

PROVINCIA DI POTENZA

Comuni di :

Castelgrande - Muro Lucano - Rapone - San Fele

LOCALITA' "Toppo Macchia"

PROGETTO DEFINITIVO PER LA REALIZZAZIONE DI UN IMPIANTO DI PRODUZIONE DI ENERGIA ELETTRICA DA FONTE EOLICA E RELATIVE OPERE DI CONNESSIONE - 16 AEROGENERATORI (potenza totale 88,2 MW)

Sezione A :

PROGETTO DEFINITIVO DELL'IMPIANTO, DELLE OPERE CONNESSE E DELLE INFRASTRUTTURE INDISPENSABILI

A.16.a.13.17 - VIABILITA' ESTERNA

N. Elaborato: A.16.a.13.17

Scala: -

Proponente

MIA WIND Srl

Via della Tecnica, 18 - 85100 - Potenza (PZ)

Amministratore Unico
Donato Macchia

Progettazione



sede legale e operativa

San Giorgio Del Sannio (BN) via de Gasperi 61

sede operativa

Lucera (FG) S.S.17 loc. Vaccarella snc c/o Villaggio Don Bosco

P.IVA 01465940623

Azienda con sistema gestione qualità Certificato N. 50 100 11873



Progettista

Dott. Ing. Nicola Forte



00	NOVEMBRE 2018	PM	PM	NF	RICHIESTA A.U.
Rev.	Data	sigla	sigla	sigla	DESCRIZIONE
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Class I

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Executor: Francesco Dragone

Approver: Ignacio Mora Parraga

Customer: Agebas SRL

Transport Road Survey Report

Project: Serra dei Venti, Italy

History of this document

Doc. and Rev. no.:	Date:	Description of changes	Exec.	Appr.
MED TTT001	27/11/2018	First issue	FRADR	IMORA

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Summary

According to Customer requested it has been analyzed V150 4,2MW 105m configuration transport feasibility for catching up to the Serra dei Venti (PZ) Wind Park Site.

Road Survey date: 12/11/2018

Transport Supervisor:
Giuseppe Basile (Vestas Italia)
Francesco DRAGONE (Vestas Italia)

Attendants:

Transporter Representative: **Francesco QUARATO (SAE Srl)**
Ing. Vincenzo CASTELLANO (SAE Srl)

Specs Description

Project	SERRA DEI VENTI (PZ)
Country	Italy
Place	Serra dei Venti – Basilicata Region
Scope	Planning Stage – Transport Logistic – Feasibility Study
Turbine	V150
MW	4.2
Transport Mode	<input type="checkbox"/> Standard X Transshipment X Blade Lifter X Tower <input type="checkbox"/> Nacelle
Start From	Pugliese Costruzioni Atessa (CH) - Tower sections Port of Manfredonia (FG) or Port of Taranto - Nacelles, Hubs, Drive Train and blades

V150 4.2MW HH105m Specifications

Nacelle	length mm	width mm	height mm	Weight kgs
	12861	4004	3412	64938

Single blade	length mm	width mm	height mm	Weight kgs
	73839	4083	2600	17000

Hub	length mm	width mm	height mm	Weight kgs
	5472	3784	3964	34196

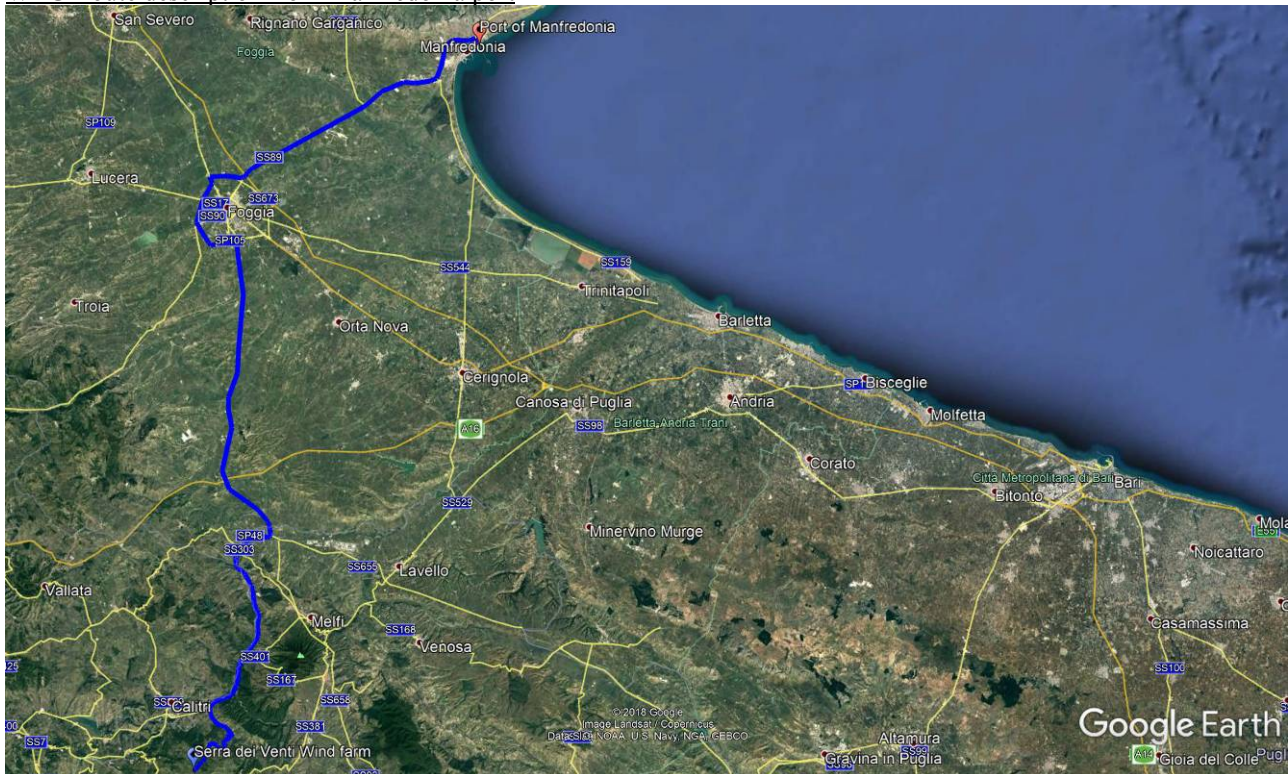
Drive train	length mm	width mm	height mm	Weight kgs
	7230	3500	3200	61059

Tower	Bottom end mm.	top end mm.	length mm.	weight kgs.
Top section	3670	3258	24380	29000
Middle section 2	4028	3670	24360	59000
Middle section 1	4041	4028	14840	45000
Bottom section	4450	4041	14760	53000

