

Environmental Due Diligence Roger II Wind Farm (Abruzzo, Italy)

Final Report (pj 0381584)

February 2017



CEF 2 Wind Energy srl

The world's leading sustainability consultancy



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Milan, February 14th, 2017

Environmental Due Diligence – Roger II Wind Farm (Abruzzo) – Final Report (pj 0381584)

Dear Sirs,

We are pleased to submit our *report* which summarises the findings from ERM's Environmental Due Diligence of the Roger II Wind Farm at San Giovanni Lipioni (Chieti, Abruzzo, Italy)

The assessment was based on a detailed review of the key environmental documentation and information made available to ERM in the Virtual Data Room (VDR).



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Partner in Charge



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Project Manager



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Non-Technical Summary

The Environmental Due Diligence (EDD) comprises:

- An assessment of the compliance of the project with the environmental permit requirements
- A comparison of the actual windfarm layout with the approved layout
- A constrains analysis.

The findings of the EDD, based on the information made available to ERM for review are the following:

- Two of the five turbines are located in an Important Bird Area (IBA). A requirement from the authorities of additional monitoring of birds and bats cannot be excluded. The cost estimate for this activity is 40k€.
- Periodic (annual) noise monitoring to ensure compliance with the noise emissions regulation is recommended. The cost estimate for this activity is 10k€.
- It is recommended to perform a site survey to verify compliance with maintenance requirements (river crossing, maintenance of vegetation planted as environmental compensation, environmental management of the site – oils and waste management).
- Archaeological finding from the Hellenic period was discovered in the so-called *Il Monte* location near the turbine WTG2. It is recommended to obtain evidence of completion of the works and possible indications on further costs to be born by the site with reference to archaeological surveys and findings management.

Introduction

This Red-Flag report provides a summary of the desktop Environmental Due Diligence (EDD) on the environmentally relevant documents uploaded in the Project Virtual Data Room (VDR) until December 08th, 2016.

The conclusions of the Environmental Due Diligence are indicated in the specific paragraphs of this Report.

EDD Criteria and Limitations

ERM understands that Glennmont wishes to conduct a review of the environmentally relevant documents available in the VDR (Virtual Data Room) in order to identify:

- Environmental Permit requirements that might lead to liabilities and costs if not complied with. The analysis is focused on requirements which are still applicable and verifiable during operation and decommissioning. Requirements which only applied to the transitory construction phase (e.g. dust and noise emissions connected to construction) are not considered in this review.
- Environmental risks associated with sensitivities of the environment (natural environment, cultural heritage, noise receptors);
- Possible liabilities associated with monitoring campaigns results;
- Additional decommissioning costs.

Issues which have been considered as material are those which do or could materially impact the business and:

- Are in excess of 20,000 Euro per issue;
- Might lead to business interruption;
- Have a potential impact on the license to operate;
- Have the potential to lead prosecution of Glennmont or impact Glennmont's reputation from an environmental perspective.

An estimate of costs to address the issue is provided, where possible, for each significant (material) issue.

Limitations

The information and conclusions expressed in this desk-top based Phase I Environmental Due Diligence have been limited to a Virtual Data Room (VDR) organized by the Vendor. No site visit or management interviews were conducted by ERM within the scope of this assignment.

Conclusions obtained are based upon ERM professional judgement and experience in assessing liabilities in similar operations. However, the conclusions obtained are limited to the quantity of information reviewed in the timeline available for review. Therefore, provided the limited scope of the assessment, the existence of material implications cannot be discarded even if specific potential environmental issues are not mentioned in this report or have not been found as of material cost therein.

The focus of the assessment has been on the Project's environmental permitting requirements and subsequent activities reports.

This report is confidential to Glennmont Partners (from now onwards Glennmont) and CEF 2 Wind Energy srl we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party rely upon the report at their own risk.

Roger II Wind Farm

- The asset is located in San Giovanni Lipioni, in the province of Chieti, Abruzzo region. The wind farm has already been commissioned and is currently operating. The main features are as follows:
 - 10 MW: 5 Wind Turbines Generators (WTGs) x 2 MW each

Region	Province	Municipality	Windfarm portions	Altitude	Turbines	Capacity
Abruzzo	Chieti	San Giovanni Lipioni	Colle Vernone	636-681 m	2 x 2.0 MW WTG 4 and 5	4.0 MW
			Monte – crinale di Caccavone	679-703 m	3 x 2.0 MW WTG 1, 2, 3	6.0 MW

- The windfarm achieved COD (Commercial Operation Date) on November 2012
- The main ancillary facilities include: underground electric cables (20kV), internal connection roads, electric substation, connection to the distribution grid through the “Roccavivara” electric station, access road.
- The whole footprint of the project (including ancillary facilities) is included in the territory of the Municipalities of San Giovanni Lipioni and Torrebruna in the Province of Chieti (Regione Abruzzo) and Roccavivara in the Provincia of Campobasso (Regione Molise).

