

# Critique of Environmental Impact Study: Fuente Pico Wind Farm

## Summary

In this document, the *Matienzo Caves Project* (see page 8) presents a critique of the 1183-page Environmental Impact Study (EIS) for the proposed Fuente Pico wind farm. The project consists of three wind generators to be installed on a limestone karst hillside covering approximately 1.8 square kilometers. The critique identifies significant deficiencies in the EIS's assessment of the site's suitability, with particular emphasis on the complex and sensitive nature of the karst ecosystem that would be irreparably damaged by this development.

The fundamental conclusion is that this wind farm is inappropriately sited in a delicate karst environment, and that the EIS fails to adequately account for the three-dimensional nature of karst systems, underground biodiversity, local hydrology, and the impossibility of restoring the area after construction or decommissioning. The "Alternative Cero" (no-build option) dismissed in the study represents the most environmentally responsible approach.

## Resources

The [publication notice](#) in the BOC

The EIS can be downloaded from [here](#) or from the [Matienzo Caves Project website](#).

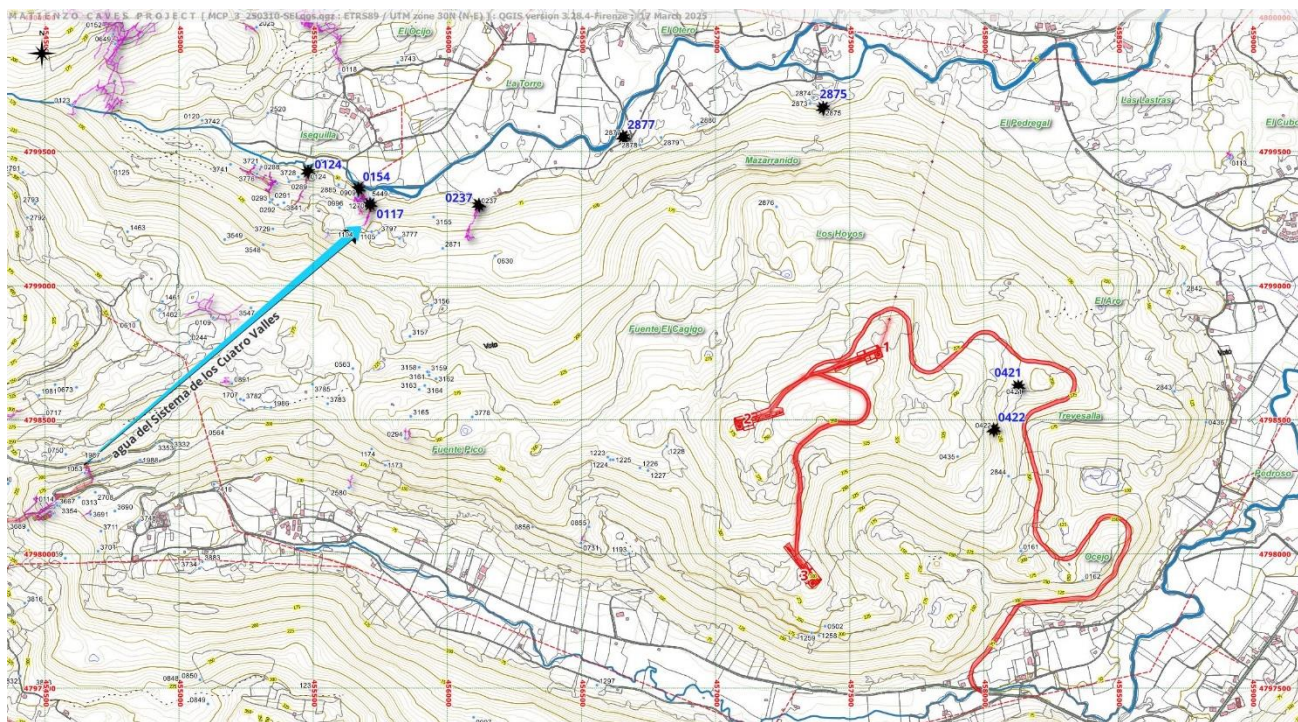


Figure 1 Map with a 500m grid. **Eight caves at risk are highlighted.** Surveyed cave passage is shown as a purple line. On the left, water from Cueva Lluvia (part of the 78km-long Four Valleys System) flows to Los Boyones resurgence.

