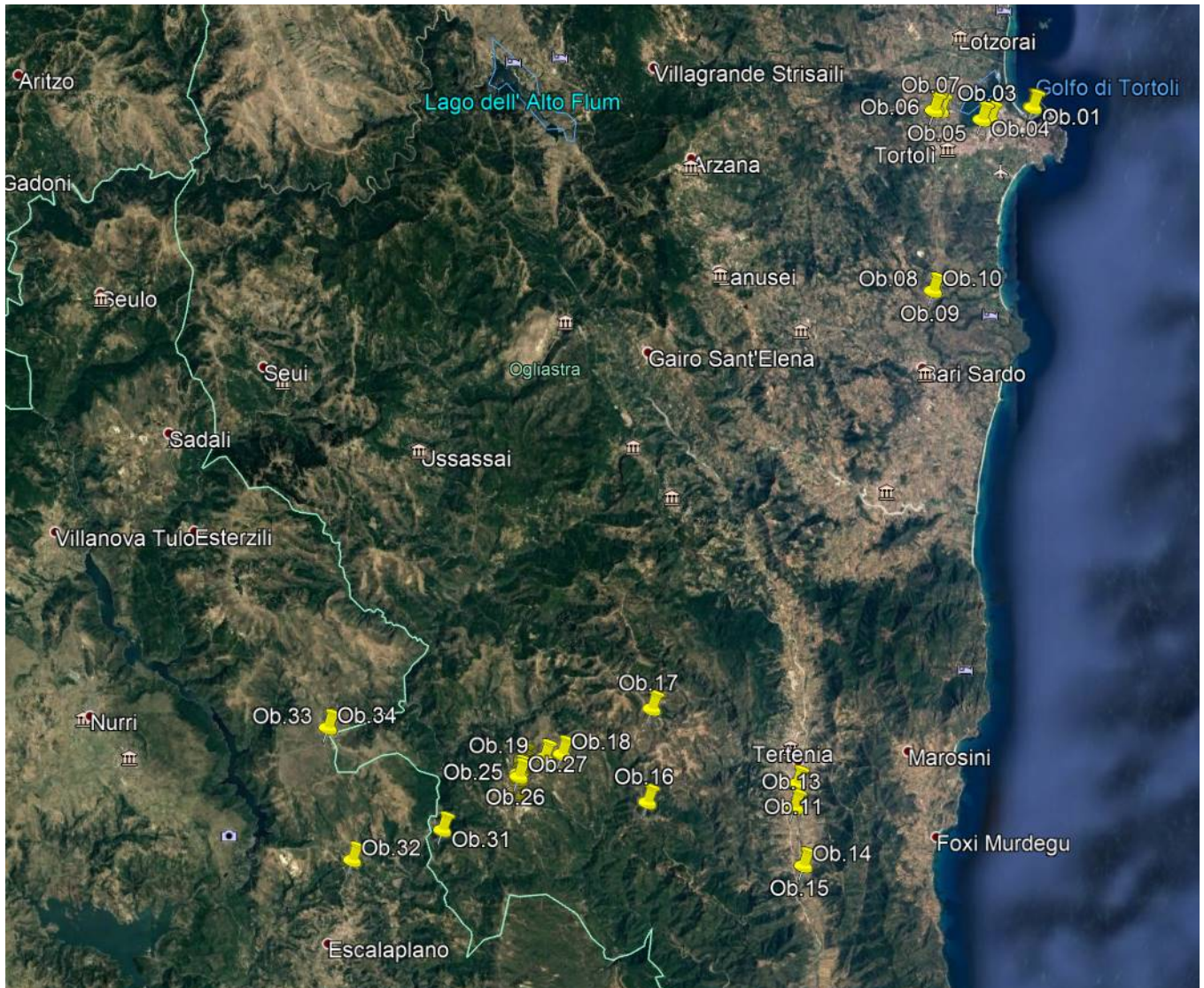
External Route

For the transport of the Wind Turbine, port of Arbatax has been considered as pick-up location.



Port of Arbatax ► Via Baccasara ► Via Bargerbu ► SS125 ► SS125 var ► SS125 ►
► Strada Militare ► road inside the wind farm ► SP13 ► SP53 ► Site Access

Observation Map Overview



Road Modifications

Observation 1

Exit from port of Arbatax

The blades will be transhipped directly on the Blade Lifter Device.