Windfarm Location

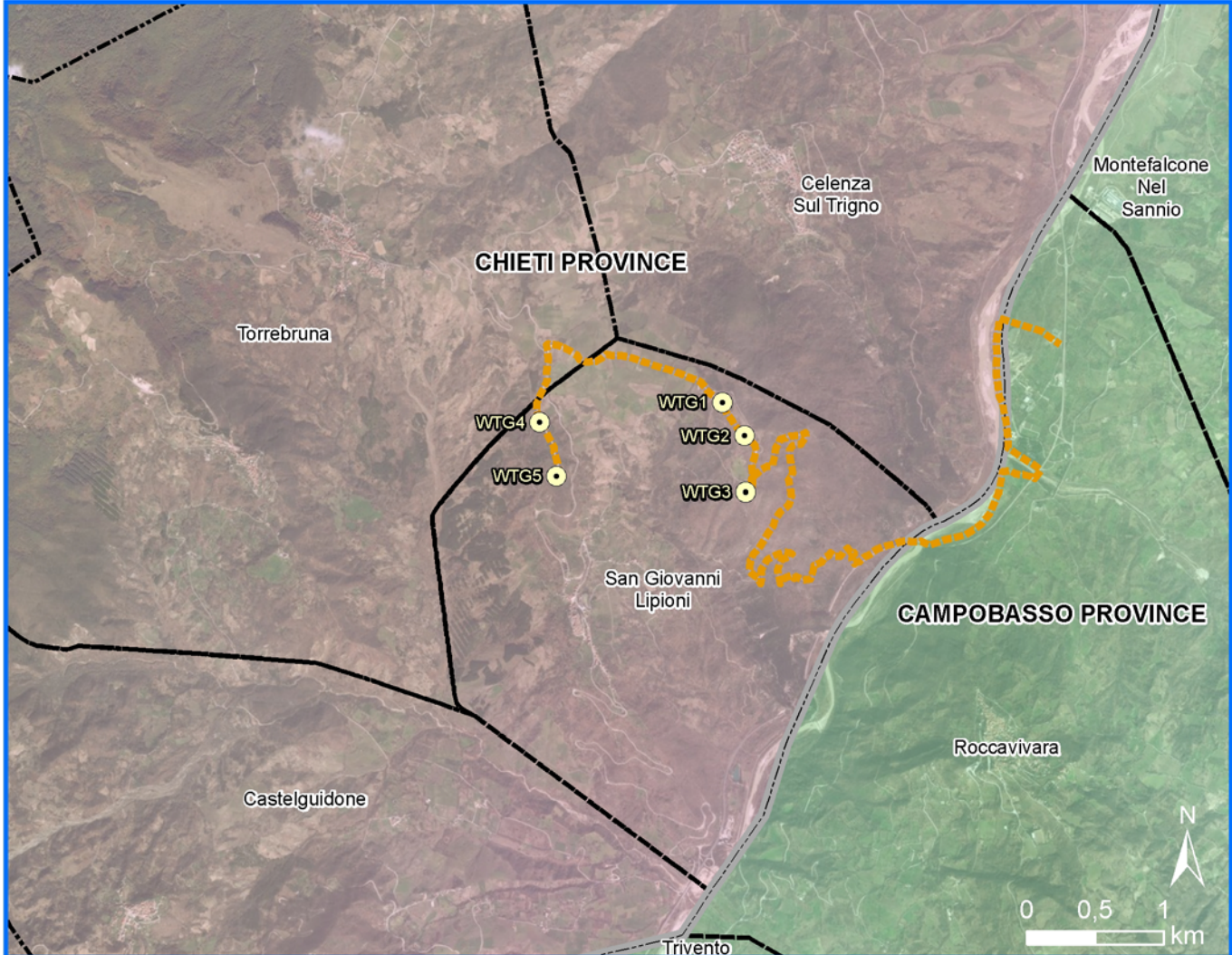


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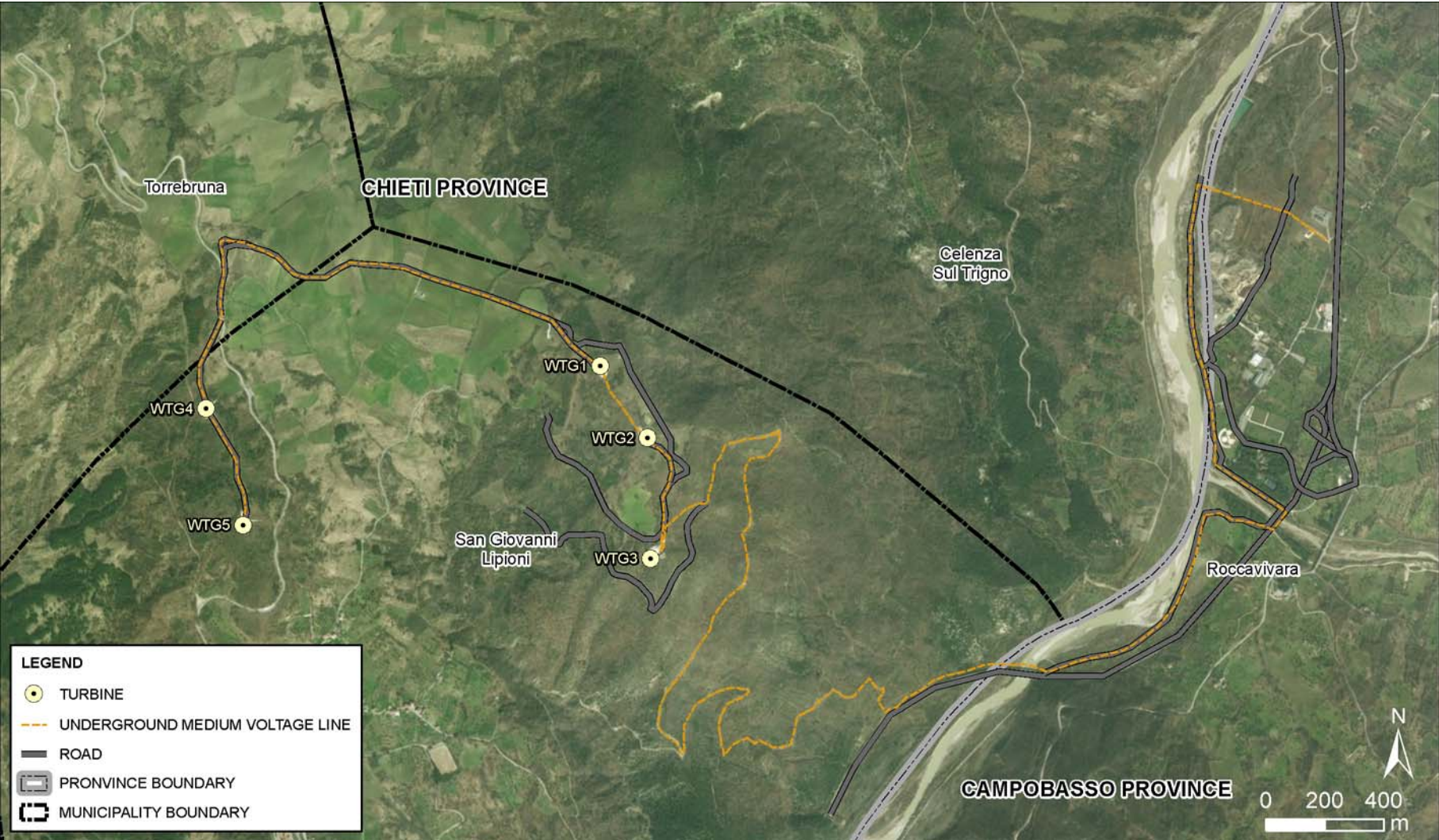
- TURBINE
- UNDERGROUND MEDIUM VOLTAGE LINE
- PROVINCE BOUNDARY
- MUNICIPALITY BOUNDARY

REGION

- ABRUZZO
- MOLISE



Windfarm Layout



Environmental Permitting

The windfarm in Abruzzo was authorized based on the Italian Legislative Decree n. 387 of the 23.12.2003 on the permitting of renewable energy production plants. This procedure was intended to simplify the permitting process and unify the permitting outcomes in an umbrella permit called «Autorizzazione Unica» (AU), single permit for construction and operation. The following single permit for was issued for the SGL Wind Farm:

- **Autorizzazione Unica no. 186 of 3 November 2011** issued by Abruzzo Region as integrated and amended on 24 July 2012

In terms of Environmental Impact Assessment (EIA) procedure the AU is based on the following acts of the Regional Environmental Department:

- **EIA Opinion no. 967 of 11 October 2007**, expressing a favourable opinion on 3 of the proposed 5 Wind Turbines, and requiring additional evaluation for the remaining
- **EIA Opinion no. 1303 of 28 July 2009** expressing a favourable opinion on the remaining 2 WTGs (Località Vernone)
- **EIA Opinion no. 1549 of 22 July 2010** expressing a favourable opinion on a non-substantial change (access road layout modification)

In terms of Landscape Assessment the AU is based on:

- **Opinion no. 5705 of 19 May 2010**, as amended and integrated by opinion no. 8040 of 2 July 2010.