## **Procedural Deficiencies in the EIS**

### **Inadequate Local Consultation and Research**

The EIS demonstrates a concerning lack of consultation with local experts and relevant authorities:

1. No evidence of engagement with the Federación Cántabra de Espeleología (Cantabrian Speleology Federation), the primary body overseeing caving activities throughout Cantabria, who could have provided crucial information about caves, shafts, and resurgences in the affected area.
2. Apparent absence of consultation with local residents who possess knowledge of the area's underground features.
3. Failure to incorporate local speleological surveys and data that would have identified a number of at-risk cave systems.

### **Reliance on Regional Rather Than Local Data**

Throughout the EIS, there is an inappropriate reliance on regional data rather than site-specific information:

1. Temperature and precipitation data from Santander Airport (at sea level) is used instead of data relevant to the project site at over 300m altitude.
2. Hydrological analysis uses a single water level station at Beranga, which is over 9km away, at 40m altitude rather than 300m, and in an entirely different catchment area.
3. The geology section presents extensive information about regional geology but lacks specific analysis of the karst terrain at the Fuente Pico site itself.

### **Incomplete Cave and Spring Inventory**

The EIS identifies only 11 caves purportedly not at risk, while omitting at least 8 others that could be directly impacted, most of which are springs around the base of the hill. This selective presentation significantly understates the project's potential impact on the karst system. A list of caves, resurgences and risks is found in Annex 1.

## **Substantive Deficiencies in the EIS**

### **Failure to Address the Three-Dimensional Nature of Karst**

The EIS fundamentally fails to account for the three-dimensional nature of karst systems:

1. No analysis of how surface modifications will affect subterranean drainage patterns, cavities, and ecosystems.
2. No consideration of how terraforming, platform construction, and road building will permanently alter the karst landscape.
3. No recognition that filled-in dolines and covered fissures will redirect water flow in unpredictable ways throughout the karst system.

### **Inadequate Analysis of Hydrological Impacts**

The study fails to properly assess the complex hydrology of the karst system:

1. No consideration of how construction will impact underground streams and water quality beyond simplistic references to surface water and buffer zones.
2. No mapping or analysis of the "Puntos de abastecimiento de agua" (water supply points) mentioned in the document, despite acknowledging 52 abstraction points within a 10km radius and 28 within 5km. (These points should have been supplied in the shapefiles information.)
3. No recognition that Los Boyones, the main secure public water supply in Secadura, could be contaminated by the project. This critical spring is between 1.1 to 1.6km from alternative generator sites and is connected to an extensive underground network including the 78km-long Four Valleys System.

## **Unrealistic Claims About Restoration and Decommissioning**

The EIS makes untenable claims about site restoration:

1. No realistic assessment of how limestone scars, filled-in dolines, altered fissures, and concrete foundations could ever be removed and the site returned to its natural state.
2. No recognition that underground hydrology, once altered, cannot simply be restored to its previous patterns.

## **Disregard for Visual Impact on the Landscape**

The EIS understates the visual impact of 194m-tall wind generators placed on a hilltop already 225m above the valley floor:

1. Generators will be visible from the scenic Llueva valley and from nearby homes, creating industrial structures completely out of proportion with the natural landscape.
2. The road from Fuente las Varas to San Miguel, which winds across the head of the Llueva valley, will have full views of these disproportionate structures.
3. Two photos can be seen in Annex 2.

## **Complete Omission of Underground Biodiversity**

The EIS entirely neglects the underground ecosystem and its biodiversity. For example:

1. No mention of Cantabroniscus, a cave-dwelling isopod crustacean endemic to the region, which has been documented in at least six photographed instances in caves around Matienzo. (See Annex 3)
2. No assessment of how changes to water flow, sediment load, and potential contaminants will affect cave-dwelling species.
3. No examination of how the fragile underground food web might be disrupted by construction activities.

## **Specific Technical Issues**

### **Archaeological Risk**

The planned access road up Fuente Pico comes dangerously close to Entrambascuevas 1 (Cueva de Trampascuevas #0421), a cave with archaeological significance. Cave surveys indicate that the end of the cave comes close to the road alignment, creating potential collapse risks for both the cave and the road.

### **Cumulative Effects Assessment**

The cumulative effects section (page 264 onwards) refers exclusively to surface water impacts at lower elevations, completely ignoring:

1. Cumulative effects on underground water systems.
2. Interrelationships with the Sierra de Sel "Complejo eólico industrial" project.
3. Long-term alterations to karst drainage patterns.