The section tower and the nacelle will be transhipped directly on the special trailer.

You need a carriageway with a width of 4.5 meters in the straight part of the road and 6,0 meters in the curves All NOT INDICATED (cables, limbs, etc..) must be over 6,0 mt in height.

In addition, close to the bends before 100mt and beyond 100mt, in the middle of the carriageway, it will be necessary to leave an aerial clearance without any obstacles (limbs and cables) to allow the lifting of the blade.

39°56'11.85"N - 9°41'47.84"E



Observation 2

Exit to Arbatax port

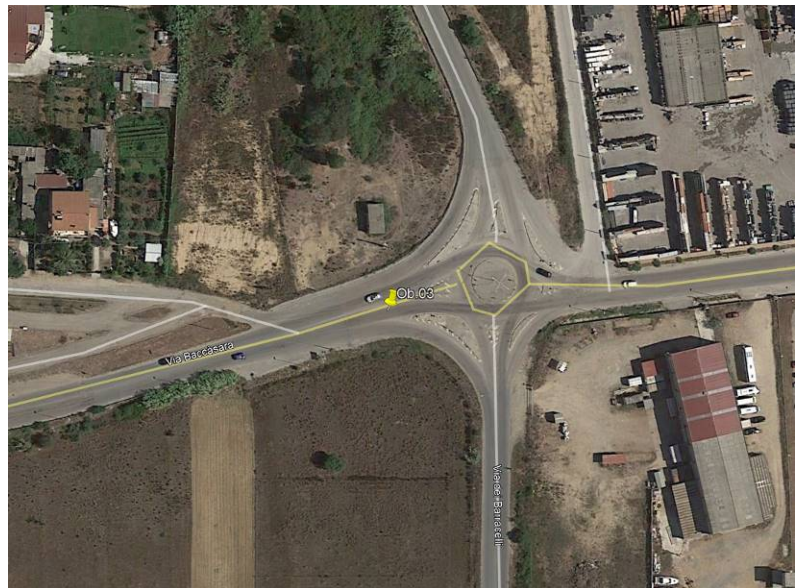
39°56'12.91"N - 9°41'44.63"E



Observation 3

Driving into oncoming traffic

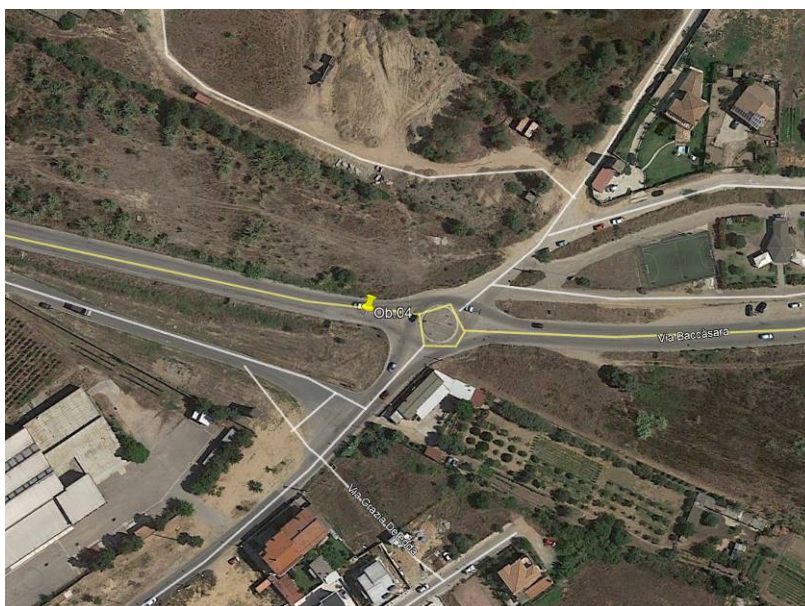
39°55'56.35"N - 9°40'30.63"E



Observation 4

Make enlargement as shown

39°55'55.25"N - 09°40'15.50"E

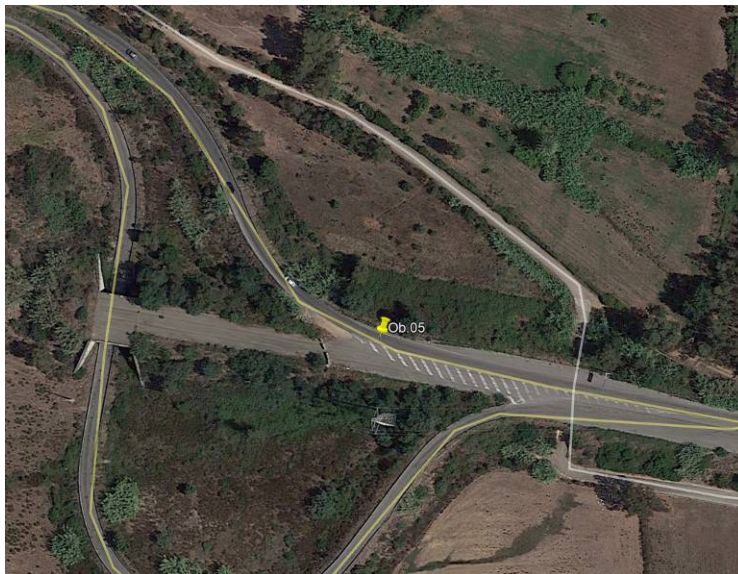


Observation 5

Make enlargement as per picture

Cut vegetation as shown