Environmental Permitting – Non Substantial modifications

The following non-substantial modifications of the project were later approved by the Regional Authorities:

- Modification of the Wind Turbines typology (April 2012)
- Modification of the proposed access roads project (July 2012)
- Construction of an anemometric tower (October 2012)
- Reuse on site of the excavation rocks (June 2013)

Environmental Permitting Requirements

The following Environmental Requirements are included in the AU permit:

- **Monitoring of fauna:** according to the Abruzzo Region Guidelines on the evaluation of Wind Farms (DGR 754/2007), since part of the wind turbines are located in an IBA (Important Bird Area), fauna monitoring is required 1 year before installation of the windfarm and 2 years after installation. In case an impact on birds and bats is detected the wind farm activity shall be stopped.
- Maintain the **river crossing** in the Municipality of San Giovanni Lipioni, to ensure regular flow of the river.
- Maintain **noise emission** levels to the environment and residential receptors within the applicable threshold limit values.
- **Keep areas clear** from any residual material / waste.
- Establish a **bank guarantee** at least 2% of the overall investment for decommissioning cost.
- Pay for the **environmental compensation** according to Regional Law 27/06.
- Comply with **environmental legislation** and with possible modifications thereof in terms of water, air, waste management, soil, noise, electromagnetic fields, including the obligation to comply with possible modifications of the legislation.

The following slides provide an assessment of the compliance with Permitting requirements based on the available documents.

Birds and Bats Monitoring

The conclusions of the birds and bats monitoring carried out in 2013-2014 state that:

- **No direct/indirect impact** of the Wind Farm on **birds** was identified.
- **No direct impact** of the Wind Farm on **bats** was identified, however the population of bats in the Wind Farm area is largely inferior to the rest of the area. This could be due to the presence of the wind farm as well as to the different environmental characteristics of the area.

Whereas the monitoring report states that the evidences collected during the monitoring period are sufficient to clearly describe the presence of nesting birds species in the area, it is noted that further monitoring would be necessary to: Complete the knowledge about migratory birds species

- Complete the evaluation of the direct impact of the wind farm on birds
- Complete the evaluation of the impact on bats population and define possible mitigation measures.

ERM Conclusion:

- No communication of the authorities related to the outcomes of the fauna monitoring was made available to ERM for review.
It cannot be excluded that, in consideration of the conclusions indicated in the monitoring report, future monitoring of birds and bats will be required by the competent authorities. The estimated cost for this activity is 40k€ (assuming 2 additional yearly monitoring campaigns, 20k€ each).

Noise Monitoring

A noise monitoring campaign carried out in 2014 was made available to ERM for review.

The study was performed considering 4 identified receptors: 2 residential dwellings, and 2 agricultural plots (see map in the following Slide).

The Municipality of San Giovanni Lipioni noise zoning plan had **not** been approved at the time of the study, therefore applicable noise immission levels are 70dB(A) during the day, 60dB(A) during the night (as per D.P.C.M. 01/03/91).