## **Alternative Siting Considerations**

Spain possesses numerous large areas better suited for wind farm development that would not entail the destruction of sensitive limestone karst ecosystems. The "Alternative Cero" option (pages 66-67), summarily dismissed by the project proposer, is in fact the most appropriate course of action for this site. The environmental and ecological cost of developing this particular site far outweighs any potential benefits.

The Fuente Pico wind farm appears to be opportunistically sited mainly because the power line from the proposed 10-generator Sierra de Sel "Complejo eólico industrial" passes nearby as it heads north. This does not constitute proper site selection based on environmental suitability.



## Conclusion

The Environmental Impact Study for the Fuente Pico wind farm demonstrates a profound failure to understand and account for the unique characteristics and vulnerabilities of limestone karst environments. The project would cause irreversible damage to a complex three-dimensional ecosystem, potentially contaminate important water sources, destroy unknown caves and karst features, harm endemic species, and permanently scar a scenic landscape.

The procedural and substantive deficiencies of the EIS are so significant that they render the document inadequate as a basis for environmental decision-making. The only appropriate conclusion is to implement the "Alternative Cero" option and preserve this sensitive karst ecosystem in its natural state.

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on behalf of the  
[Matienzo Caves Project](#)  
17/3/2025

Annexes follow ...

## Annex 1 – Caves and resurgences at risk, all in the Voto Municipality.

Alternative	Phase	code	name	area	East	North	Altitude	Feature	Summary	Consequences	web details
1, 2, 3	all phases	0117	Boyones, Los	Secadura	455712	4799303	49	Cave with deep water. Resurgence for the 4 Valleys System (78km).	This is a major, secure regional resurgence. Behind the entrance pool and abstraction point there is a complex network of cave passages bringing water from Riaño, Llueva, Secadura (north) and Matienzo. Some of the Matienzo feeder water comes from Cueva Vallina at Arredondo, a straight line distance of 8.4km. See also other sites related to this complex resurgence and drinking water supply: #0154, #0124	Altered water flows + pollution	<a href="https://matienzocaves.org.uk/descrip/0117.htm">https://matienzocaves.org.uk/descrip/0117.htm</a>
1, 2, 3	all phases	0124	Crecidas, Surgencia de las	Secadura	455481	4799425	52	Resurgence with cave passage.	Length 200m; Depth 5m See also other sites related to this complex resurgence and drinking water supply: #0117, #0154	Altered water flows + pollution	<a href="https://matienzocaves.org.uk/descrip/0124.htm">https://matienzocaves.org.uk/descrip/0124.htm</a>
1, 2, 3	all phases	0154	77A, Cueva	Secadura	455668	4799361	48	Cave with deep water. probably connected to #0117, the cave behind the main resurgence.	Length 466m; Depth 5m - See also other sites related to this complex resurgence and drinking water supply: #0117, #0124	Altered water flows + pollution	<a href="https://matienzocaves.org.uk/descrip/0154.htm">https://matienzocaves.org.uk/descrip/0154.htm</a>
1, 2, 3	all phases	0237	Bodegon, El	Secadura	456118	4799301	53	Cave with deep water.	Length 347m; Depth 15m	Altered water flows + pollution	<a href="https://matienzocaves.org.uk/descrip/0237.htm">https://matienzocaves.org.uk/descrip/0237.htm</a>
1, 2, 3	all phases	0421	Entrambascuevas 1	San Pantaleón de Aras	458128	4798624	237	Archaeological cave	Length 103m The survey of this archaeologically important cave shows the passage heading northeast from the entrance towards the track. The cave appears to be little distance below the surface and would be easily damaged.	<b>Collapse of end of cave; traffic vibrations damaging formations and disturbing bats.</b>	<a href="https://matienzocaves.org.uk/descrip/0421.htm">https://matienzocaves.org.uk/descrip/0421.htm</a>
2	all phases	0422	Entrambascuevas 2	San Pantaleón de Aras	458036	4798464	263	Cave with delicate formations.	Length 205m The east end of platform 1 appears to be over the cave.	<b>Damage to formations caused by vibrations.</b>	<a href="https://matienzocaves.org.uk/descrip/0422.htm">https://matienzocaves.org.uk/descrip/0422.htm</a>
1, 2, 3	all phases	2875	resurgence	Secadura	457401	4799662	43	Resurgences.	A set of small resurgences.	Altered water flows + pollution	<a href="https://matienzocaves.org.uk/descrip/2875.htm">https://matienzocaves.org.uk/descrip/2875.htm</a>
1, 2, 3	all phases	2877	resurgence	Secadura	456655	4799555	40	Resurgence with cave passage.	Small resurgence.	Altered water flows + pollution	<a href="https://matienzocaves.org.uk/descrip/2877.htm">https://matienzocaves.org.uk/descrip/2877.htm</a>

## Annex 2 – Two Views of the Fuente Pico hill.



The view from the west end of the Llueva valley, just before the road from Fuente las Varas levels out. The arrow points to the area where it is proposed to install 3 193m-high generators. The top of the hill is about 225m above valley bottom.