39°56'07.49"N - 09°39'00.17"E



Observation 6

Make enlargement 8mt

39°56'10.48"N - 9°38'51.48"E



Observation 7

Driving into oncoming traffic

39°56'07.78"N - 9°38'49.11"E



Observation 8

Make a passable area

Remove road signals as shown

39°51'57.71"N - 9°34'47.82"E



Observation 9

Remove road signal as shown
39°51'57.93"N - 9°38'46.61"E



Observation 10

Create by-pass as the "0054-6051- Wind farm Roads Requirements"

Remove road signal as shown

39°51'58.10"N - 9°38'46.73"E



Observation 11

Make a passable area as shown

Remove road signals as shown

39°40'38.15"N - 9°34'41.09"E



Observation 12

Remove cable as shown

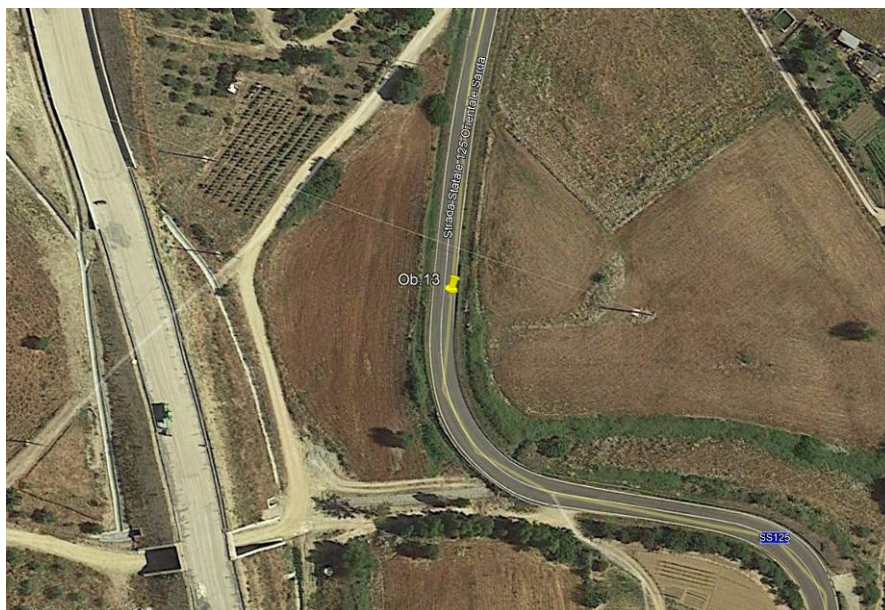
39°40'36.84"N - 9°34'41.01"E



Observation 13

Remove cable as shown

39°40'06.05"N - 9°34'36.89"E



Observation 14

Make a passable area.

Remove the road signals as shown

39°38'45.17"N - 9°34'52.65"E



Observation 15

Make a passable area.