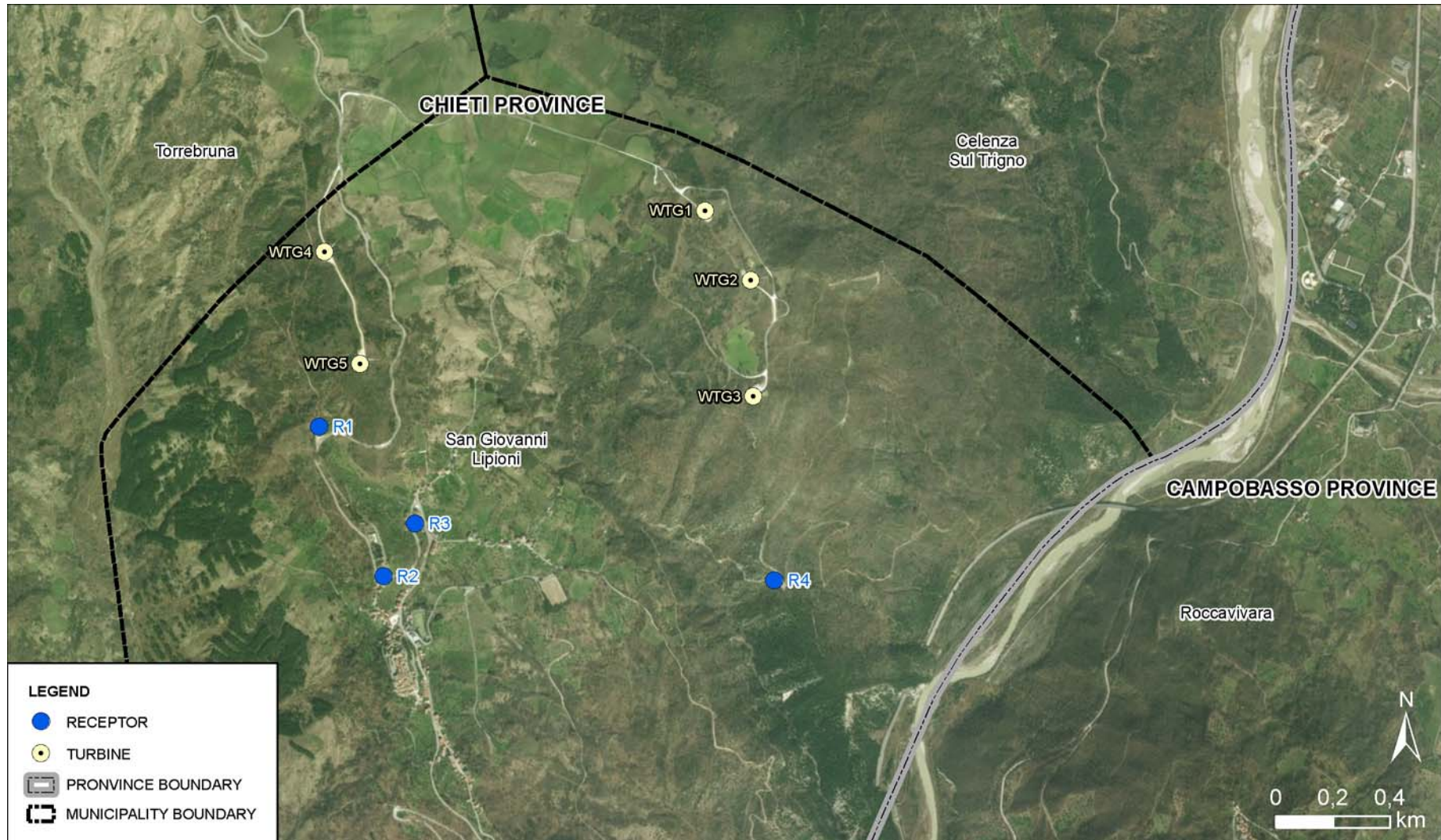
The conclusions of the noise monitoring are the following:

- The noise immission levels complied with the applicable limits at all four receptors
- The differential limit (measure of the difference between the noise level with and without the contribution of the wind farm operation noise) was complied with at 3 out of 4 of the analyzed receptors. The receptor where the differential limit was exceeded is not considered sensitive as it is not residential.

ERM Conclusion:

- It is recommended to repeat the noise monitoring in order to ensure continued compliance of noise levels, considering possible changes in the applicable legal framework (e.g. approval of the noise zoning in the Municipality of San Giovanni Lipioni). The cost estimate is 10 k€ for each monitoring campaign.

Sensitive receptors Location



Maintenance Requirements

As per the AU requirements connected with the maintenance of the Wind Farm and its ancillary facilities i.e.:

- Maintain the **river crossing** in the Municipality of San Giovanni Lipioni, to ensure regular flow of the river.
- Comply with **environmental legislation** and with possible modifications thereof in terms of water, air, waste management, soil, noise, electromagnetic fields, including the obligation to comply with possible modifications of the legislation.
- **Keep areas clear** from any residual material / waste.

No information was available to ERM for the assessment of the their actual implementation.

ERM Conclusion:

- It is recommended to verify compliance with the above mentioned requirements through a site survey.

Decommissioning and Reinstatement Requirements

As per decommissioning and reinstatement requirements i.e.

- Establish a **bank guarantee** at least 2% of the overall investment for decommissioning cost.
- Pay for the **environmental compensation** according to Regional Law 27/06.

No information was made available to ERM to confirm completion of these requirements.

ERM Conclusion:

- Evidence of compliance with the above mentioned requirements was reviewed by ERM.

Archaeology

The site received a request by the competent authority (Soprintendenza Beni Archeologici Abruzzo – Chieti, Prot. N. 08175 dated October 10, 2012) to carry out an archaeological survey in the so-called *Il Monte* location near the turbine WTG2.

The archaeological survey started in October 2012 and was suspended in November 2012 by adverse weather conditions. The investigation restarted in March 2014 and an archaeological finding from the Hellenic period was discovered in the “Il Monte” area (as per Prot. 3032 of 18.04.2014 of the above mentioned Soprintendenza). The immediate protection (through cover) of the finding was required.

The Site communicated to the Authority (Letter of Eolica Lucana to Soprintendenza of May 2014) the covering the finding, as required by the Authority.