General Route Description

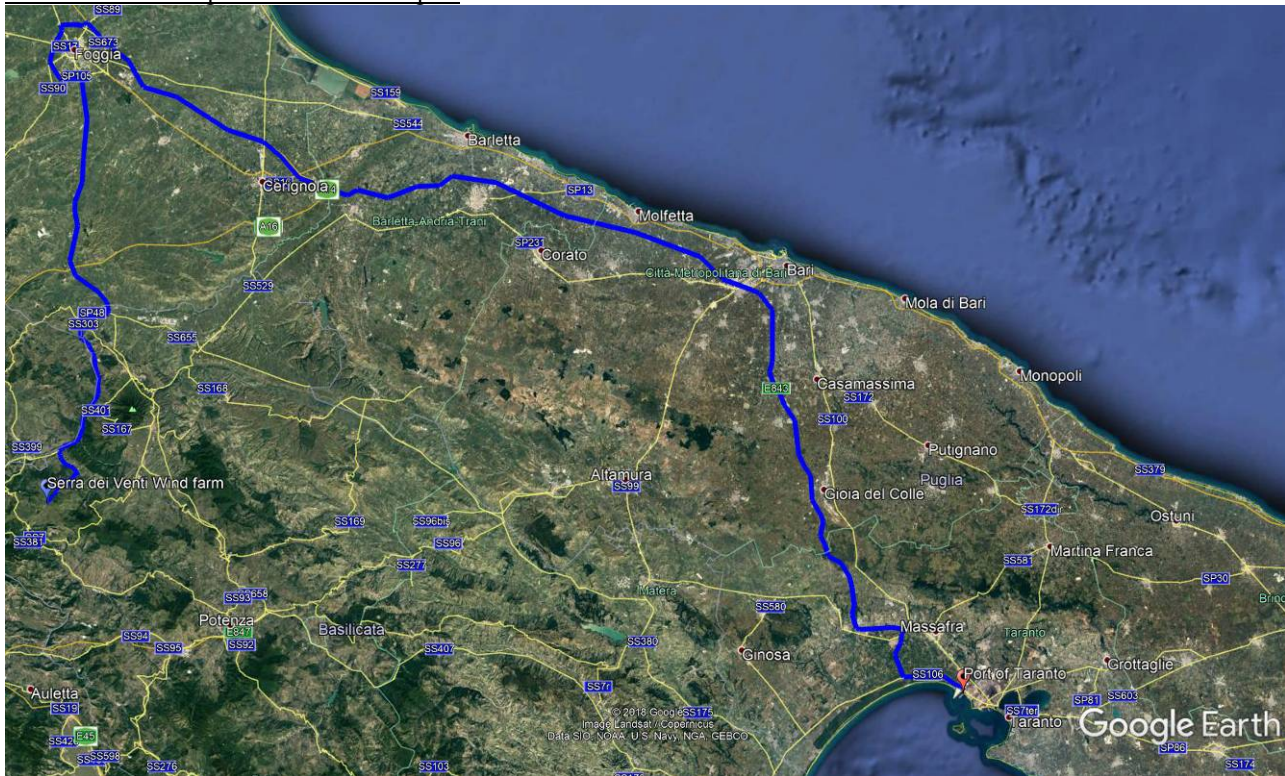
First option

WTG Route description from Manfredonia port



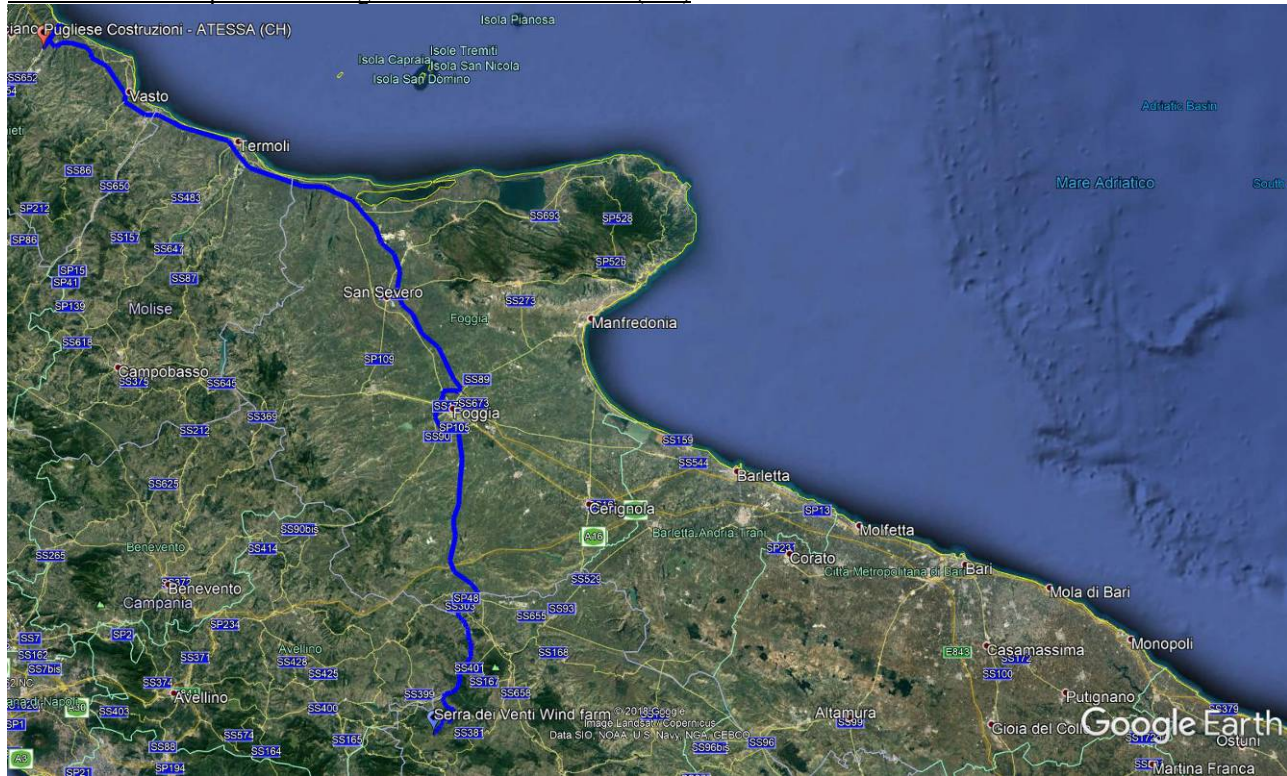
- **SS 89 Appia**: from Manfredonia Port SS 673 Dir;
- **SS 673 Dir**: from SS 89 to SS 673;
- **SS 673**: from SS 673 Dir to SS 16;
- **SS 16**: from SS 673 to SS 655;
- **SS 655**: from SS 16 to SS401;
- **SS 401**: from SS 655 to SP 219
- **SP 219**: from SS 401 to unknown road
- **Unknown road**: from SP 219 to Contrada Corosiello
- **Contrada Carosiello**: from unknown road to unknown road
- **Unknown road**: from Contrada Carosiello to several site entrances.

WTG Route description from Taranto port



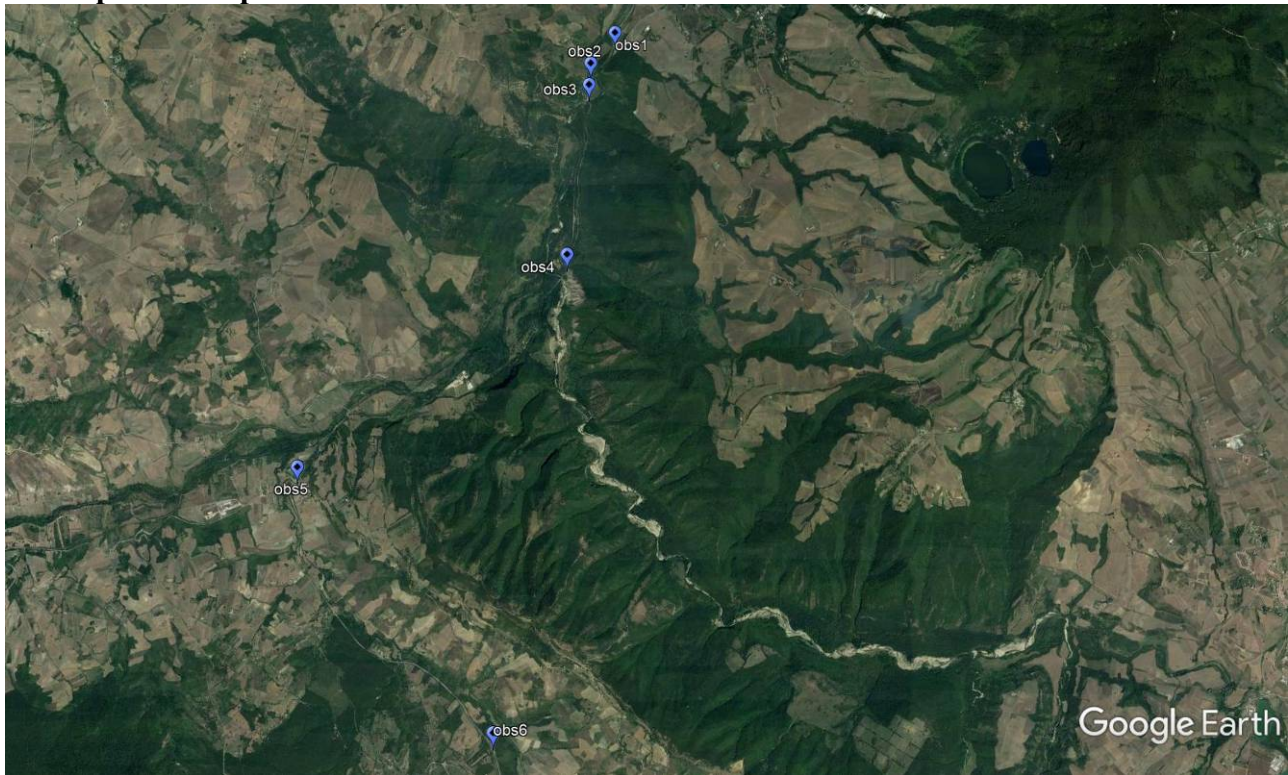
- **SS.7 Appia**: from Taranto to SS 106;
- **SS 106**: from SS 7 to SS 106 Dir;
- **SS 106 Dir**: from SS 106 to entrance gate Highway A/14 – Taranto;
- **A14 HIGHWAY**: from Taranto to Foggia;
- **SS 673 Dir**: from A/14 - Foggia to connection SS 673;
- **SS 673**: from SS 673 Dir to SS 16;
- **SS 16**: from SS 673 to SS 655;
- **SS 655**: from SS 16 to SS401;
- **SS 401**: from SS 655 to SP 219
- **SP 219**: from SS 401 to Unknown road
- **Unknown road**: from SP 219 to Contrada Corosiello
- **Contrada Carosiello**: from unknown road to unknown road
- **Unknown road**: from Contrada Carosiello to several site entrances.

WTG Route description from Pugliese Costruzioni Atezza (CH)

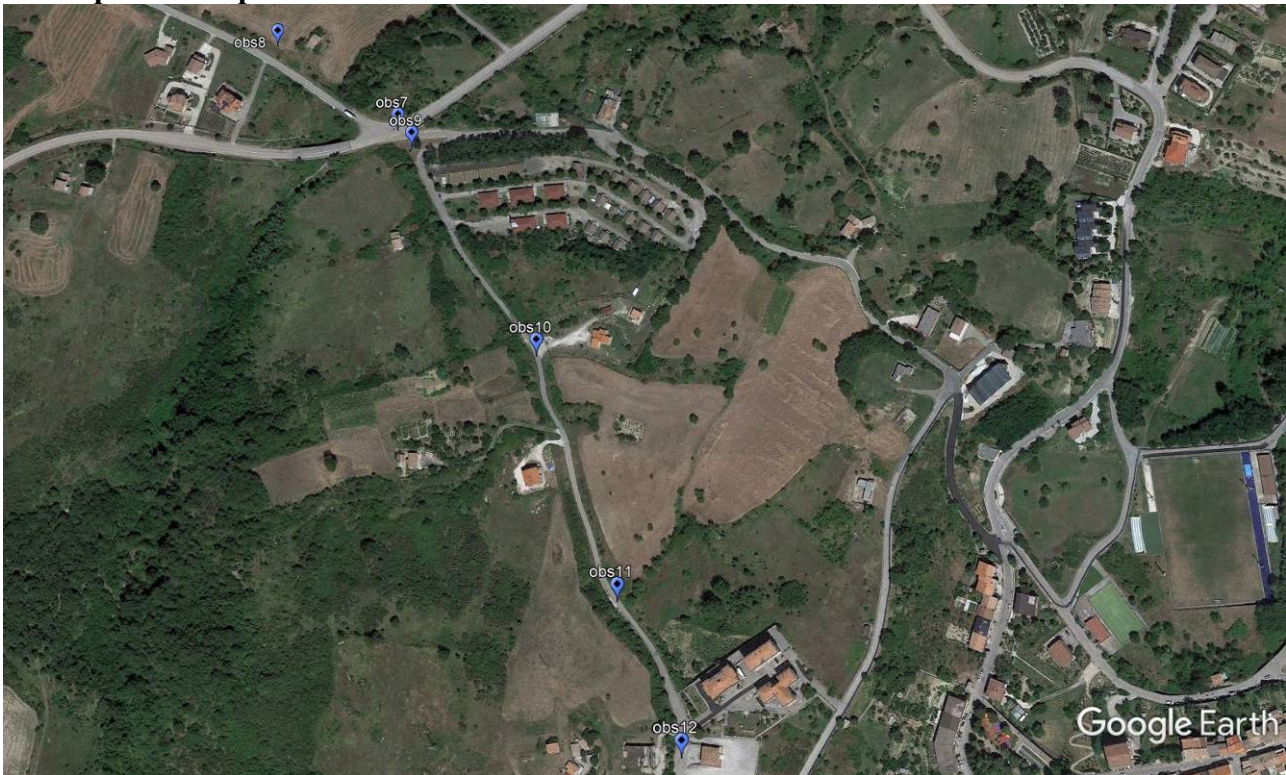


- **SS 652:** from Pugliese Costruzioni to SS 16;
- **SS 16:** from SS 652, U-turn and back to the SS 652;
- **SS 652:** from SS 16 to entrance gate Highway A14 – Val di Sangro;
- **A14 HIGHWAY:** from Val di Sangro to Foggia;
- **SS 673 Dir:** from A/14 - Foggia to connection SS 673;
- **SS 673:** from SS 673 Dir to SS 16;
- **SS 16:** from SS 673 to SS 655;
- **SS 655:** from SS 16 to SS401;
- **SS 401:** from SS 655 to SP 219
- **SP 219:** from SS 401 to Unknown road
- **Unknown road:** from SP 219 to Contrada Corosiello
- **Contrada Carosiello:** from unknown road to unknown road
- **Unknown road:** from Contrada Carosiello to several site entrances.