Remove the road signals as shown

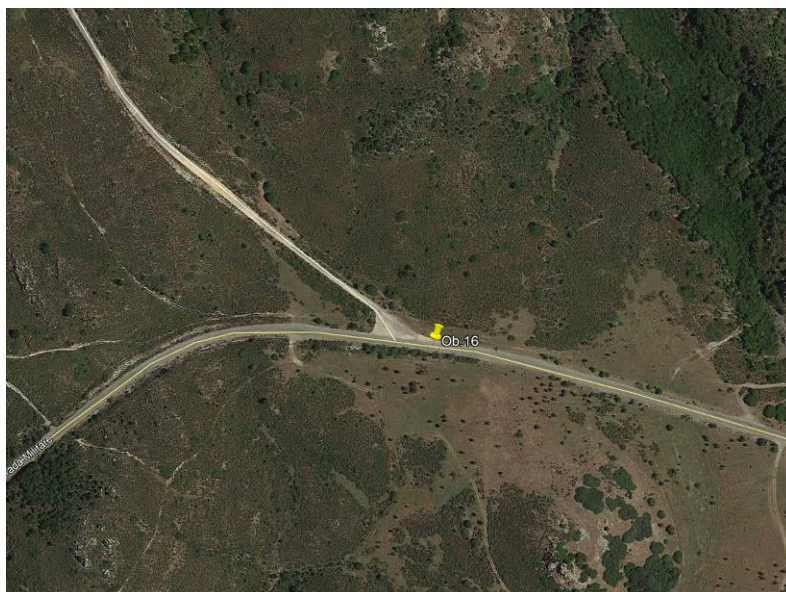
39°38'45.71"N - 9°34'51.43"E



Observation 16

Road brecciated to do as per specifications

39°40'15.22"N - 9°30'15.00"E



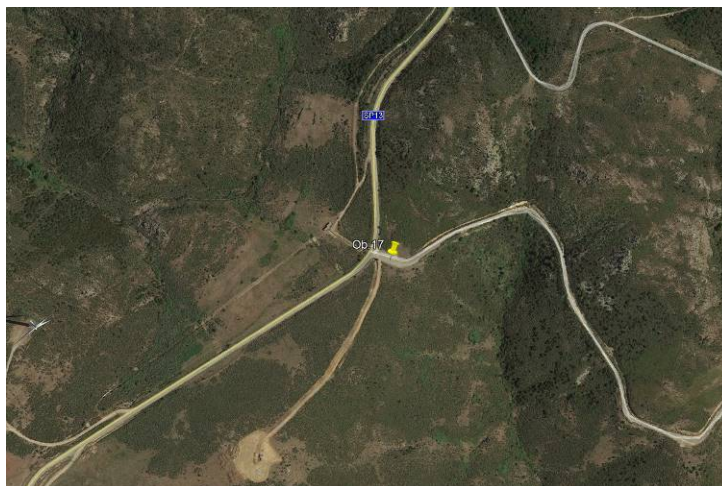
Observation 17

End of the brecciated road

Create a widening to 5 mt

Remove the guard rail as indicated

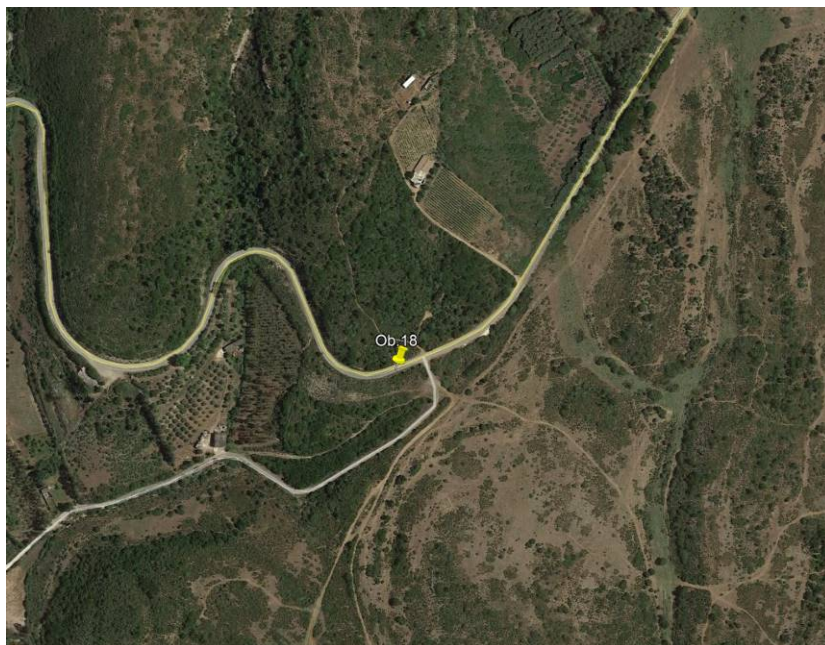
39°42'23.91"N - 9°30'23.50"E