ERM Conclusion:

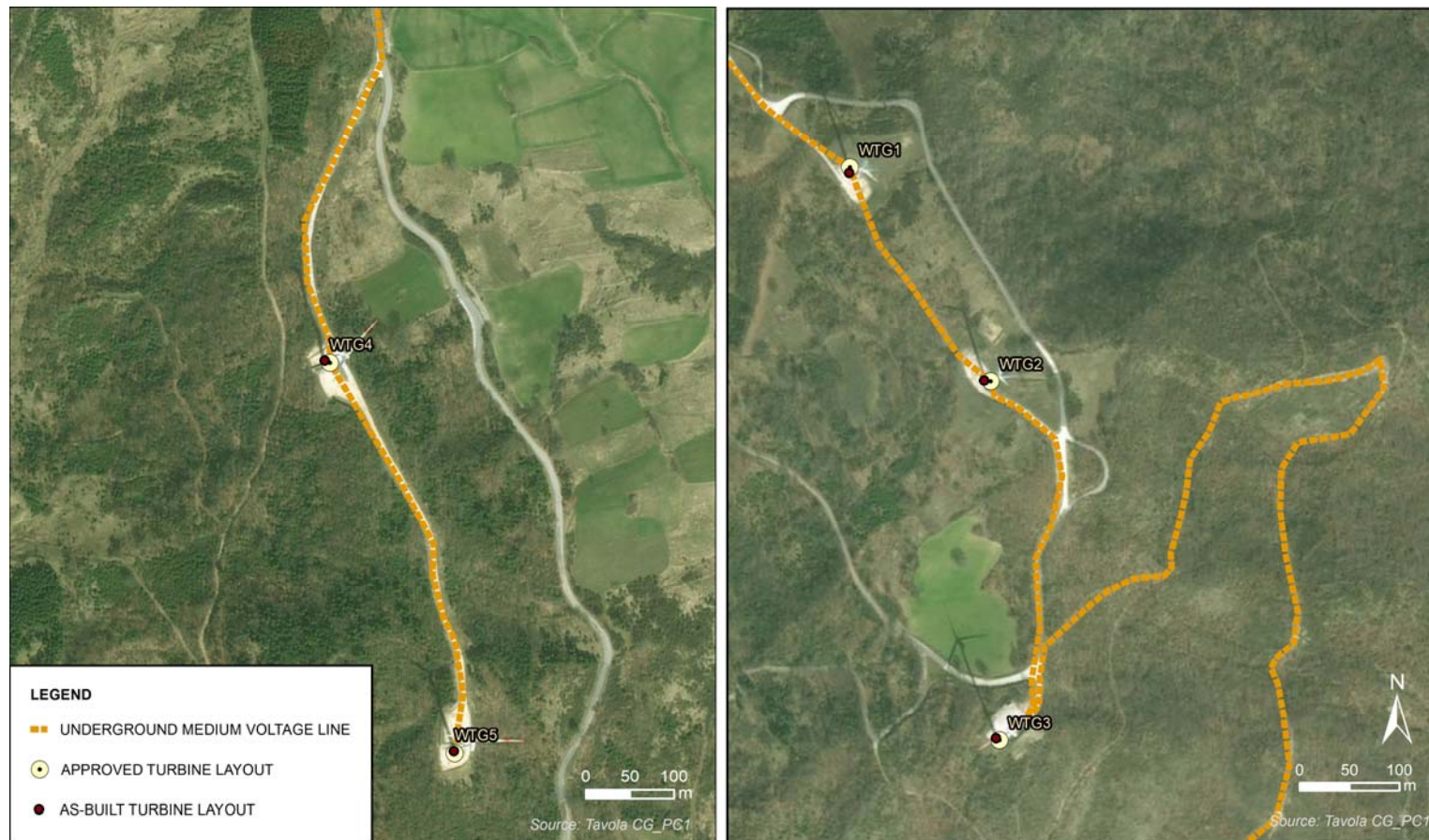
- It is recommended to obtain evidence of completion of the works and possible indications on further costs to be born by the site with reference to archaeological surveys and findings management.

Windfarm Layout Compliance Analysis

The Figure below shows an overlay of the following geographic project information layers:

- Approved project layout (Progetto Definitivo 09/2010, Tavola CG PI 2)
- As-built project layout (satellite image, Source ESRI, Digital Globe, 2015).

The analysis confirms that the as-built layout to the approved layout.



