

Cronin,
Dysart,
Co. Roscommon.
H53 HN59.

An Bord Pleanála,
61-64 Marlborough Street,
Dublin 1,
DO1 V902.

Tuesday 14th January, 2025.

Re:

Case reference ABP 321238-24 for the development of a 110 kV electricity substation at Moyvannan, Co. Roscommon, approximately 7.5 km of underground electricity line and all associated works including a connection to the existing 110kV overhead line at Moyvannan.

Dear Sir/Madam,

I wish to object to the above SID application for the Moyvannan substation. Please find attached a detailed report outlining my observations.

I would also like to request an oral hearing.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'John Joe Kennedy', is written over a horizontal line.

John Joe Kennedy.

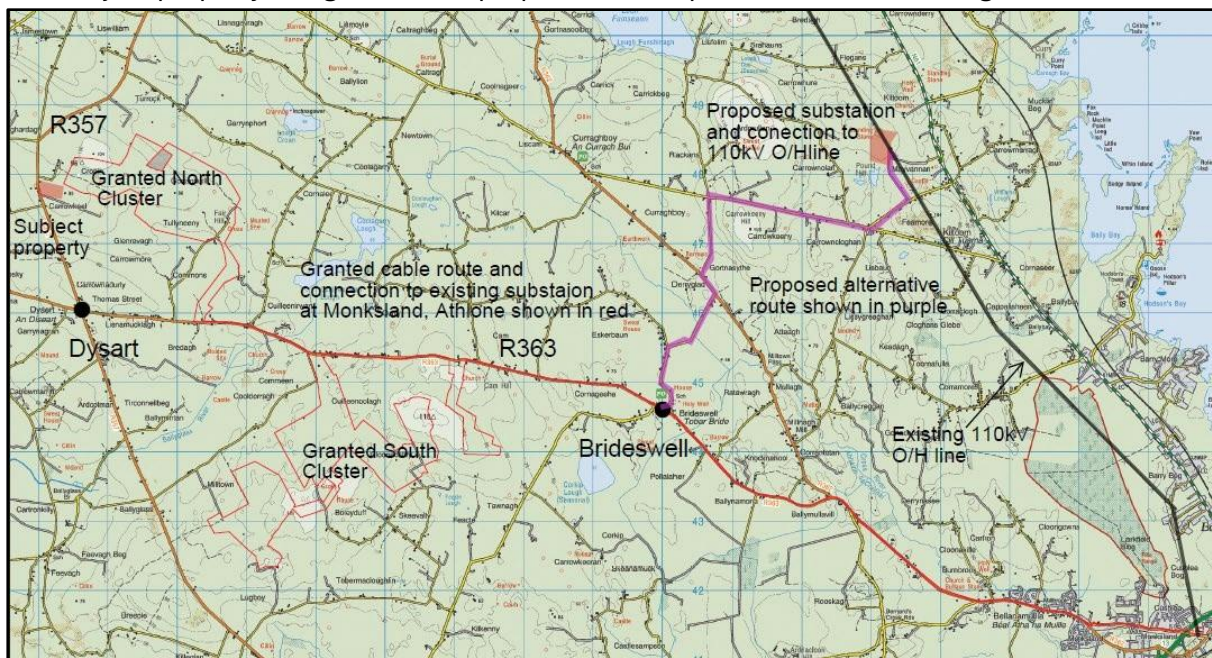
1.0 Introduction

This report was prepared for Mr. J.J. Kennedy of Cronin, Dysart, Co. Roscommon. It examines the potential effects on Mr. Kennedy's property (the subject property) of the planning permission application to An Bord Pleanála (the Board) ABP-321238-24 alone and in combination with the granted permission ABP-313750-22.

On the 23rd of Nov 2023 the Board granted Energia Developments permission, AB-313750-22, to construct a 17 turbine wind farm with a connection to the grid at an existing substation in Monkslands Athlone.