Observation 18

Remove cable as shown

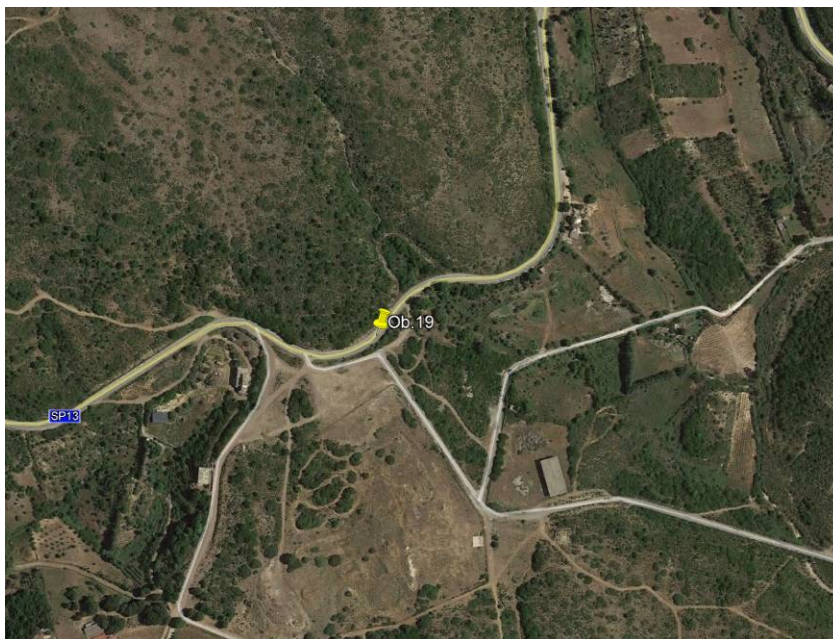
39°41'21.54"N - 9°27'43.22E



Observation 19

Remove cable as shown

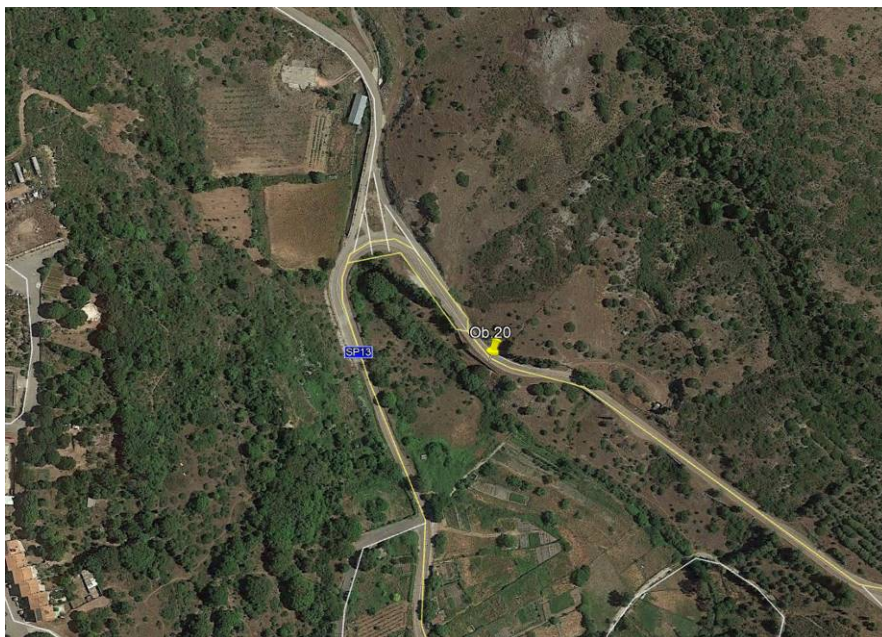
39°41'16.35"N - 9°27'11.95"E



Observation 20

Remove cable as shown

39°41'12.44"N - 9°26'33.20"E



Observation 21

Remove cable as shown

39°41'02.44"N - 9°26'31.86"E

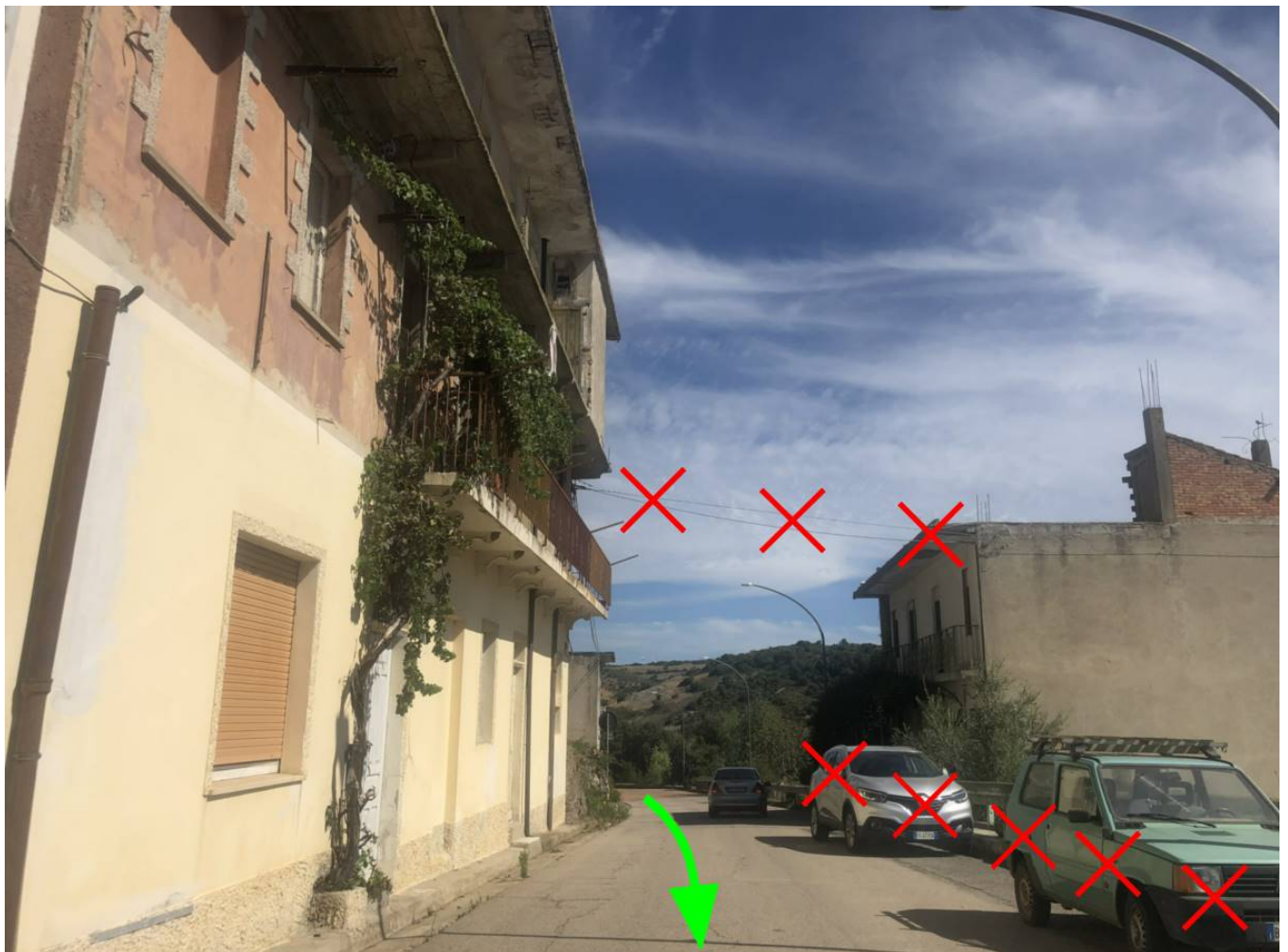


Observation 22

Remove the cables as shown

No parking along the whole road

39°40'58.89"N - 9°26'31.53"E



Observation 23

Remove cable as shown

39°40'56.33"N - 9°26'29.72"E



Observation 24

Remove cables as shown

39°40'55.82"N - 9°26'28.80"E



Observation 25

Remove cable as shown

39°40'54.74"N - 9°26'26.47"E



Observation 26

Cut the vegetation off protruding on the road,
Remove the cable and the indicated lamp post