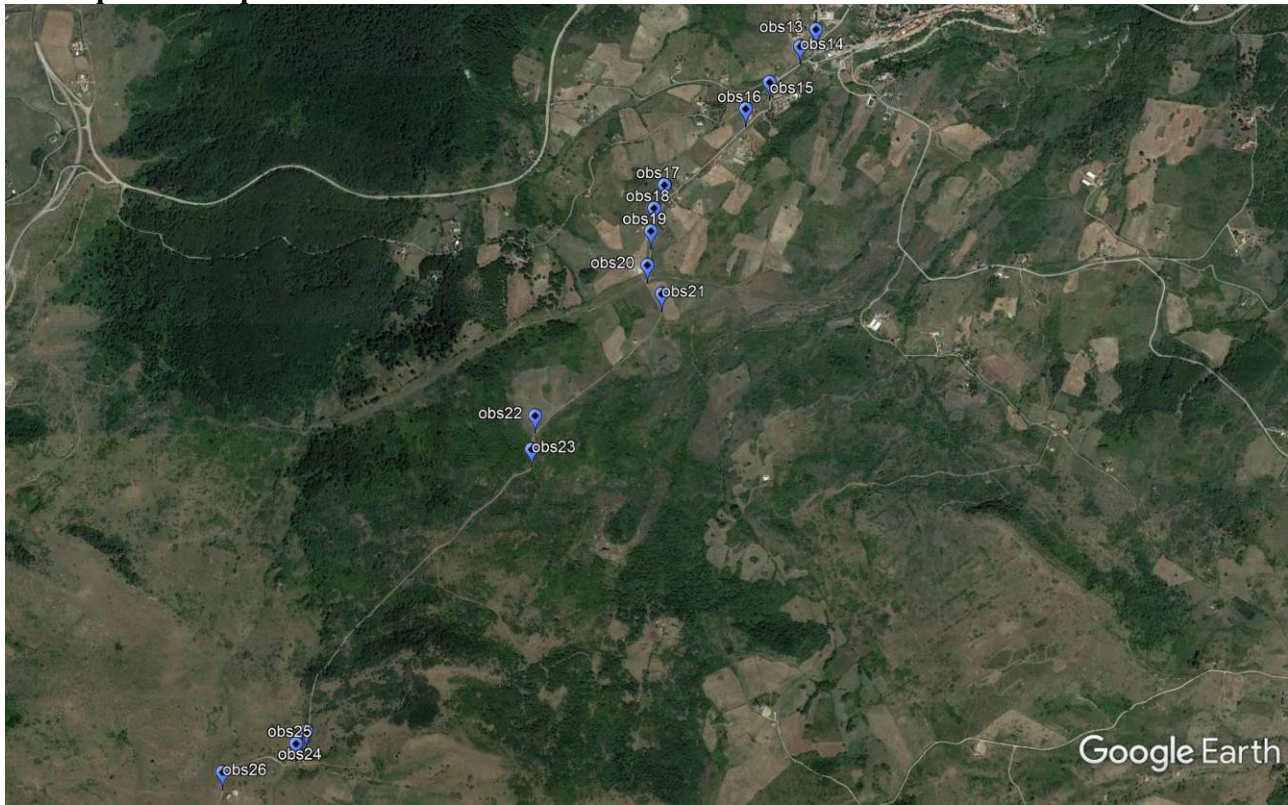
First option - Map of observations: from observation 1 to observation 6



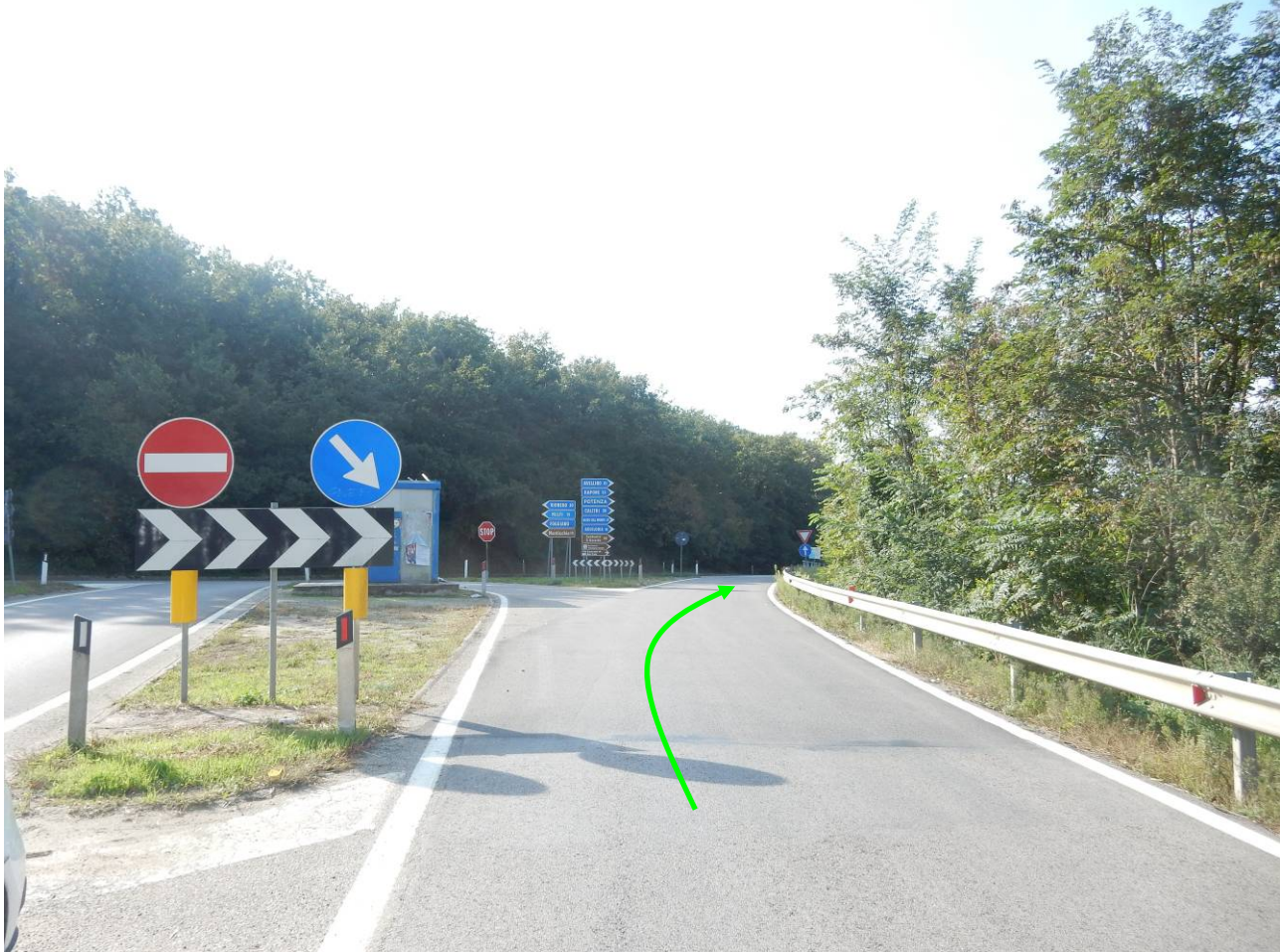
First option - Map of observations: from observation 7 to observation 12



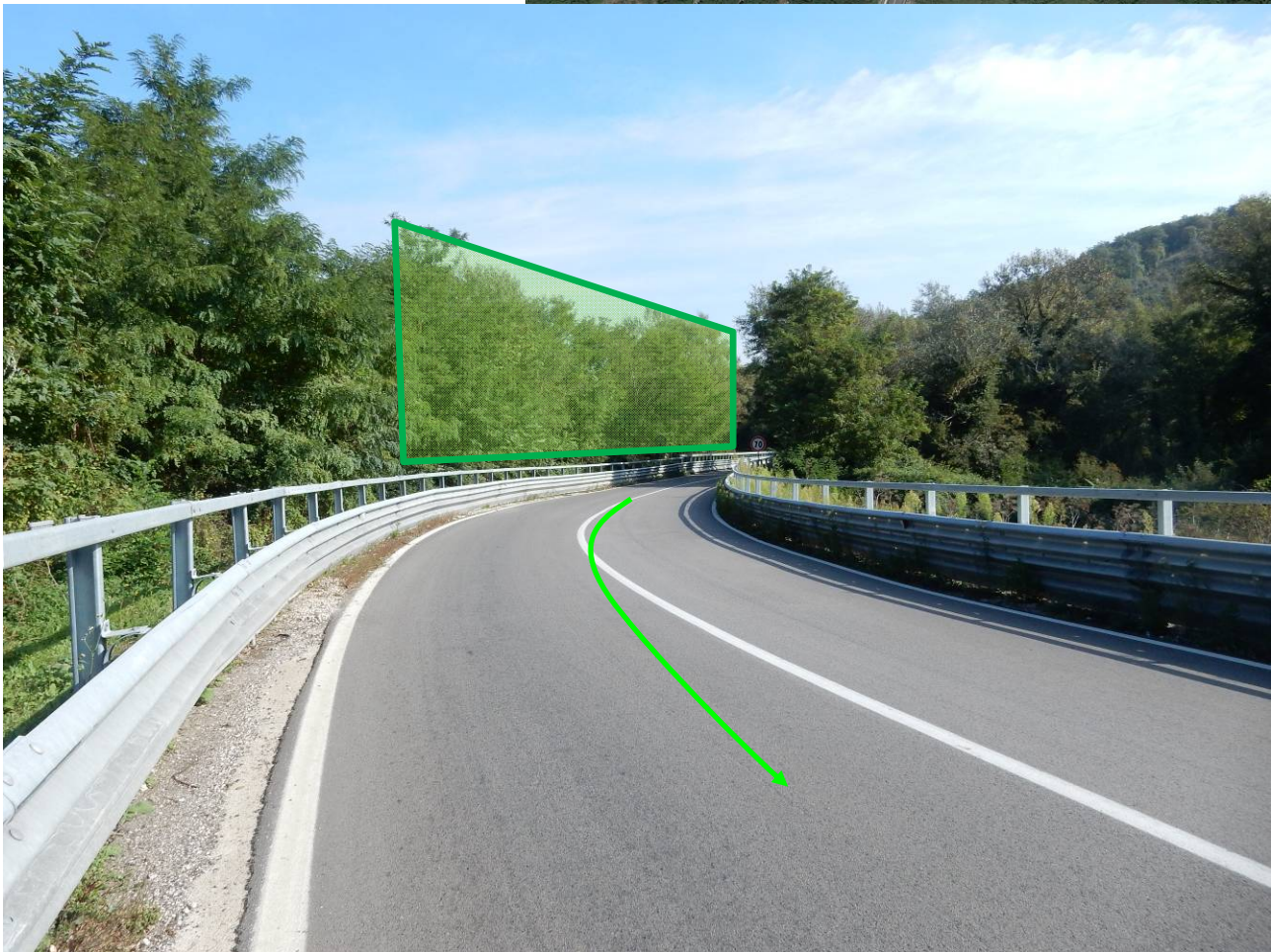
First option - Map of observations: from observation 13 to observation 26