On the 25th of Nov. 2024 Energia applied to the Board for planning permission, reference ABP321238-24, for the development of a 110 kV electricity substation at Moyvannan, Co. Roscommon, approximately 7.5 km of underground electricity line and all associated works including a connection to the existing 110kV overhead line at Moyvannan.

The subject property, the granted and proposed developments are shown in Figure 1.



1.0 Figure 1: Site Layout (From MKO Drg. 190907-1)

2.0 Description of the subject property



Mr. Kennedy is the registered owner of the subject property, shaded pink, as shown in an extract from Land Direct maps – Figure 2. The subject property fronts on to the R357, two minor roads are located north and south of the subject property. Mr. Kennedy's family home is shown by a blue dot and is located approx. 800m east of granted wind turbine T5 – ABP-313750-22.

Farm sheds and farm machinery are located east of the family home. Mr. Kennedy's occupation is full time

farmer

Figure 2

3.0 Historical sites and monuments adjacent to the subject property

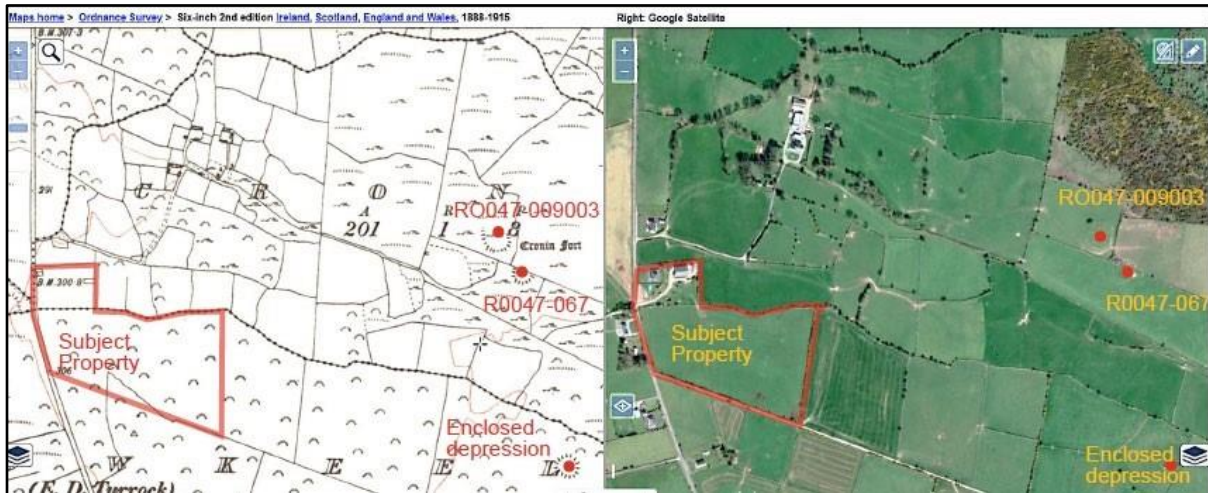


Figure 3: Subject property OSI Historical map (1888-1915) side by side with Google Satellite image. (Scottish National Library)

Figure 3 shows the subject property and surrounding lands on the 1888 – 1915 OSI Historical map side by side with the modern Google satellite map. The extensive, Government aided, land reclamation in the last century is evident. The *Rough Pasture & Cropping Rock* area mapped around the location of Sites and Monuments Records (SMR) Nos. RO047-067 and RO047-009003 has been reclaimed and is now agricultural land.

Figures 4 and 5 show the description of the SMRs taken from The Historic Environment Viewer managed by the Department of Housing, Heritage and Local Government (DHHLG).