No parking on the whole area

39°40'53.78"N - 9°26'25.91"E



Observation 27

Remove cable as shown

39°40'50.38"N - 9°26'26.14"E



Observation 28

Remove cable as shown

39°40'46.47"N - 9°26'26.99"E



Observation 29

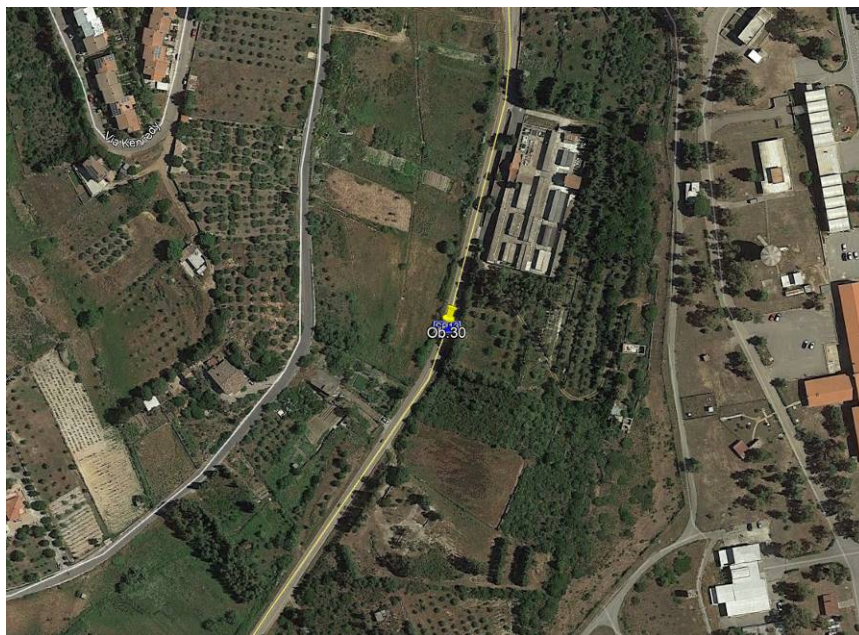
Cut the vegetation off protruding on the road

39°40'41.50"N - 9°26'26.69"E



Observation 30

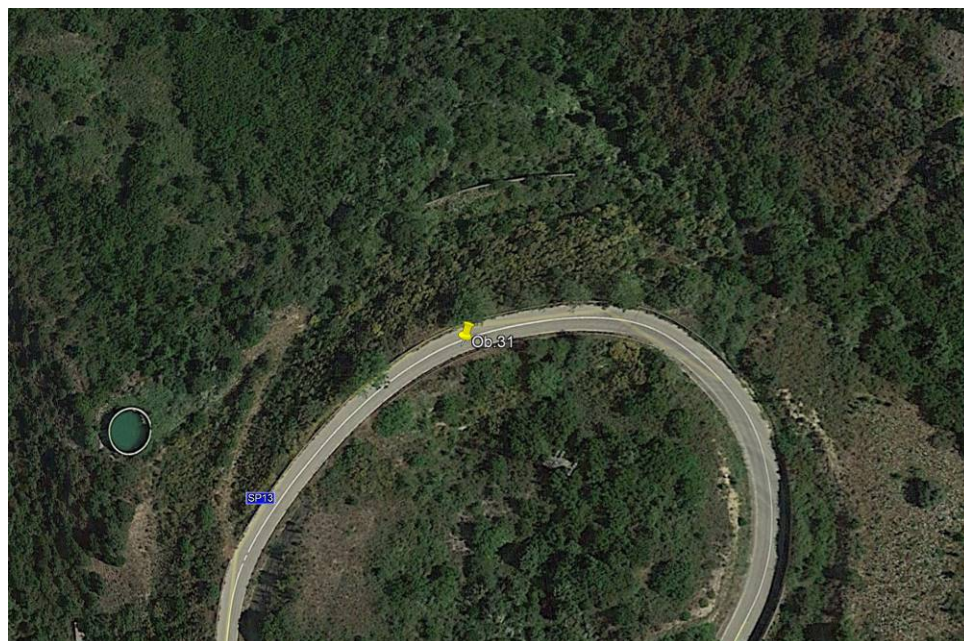
Pruning the vegetation indicated
39°40'27.75"N - 9°26'22.93"E