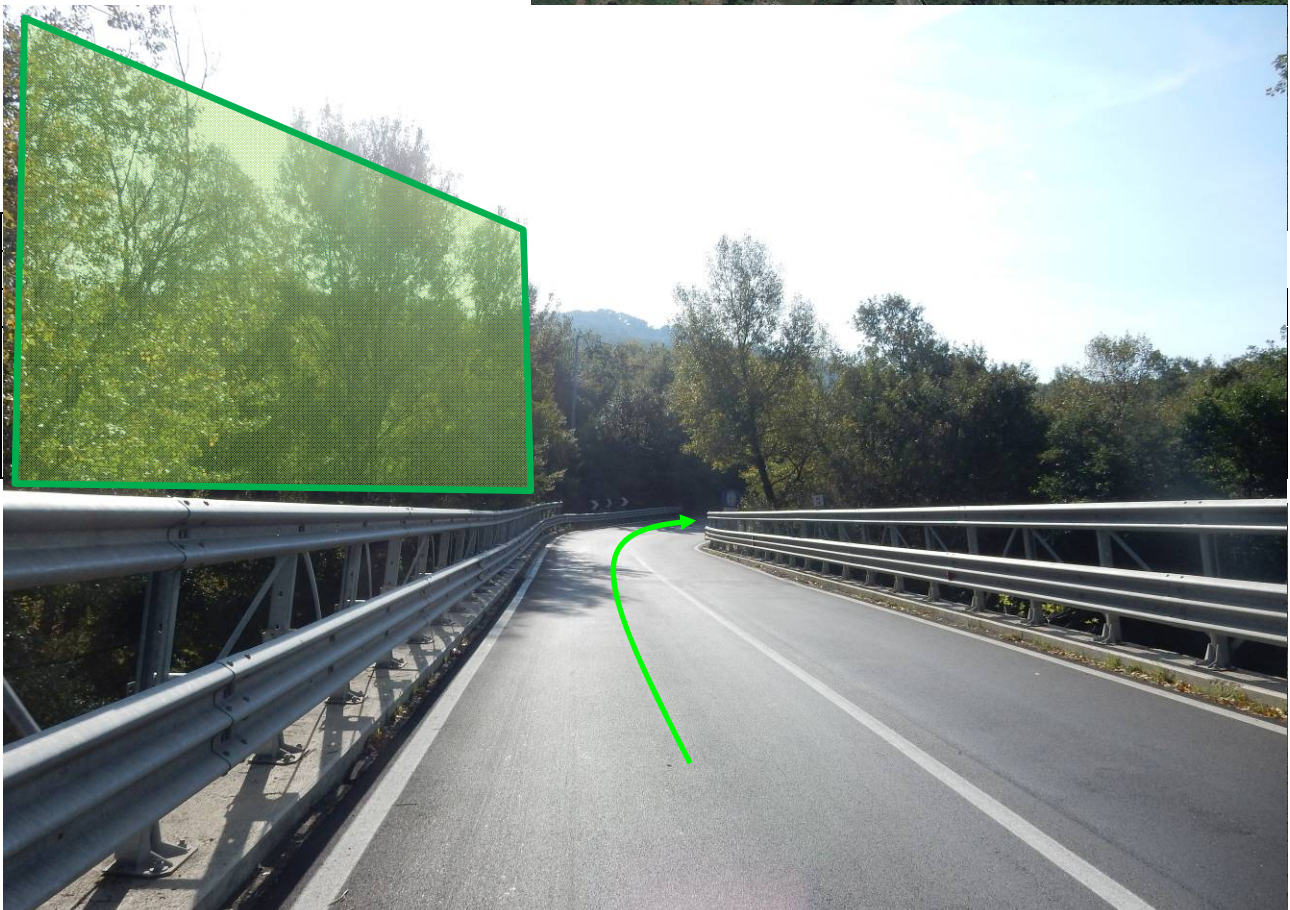
First option - Observation 1		
Coordinates (N,E):	40.946203	15.545767
Road:	from SS 655 to SS 401	
No intervention in this point. Turn right and follow in SS 401.		



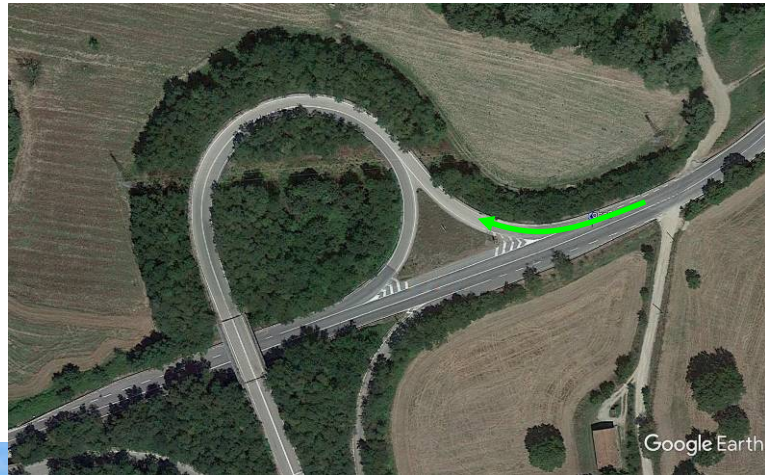
First option - Observation 2		
Coordinates (N,E):	40.942443	15.541883
Road:	SS 401	
Cut vegetation on the right side for a depth of 5 meters as in picture.		



First option - Observation 3		
Coordinates (N,E):	40.939808	15.541625
Road:	SS 401	
Cut vegetation on the left side for a depth of 10 meters.		

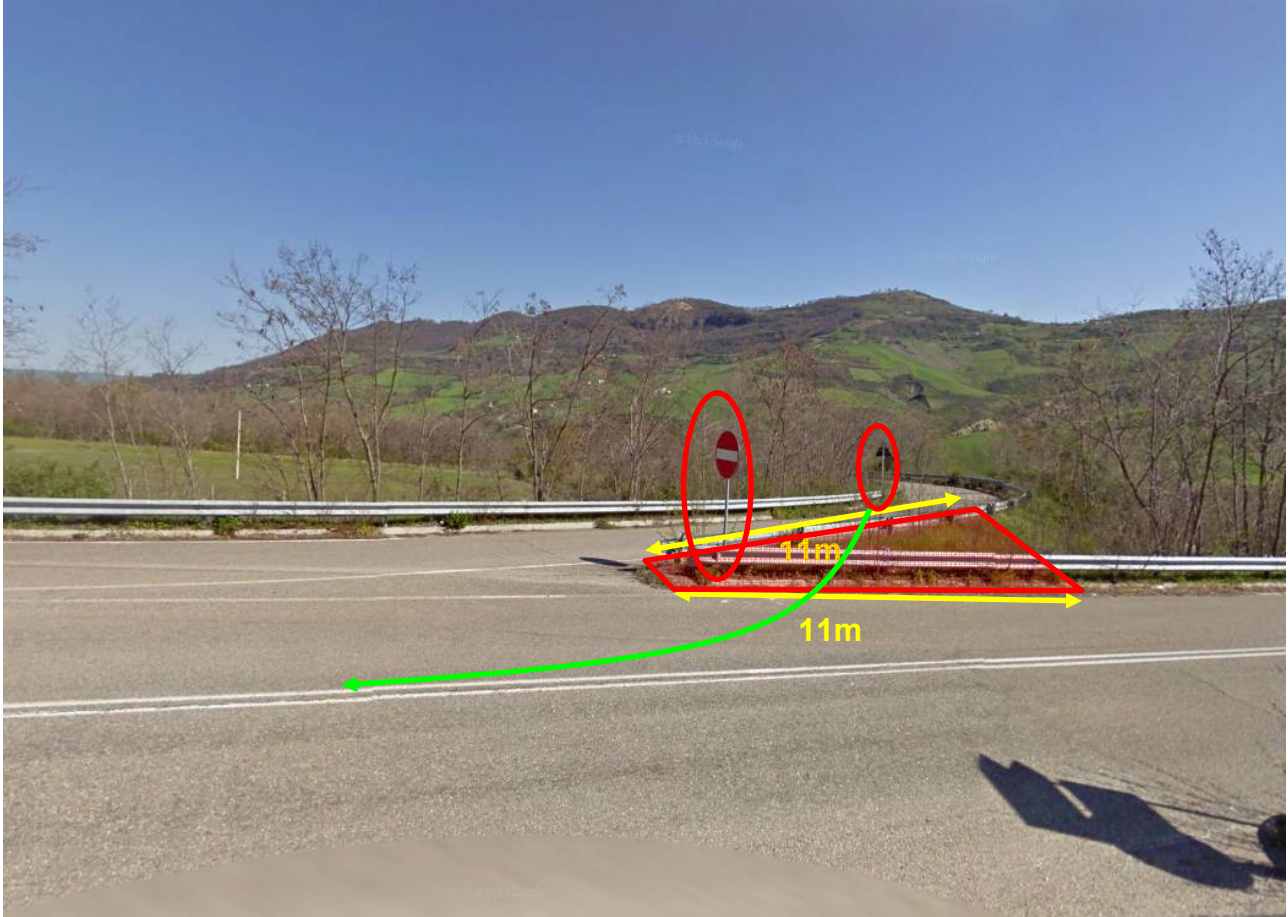


First option - Observation 5		
Coordinates (N,E):	40.893734	15.495991
Road:	SS 401	
Leave SS 401 and follow in San Fele direction in SP 219. If present, cut vegetation on right side for all the bending radius of the slip road.		



First option - Observation 6		
Coordinates (N,E):	40.862662	15.527007
Road:	SP 219	
Leave SP 219 and follow in Rapone direction. Cut vegetation for all the bending radius of the slip road for a depth of 10 meters. At the end of the slip road on the left side remove guardrail, make practicable (11 meters x 11 meters). Remove no. 2 road signals.		



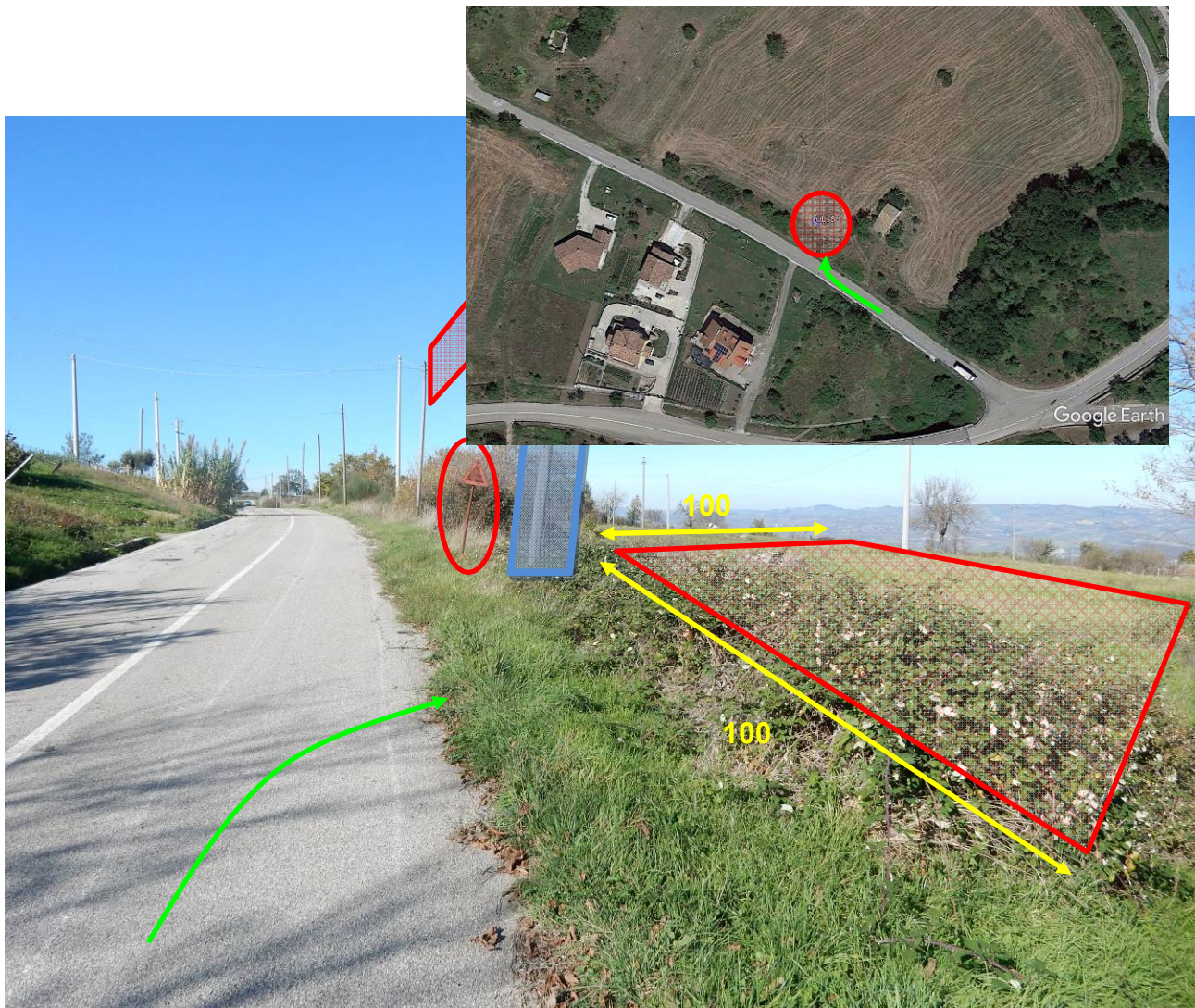


First option - Observation 7		
Coordinates (N,E):	40.850565	15.491770
Road:	Unknown road	
Widen and make practicable internal radius of the bend on right side for a depth of 10 meters. Cut vegetation on the left side for a depth of 10 meters to allow trailer with blade to turn right. Take right in unknown road and follow towards transshipment area.		