Environmental Constraints

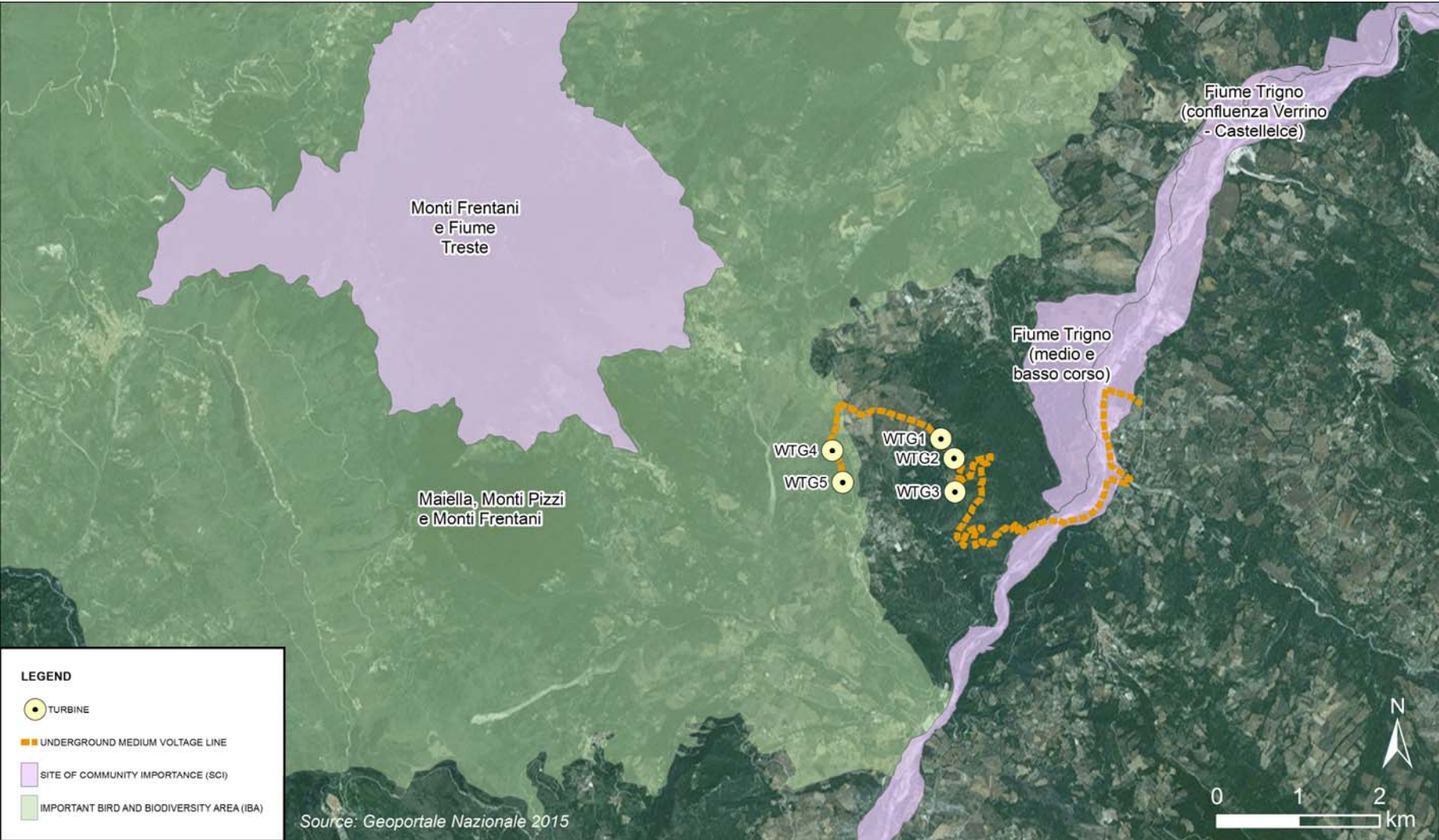
The EIA documents were not made available to ERM for review. ERM reviewed the following sources to identify possible constraints relevant to the area of Roger II and produce Environmental Constraint Maps (see following slides):

- Protected Areas, Important Bird Areas: *Geoportale Nazionale del Ministero dell'ambiente e della tutela del territorio e del mare*
- Landscape Planning: *Piano Regionale Paesistico Abruzzo*
- Flooding and Hydrogeologic Constraints: *Piano Stralcio per l'Assetto del Territorio – Fiume Trigno*