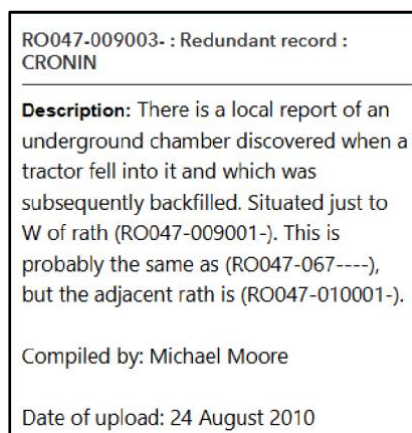


Figure 4

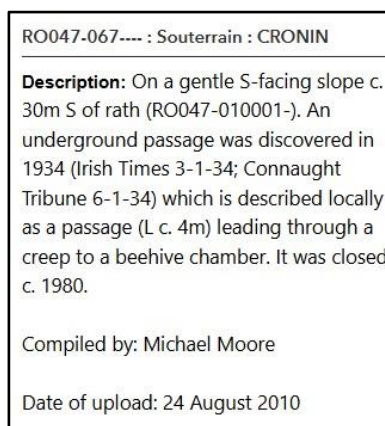
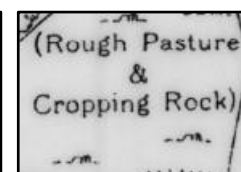
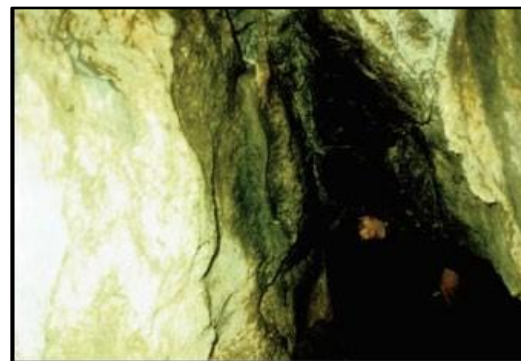


Figure 5



25"OSI
Characteristic Sheet



Photographs 1 and 2 taken in 1996 in Cronin confirm the records noted in Figures 4 and 5

4.0 Geology of land adjacent to the subject property

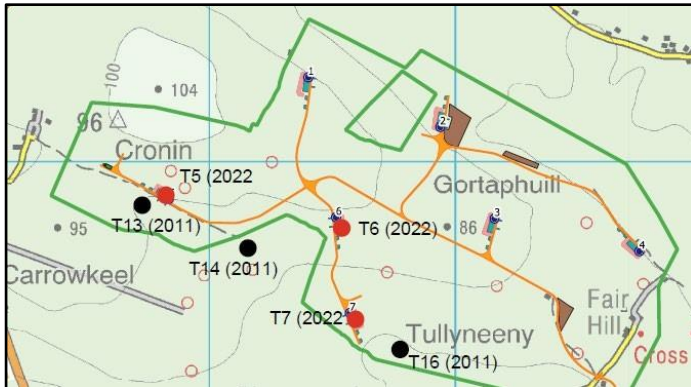


Figure 6

The red dots in Figure 6 show the locations of turbines T5, T6 and T7 granted permission ABP-313750-22 in Nov. 2023. The black dots show the locations of turbines T13, T14 and T16 granted permission ABP-239759 in Sept. 2013 and refused permission ABP-244346 in Feb. 2017

4.1 April 2011 – Northern Cluster (Phase 1: black dots)¹

6. A prominent karstified layer as indicated by low resistivity values is modelled to the centre and east of the site. This layer is typically 6-10 m thick and may contain significant fractures, cavities and sediment filled cavities

7. A number of possible small karst features within the intermediate limestone horizon are interpreted within the central band of the site, in particular at **Turbines 14 and 16**. A possible fault zone or channel feature is interpreted along profile 28 at **Turbine 13**.

4.2 May 2022 – Northern Cluster (Red dots)²

The geophysical data indicates the centre of **Turbine T05** is characterised by c1.5m medium dense to dense slightly clayey sandy GRAVEL/BOULDERS over very poor highly weathered /possible karstified LIMESTONE over moderately weathered/possible karstified LIMESTONE. Depth to slightly weathered to fresh LIMESTONE is 3.0m bgl.