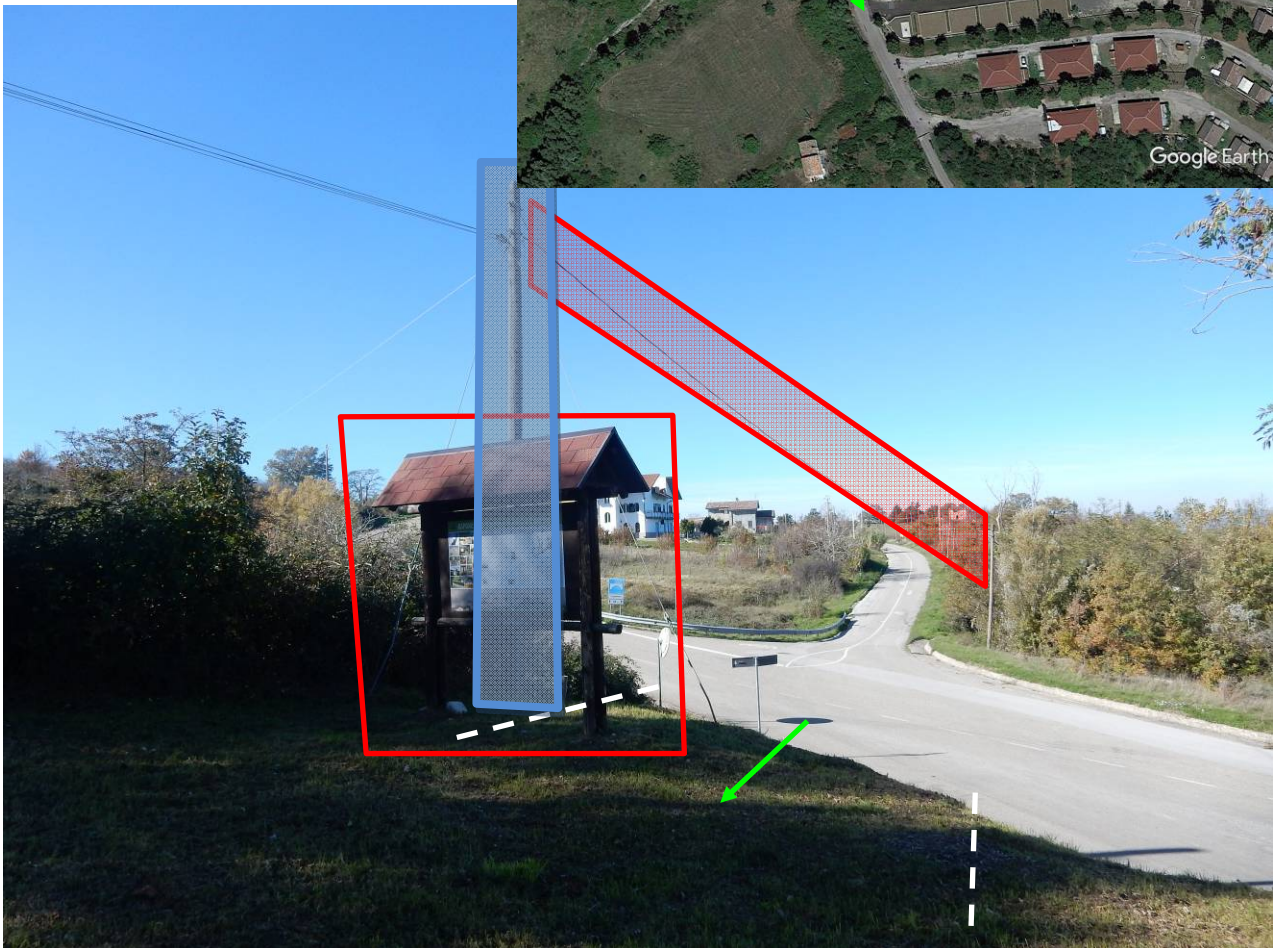




First option - Observation 8		
Coordinates (N,E):	40.851208	15.490585
Road:	Unknown road	
Remove pole. Remove suspended cable. Remove road signal. Create a transshipment area on right side to transboard elements on modular trailer and blade on Blade-Lifter.		



First option - Observation 9		
Coordinates (N,E):	40.850428	15.491906
Road:	Unknown road	
Create a bypass as in picture with an adequate slope according to 0054-6051- Wind farm Roads Requirements. Necessary pulling truck. Remove electric pole and suspended cables. Remove billboard. Make practicable all way, 5 meters of width. Stabilize, livelled and compacted.		





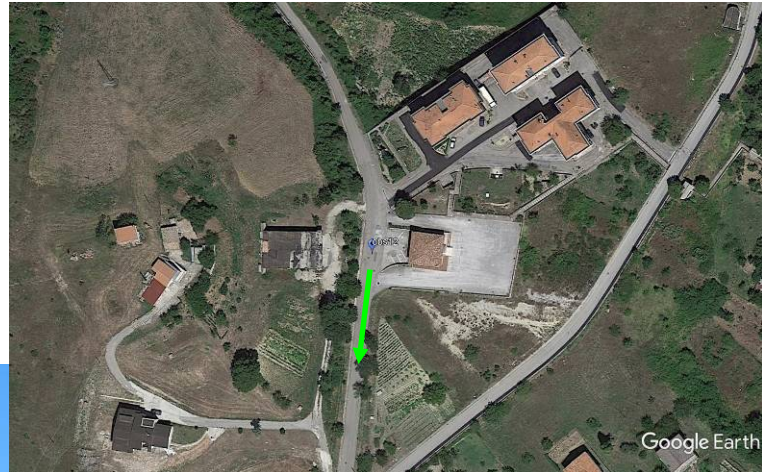
First option - Observation 10		
Coordinates (N,E):	40.848916	15.493117
Road:	Unknown road	
Remove suspended cable and make practicable internal radius of the bend on right side for a depth of 3 meters.		



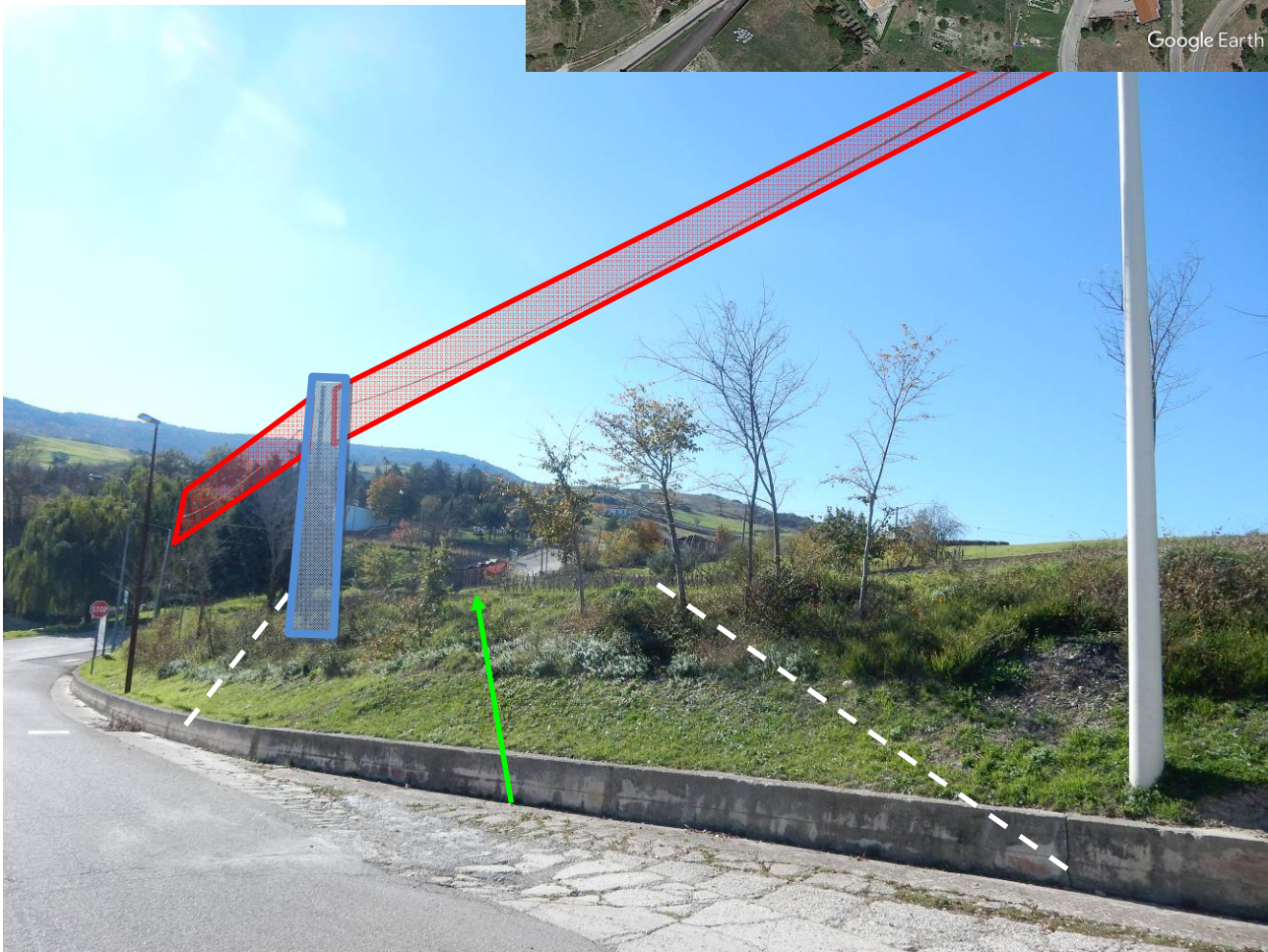
First option - Observation 11		
Coordinates (N,E):	40.847249	15.493866
Road:	Unknown road	
Make practicable internal radius of the bend on left side for a depth of 3 meters.		