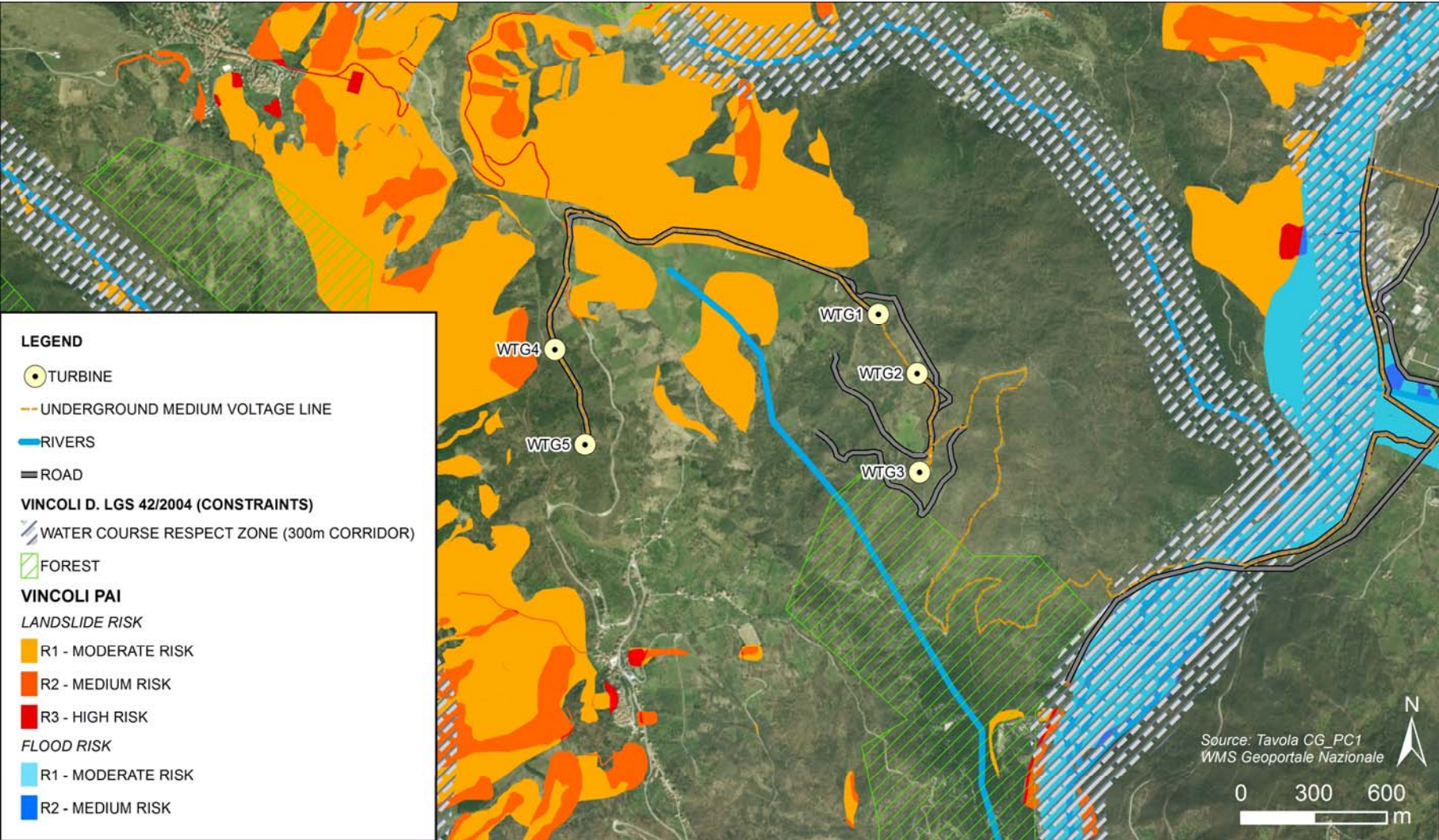
As considered in the EIA permitting process turbines WTG 4 and WTG5 are located in the *IBA Maiella, Monti Pizzi e Monti Frentani*.

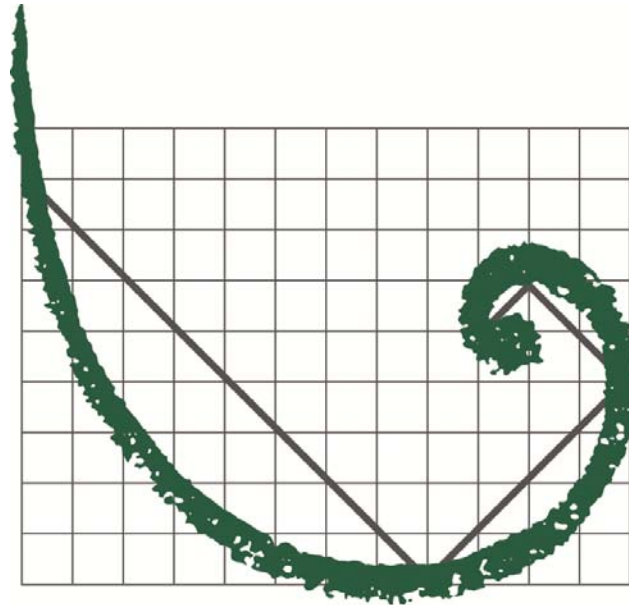
No additional constraints were identified in the area of the wind turbines in terms of natural areas protection, hydrogeological or flooding risk, river protection, forest protection.

Environmental Constraints Map (1)



Environmental Constraints Map (2)





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