Observation 31

Cut the vegetation off indicated

39°39'35.86"N - 9°24'08.07"E



Observation 32

Use the existing by-pass

39°38'54.37"N - 9°21'27.49"E



Observation 33

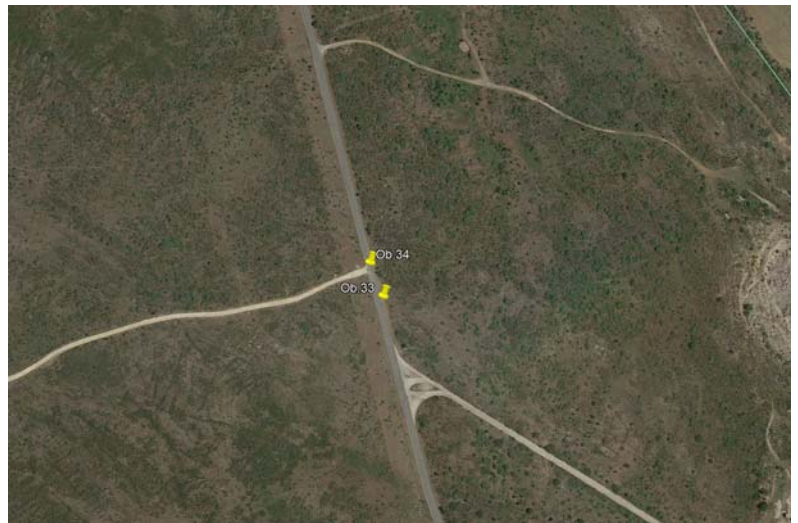
Make enlargement on the left side. Remove the road signals as per picture

39°41'56.10"N - 9°20'46.96"E



Observation 34

Create site access as the "0054-6051- Wind farm Roads Requirements"
39°41'57.03"N - 9°20'46.48"E



Conclusions and Highlighted

Every branches jutting out on routing roads will have to be cut (6,0 mt width and 6,0 mt high)

- Keep flat every height difference (along 45mt vertical bending radius has to be 250m) on the complete road surveyed.
- Every air electric and phone cables have to be at least 6,0 mt high.
- From the transshipment area you need a carriageway with a width of 4.5 meters in the straight part of the road and 6,0 meters in the curves All NOT INDICATED (cables, limbs, etc..) must be over 6,0 mt in height.
In addition, close to the bends before 100mt and beyond 100mt, in the middle of the carriageway, it will be necessary to leave an aerial clearance without any obstacles (limbs and cables) to allow the lifting of the blade.
- The survey road report has been written up considering authorities go head for exceptional transport along every route analyzed
- The feasibility studies and activities suppose owners availability for transiting and making civil works on their farmsteads.
- Site inland practicability, Wind Turbine Generators stocking area and its accesses roads have not taken into account.
- The survey road report has referred to the date 29/03/2021 therefore variations and/or changes of practicability state will be evaluated subsequently
- For transport activities related to site and new roads, refer to Vestas guidelines as the "0054-6051- Wind farm Roads Requirements"
- This report could be changed according to the final survey performed by Transport Company
- The Buyer will have to use pull trailers able to tow up our trailers, in order to guarantee the passing on internal site roads in safety way when necessary
- It is necessary to conduct part of the transport service, using normal trains and special convoys as well as using the blade lifting device.
- "This report do not take into account activities which could be eventually requested by the private or public authorities on the Access Roads as a condition for the obtainment by the Supplier of any Permit under this Agreement (including but not limited to verification of bridges and performance of all activities necessary in order to get the "certificato di transitabilità"), therefore such activities, if any, shall be performed by the Buyer."