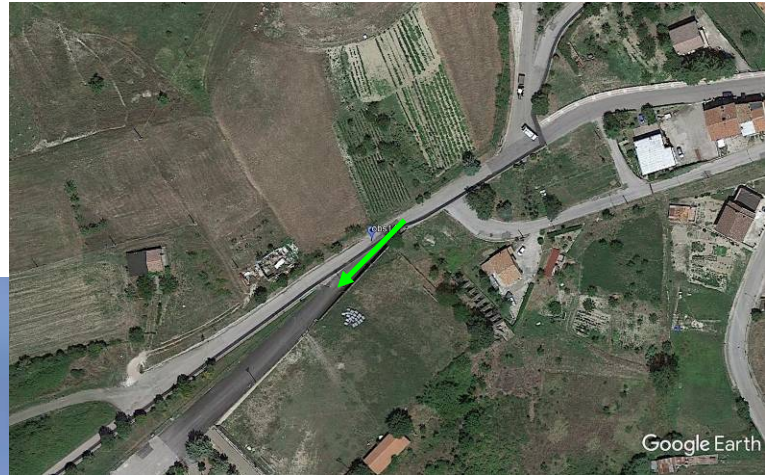
First option - Observation 12		
Coordinates (N,E):	40.846248	15.494425
Road:	Unknown road	
Remove suspende cable.		



First option - Observation 13		
Coordinates (N,E):	40.845222	15.494282
Road:	Unknown road	
Remove pole and suspended cable. Create a bypass 70 meters long to take road in Contrada Carosiello. according to 0054-6051- Wind farm Roads Requirements		



First option - Observation 14		
Coordinates (N,E):	40.844676	15.493585
Road:	Contrada Carosiello	
End of the bypass. Remove light pole. Remove electric pole and suspended cable.		

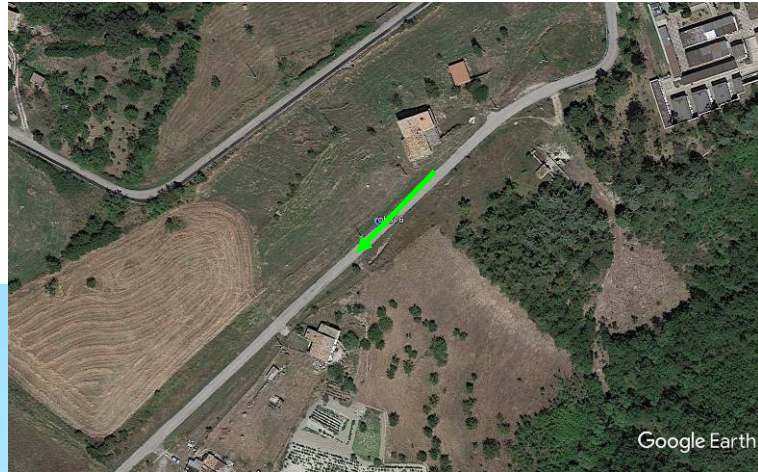




First option - Observation 15		
Coordinates (N,E):	40.843526	15.492240
Road:	Contrada Carosiello	
Create a bypass 50 meters long according to 0054-6051- Wind farm Roads Requirements Remove pole and suspendes cable.		



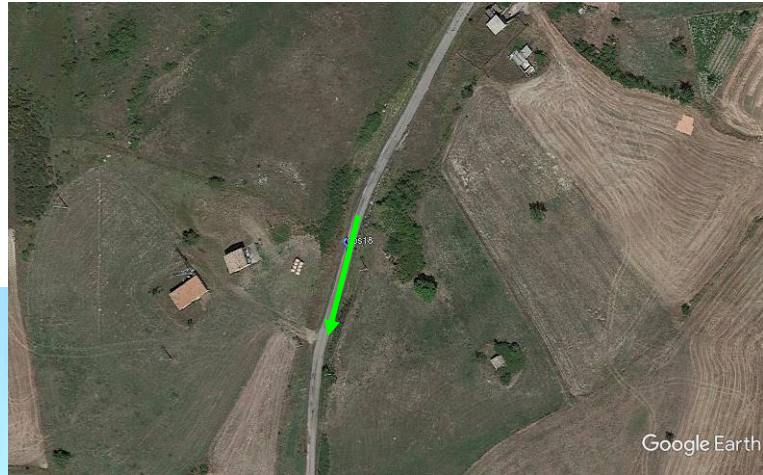
First option - Observation 16		
Coordinates (N,E):	40.842673	15.491189
Road:	Contrada Carosiello	
Remove suspended cable. All transit road have to a width of at least 5 meters.		



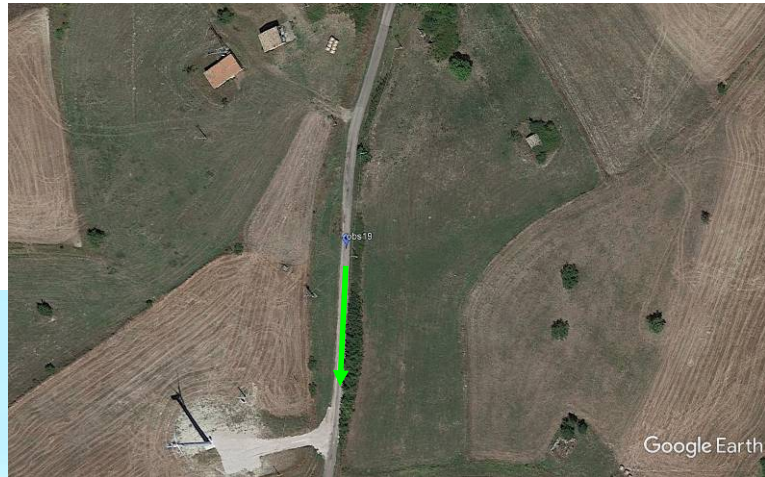
First option - Observation 17		
Coordinates (N,E):	40.840243	15.487630
Road:	Contrada Carosiello	
Remove suspended cable. Widen and make practicable left side for a depth of 2 meters.		



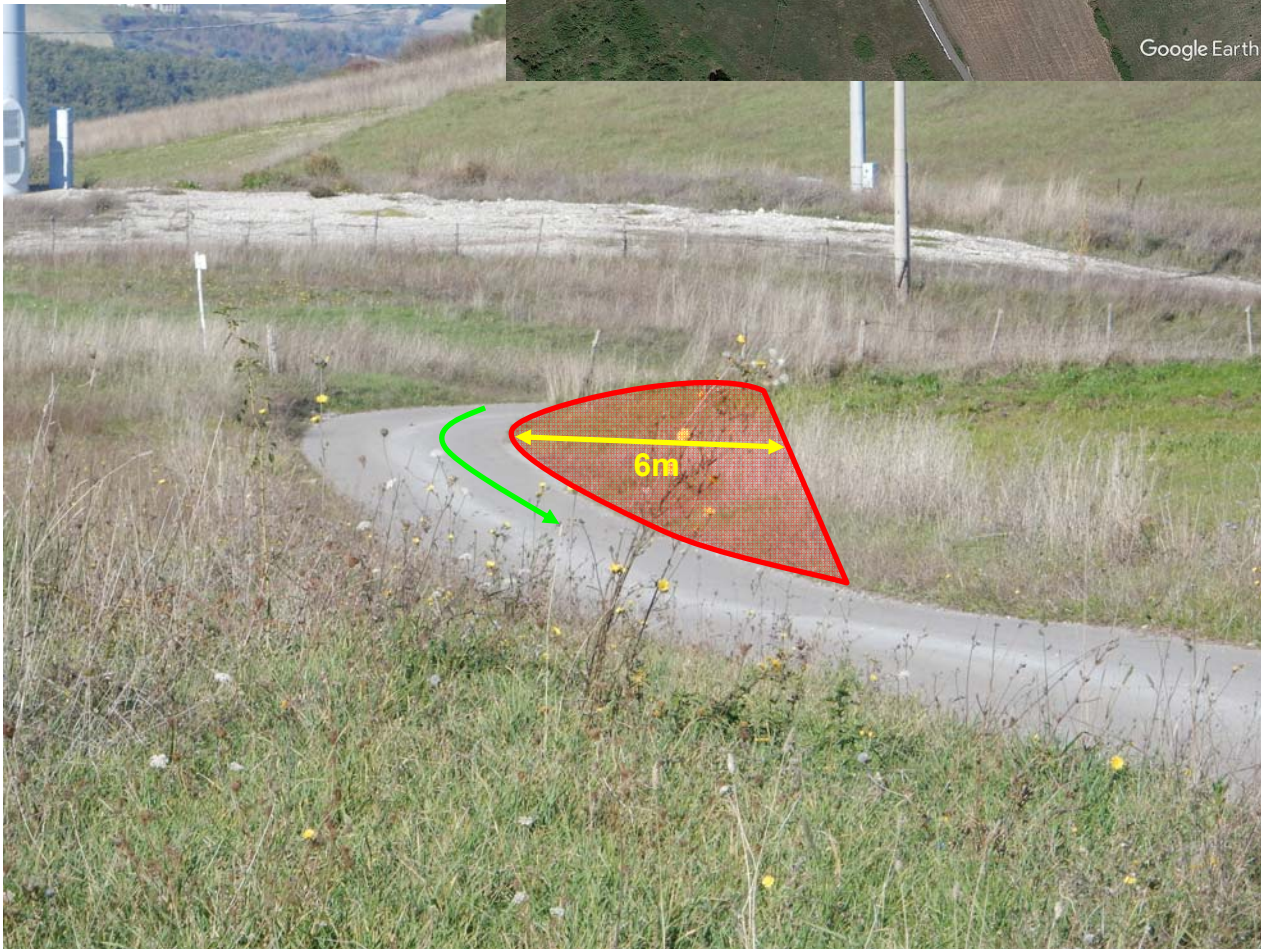
First option - Observation 18		
Coordinates (N,E):	40.839494	15.487168
Road:	Contrada Carosiello	
Remove suspended cable.		