*Photo: Harry Long*



The fine view looking down the Llueva valley, from the road that winds down from Fuente las Varas. The arrow points to the area where it is proposed to install 3 193m-high generators. The top of the hill is about 225m above valley bottom. These are huge generators, completely out of proportion to the landscape.

*Photo: Harry Long*

## Annex 3 – Cantabroniscus

***A request for information to AI Claude about this crustacean came back with the information below***

*Cantabroniscus primitivus* is a fascinating cave-dwelling isopod crustacean endemic to the Cantabrian Mountains in northern Spain.

### **Biology and Classification**

- It belongs to the family Trichoniscidae within the suborder Oniscidea (terrestrial isopods or woodlice)
- It's considered a relict species with primitive characteristics, reflected in its species name "primitivus"
- It's the only species in its genus (*Cantabroniscus*)

### **Habitat and Distribution**

- Found exclusively in limestone caves of the Cantabrian Mountains in northern Spain
- Inhabits subterranean aquatic environments, particularly in karst systems
- Restricted to a very limited geographical range, making it extremely endemic

### **Adaptations**

- Like many cave organisms, it displays troglomorphic adaptations including:
  - Lack of pigmentation (typically appearing whitish or translucent)
  - Reduced or absent eyes
  - Elongated appendages for sensing its environment
  - Slow metabolism adapted to the resource-limited cave environment

### **Conservation Status**

- Due to its extremely limited range and specialized habitat requirements, it's considered vulnerable to environmental changes
- Threats include groundwater pollution, disturbance of cave systems, and climate change impacts on the karst hydrology

This species represents an important example of specialized evolution in subterranean environments and is of significant interest to biospeleologists.

*Cantabroniscus* has been photographed at least 6 times in different caves in and around Matienzo.



*Above: Cantabroniscus in Orillonzuco (#1162) Photo: Juan Corrin*

*Below: Cantabroniscus in Cueva de Fresnedo 2 (#0841)*



*Photo: Simon Cornhill*

# El Proyecto de Cuevas de Matienzo

El [Proyecto de Cuevas de Matienzo](#) es una iniciativa de larga trayectoria dedicada a explorar, documentar y preservar los extensos sistemas de cuevas en y alrededor de la depresión de Matienzo en el norte de España desde la década de 1960. Operando con permisos oficiales del Gobierno de Cantabria, el proyecto realiza expediciones sistemáticas que han documentado miles de cuevas, creando un archivo digital y físico integral de topografías, fotografías, descripciones de cuevas y datos geológicos.

El proyecto sirve como un centro de colaboración internacional donde espeleólogos experimentados y novatos trabajan juntos para ampliar el conocimiento de estas formaciones kársticas únicas, promoviendo la conservación de cuevas y apoyando la investigación científica en campos como la arqueología, hidrología, biología y cambio climático.

A través de su sitio web interactivo, el Proyecto de Cuevas de Matienzo hace sus hallazgos accesibles al público, permitiendo a investigadores y entusiastas de todo el mundo beneficiarse de sus sesenta y cinco años de exploración espeleológica, mientras crea conciencia sobre la importancia de proteger estos frágiles ecosistemas subterráneos.

## The Matienzo Caves Project

The [Matienzo Caves Project](#) is a long-standing initiative dedicated to exploring, documenting, and preserving the extensive cave systems in and around the Matienzo depression of northern Spain since the 1960s. Operating with official permits from the Cantabrian Government, the project conducts systematic expeditions that have documented thousands of caves, creating a comprehensive digital and physical archive of surveys, photographs, cave descriptions and geological data.

The project serves as an international collaborative hub where experienced and novice cavers work together to expand knowledge of these unique karst formations while promoting cave conservation and supporting scientific research in fields such as archaeology, hydrology, biology and climate change.

Through its interactive website, the Matienzo Caves Project makes its findings publicly accessible, allowing researchers and enthusiasts worldwide to benefit from its sixty-five years of speleological exploration while raising awareness about the importance of protecting these fragile underground ecosystems.