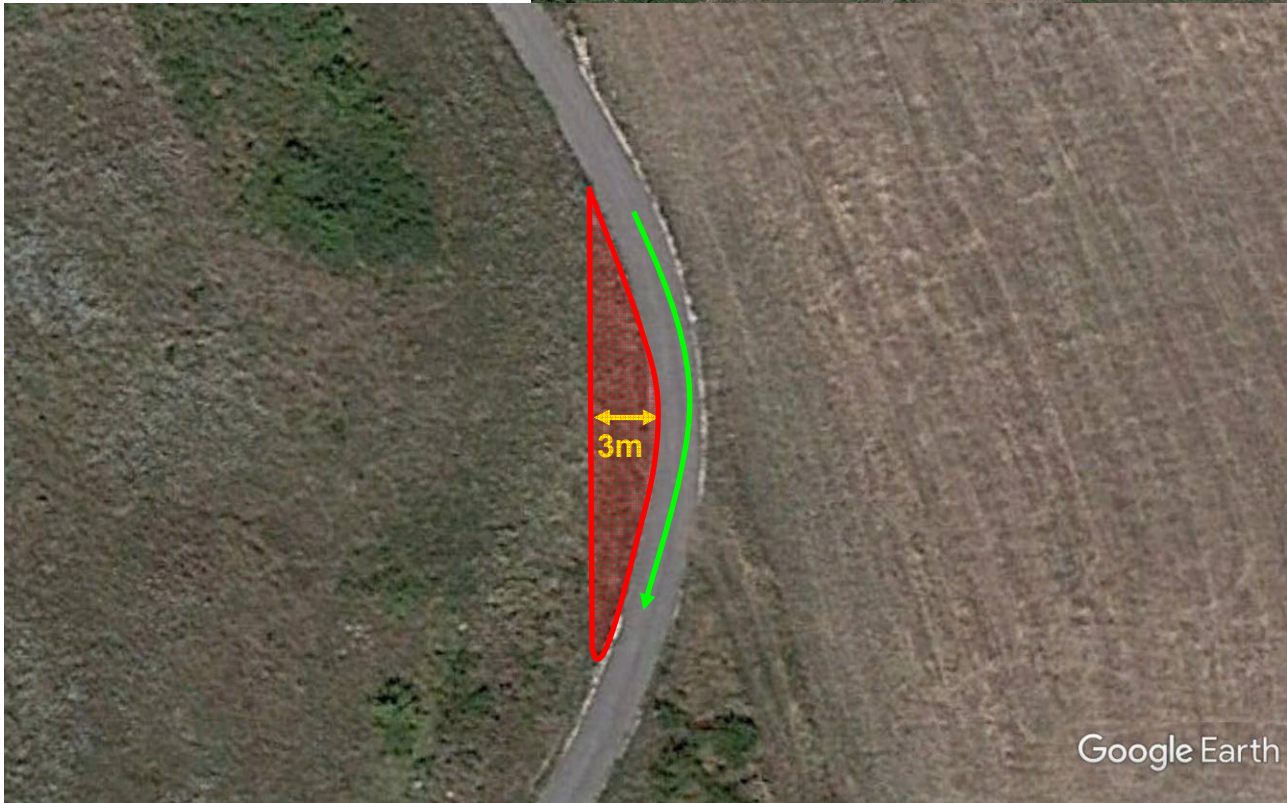
First option - Observation 19		
Coordinates (N,E):	40.838754	15.487011
Road:	Contrada Carosiello	
Remove suspended cable.		



First option - Observation 20		
Coordinates (N,E):	40.837647	15.486832
Road:	Contrada Carosiello	
Widen and make practicable left side for a depth of 6 meters.		



First option - Observation 21		
Coordinates (N,E):	40.836707	15.487424
Road:	Unknown road	
Make practicable internal radius of the bend for a depth of 3 meters.		



First option - Observation 22	
Coordinates (N,E):	
Road:	Unknown road
Make practicable internal radius of the bend for a depth of 4 meters in order on left side and then on right side.	



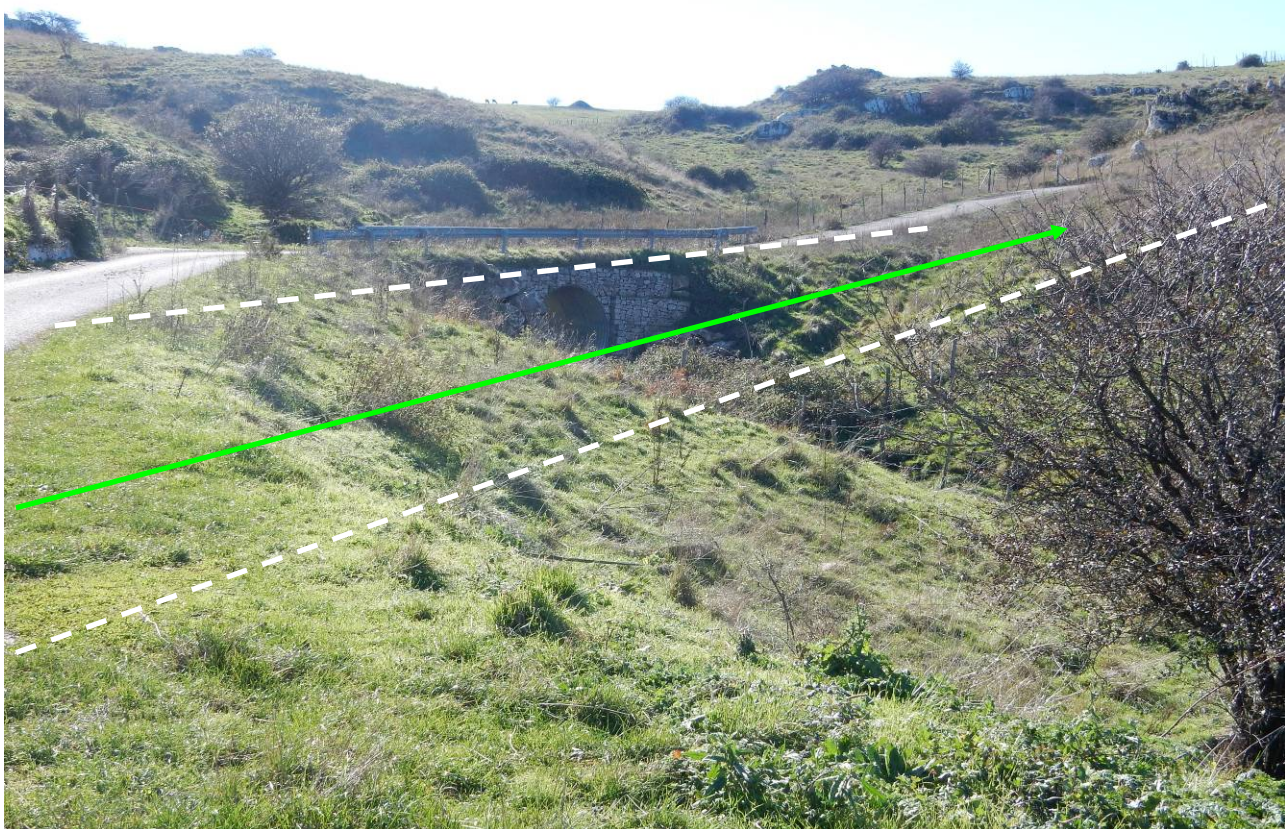
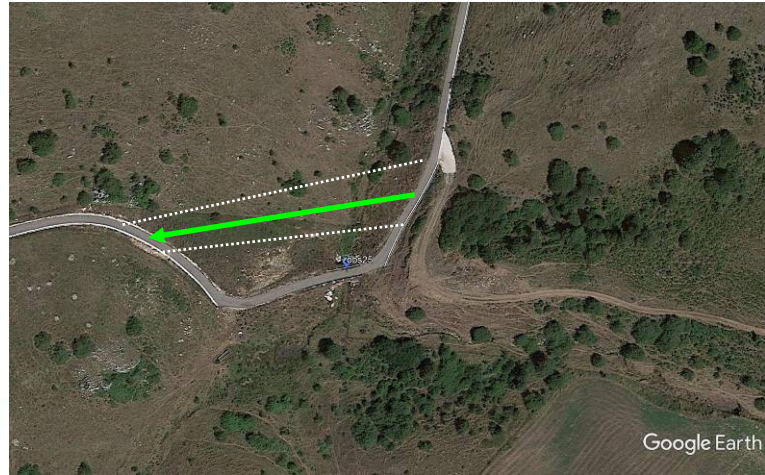
First option - Observation 23		
Coordinates (N,E):	40.831747	15.481723
Road:	Unknown road	
Make practicable internal radius of the bend for a depth of 4 meters.		



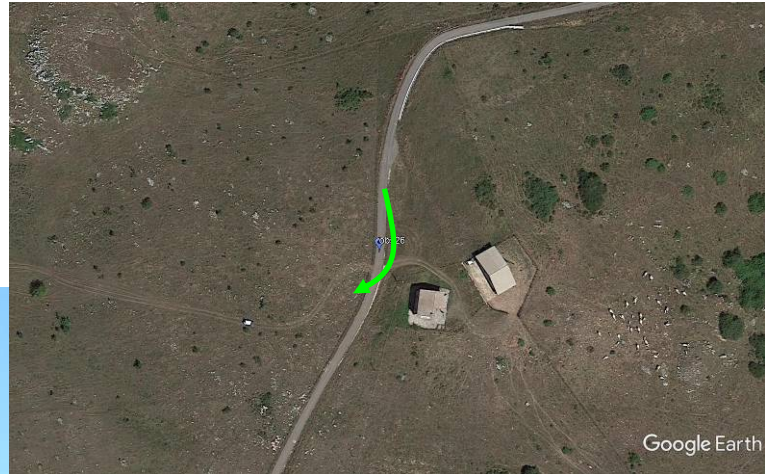
First option - Observation 24		
Coordinates (N,E):	40.822807	15.471892
Road:	Unknown road	
First access for 21 Wtgs.		



First option - Observation 25		
Coordinates (N,E):	40.822396	15.471444
Road:	Unknown road	
Create a bypass long about 110 meters. According to 0054-6051- Wind farm Roads Requirements		

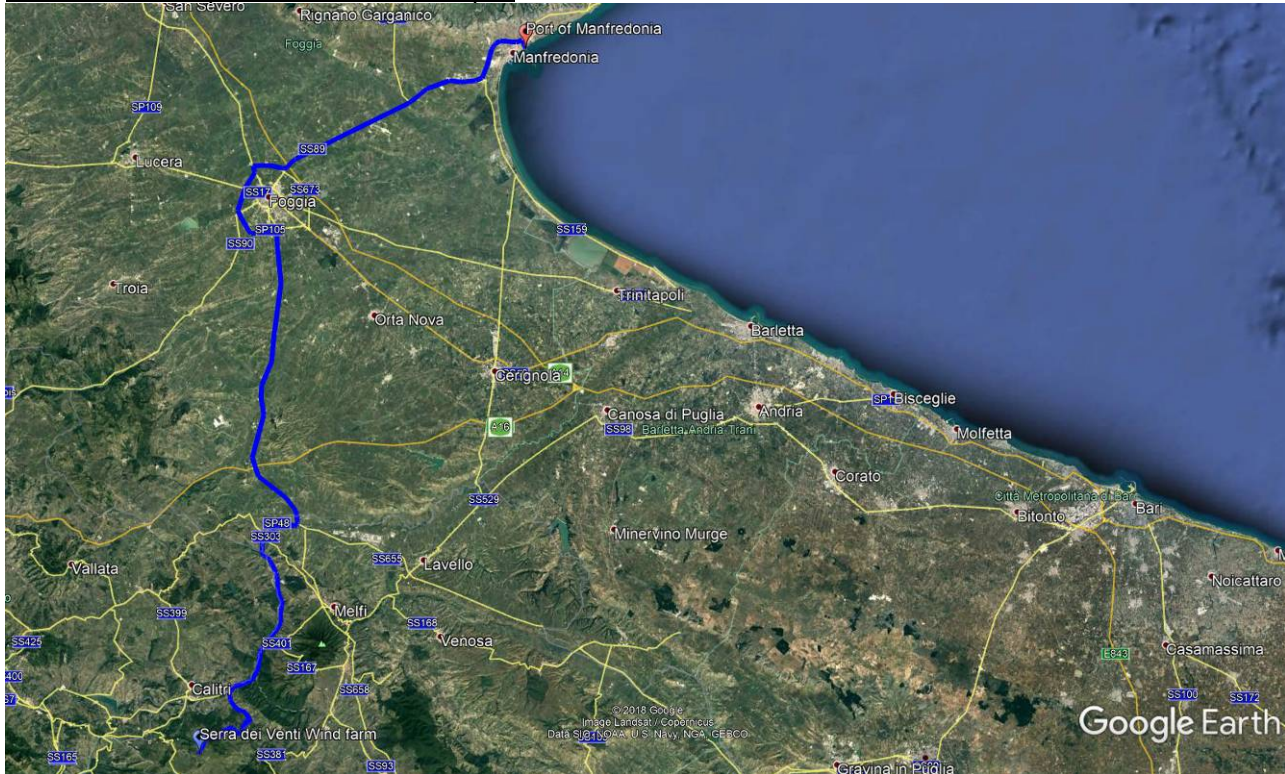


First option - Observation 26		
Coordinates (N,E):	40.821523	15.468288
Road:	Unknown road	
Second access for 3 Wtgsk eep the road according to 0054-6051- Wind farm Roads Requirements		



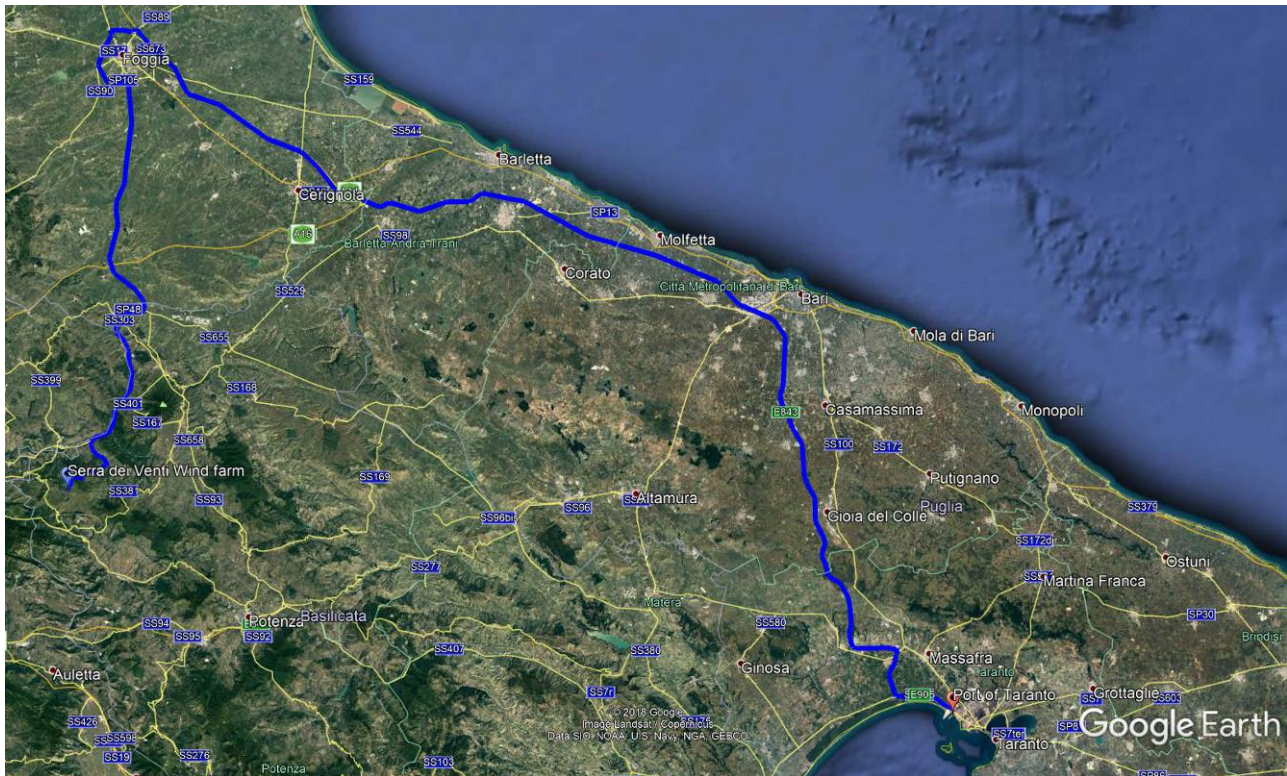
Second option - General Route Description:

WTG Route description from Manfredonia port



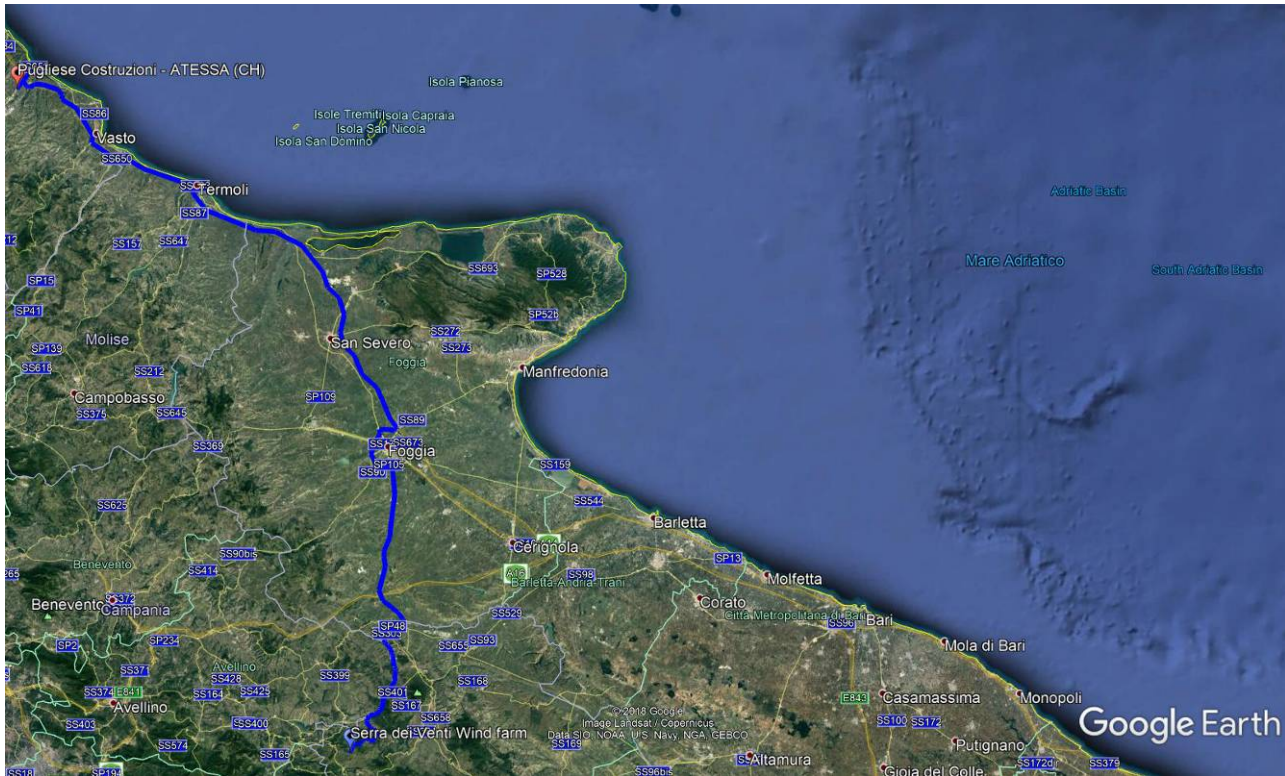
- **SS 89 Appia**: from Manfredonia Port SS 673 Dir;
- **SS 673 Dir**: from SS 89 to SS 673;
- **SS 673**: from SS 673 Dir to SS 16;
- **SS 16**: from SS 673 to SS 655;
- **SS 655**: from SS 16 to SS401;
- **SS 401**: from SS 655 to SP 219
- **SP 219**: from SS 401 to unknown road
- **Unknown road**: from SP 219 to NSA506
- **NSA506**: from unknown road to site entrance.

WTG Route description from Taranto port



- **SS.7 Appia**: from Taranto to SS 106;
- **SS 106**: from SS 7 to SS 106 Dir;
- **SS 106 Dir**: from SS 106 to entrance gate Highway A/14 – Taranto;
- **A14 HIGHWAY**: from Taranto to Foggia;
- **SS 673 Dir**: from A/14 - Foggia to connection SS 673;
- **SS 673**: from SS 673 Dir to SS 16;
- **SS 16**: from SS 673 to SS 655;
- **SS 655**: from SS 16 to SS401;
- **SS 401**: from SS 655 to SP 219
- **SP 219**: from SS 401 to unknown road
- **Unknown road**: from SP 219 to NSA506
- **NSA506**: from unknown road to site entrance.

WTG Route description from Pugliese Costruzioni Atezza (CH)



- **SS 652**: from Pugliese Costruzioni to SS 16;
- **SS 16**: from SS 652, U-turn and back to the SS 652;
- **SS 652**: from SS 16 to entrance gate Highway A14 – Val di Sangro;
- **A14 HIGHWAY**: from Val di Sangro to Foggia;
- **SS 673 Dir**: from A/14 - Foggia to connection SS 673;
- **SS 673**: from SS 673 Dir to SS 16;
- **SS 16**: from SS 673 to SS 655;
- **SS 655**: from SS 16 to SS401;
- **SS 401**: from SS 655 to SP 219
- **SP 219**: from SS 401 to unknown road
- **Unknown road**: from SP 219 to NSA506
- **NSA506**: from unknown road to site entrance.

Second option - Map of observations:



Feasibility of this second itinerary is subject to an except transit request on the new road that connect SS 401 to Muro Lucano (NSA506). Currently, traffic is prohibited on this road. After this request, if it's possible to use this road will be evaluate all the interventions on the entire itinerary. (First six observations are same of the first itinerary).

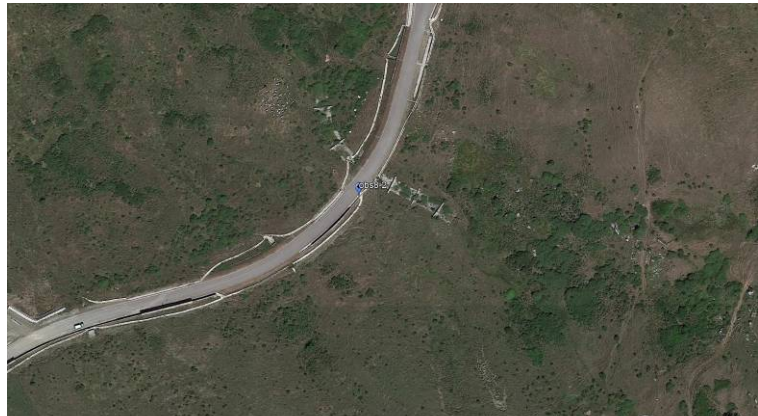
Second option – Obs. 7-2		
Coordinates (N,E):	40.841300	15.464164
Road:	Unknown road	
Verify this access and relative interventions if is possible to use this itinerary.		



Second option – Obs. 8-2		
Coordinates (N,E):	40.826353	15.452274
Road:	NSA506	
Unscrew temporarily first three snow height indicator to external bending radius.		



Second option – Obs. 9-2		
Coordinates (N,E):	40.820867	15.449920
Road:	NSA506	
Create a bypass on left side to serve each WTGs of the wind farm. According to 0054-6051- Wind farm Roads Requirements		



Conclusions and Highlighted

- Every branches jutting out on routing roads will have to be cut (6mt width and 5,5mt 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 5 mt high.
- 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 12/11/2018 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 described 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