The geophysical data indicates the centre of **Turbine T06** is characterised by c. 1.2 m of loose to medium dense slightly clayey sandy GRAVEL/BOULDERS over highly to moderately weathered/possible karstified LIMESTONE over slightly weathered to fresh LIMESTONE at 3.6m bgl.

The geophysical data indicates the centre of **Turbine T07** is characterised by c. 1.5m of loose slightly clayey sandy GRAVEL/BOULDERS over highly weathered LIMESTONE. Depth to top of slightly weathered to fresh LIMESTONE is 3.0m bgl.

4.3 Expert opinion of the Board's Hydrogeologist³

The geological setting of the site is dominated by Limestone, which is extensively karstified. I also observed a number of karst features (collapse /dolines) on and around the site confirming the underlying karst nature of the site.

¹ WaterWise Environmental Geophysical Survey Seven Hills Wind Farm -07.04.2011

² Apex Geophysics Report on the Geophysical Investigation at Seven Hills Wind Farm – 05.05.2022

³ Inspectors report ABP-244346A: Mr. Jerome Keohane. 2016

4.4 June 2022 – ABP 313750-22:Seven Hills Wind Farm EIAR Chapter 8: Land, Soils and Geology

Assessment Summary and Conclusion

The bedrock geology underlying both Wind Farm sites clusters is now comprehensively understood with the recognition that karst features are not ubiquitous, and that the bedrock geology is characterised by competent limestone;

No proposed WTG is located over a known or suspected karst anomaly. The iterative approach to design has ensured that turbine locations were moved or reconfigured to avoid potential subsurface anomalies identified from drilling and geophysical investigations;

As expected, the 2011 geophysics align with those of 2022. The 2011 Waterwise interpretations along T13,14 and T16 align with the 2022 Apex interpretations along T05,T06 and T07. These results indisputably contradict the *Assessment Summary and Conclusion* in ABP-313750-22 EIAR Chapter 8: Land, Soils and Geology.

An extensive range of site suitability tests were undertaken at the location of the various project elements. The turbines would occupy positions where the landslide susceptibility risk is low, sub-soil depths are substantial, underlying bedrock and glacial sub-soils are relatively firm.

I am satisfied that the results of the various site investigations and assessments are robust.

The consultant hydrogeologist who advised the Board on the previous windfarm applications described the underlying bedrock as extensively karstified (i.e. weathered or fissured), and referenced the inter-relationship between ground and surface waters. Several of the submissions raised concerns in relation to potential adverse impacts on groundwater and the underlying bedrock aquifer (incl. GSI, NPWS, RCC & several observers). On the other hand, the applicant has described the underlying limestone bedrock as not been highly karstified in both the previous and current windfarm applications. However, unlike the previous cases, the applicant's contention has been supported by an extensive range of site surveys and investigations to support the current application. The site investigations provide a very detailed, localised, and spatially specific description of the topography, sub-soil overburden, bedrock conditions and groundwater levels and flow patterns with the site, which I consider to be thorough and robust following my review of them.⁴

It is unclear what the Inspector means by 'relatively firm' – relative to what? As discussed, the site investigations and the assessments are at either end of the spectrum, they can never align, so to describe them both as *robust* in the one sentence is illogical, irrational and downright crazy.

The shaded area in Figure 7 represents a fault/karstified zone summary of the 2011 and 2022 geophysical reports and the 2010 SMR descriptions and the supporting photographs from a

⁴ ABP-313750-22 Inspector's report

firsthand source. The minor road to the north of the subject property will be upgraded and be used as the site entrance and the permanent operational access road for the Northern Cluster.



Figure 7: Summary of 2011 and 2022 geophysics results and SMR descriptions.



Figure 8: Distance from access road to bend

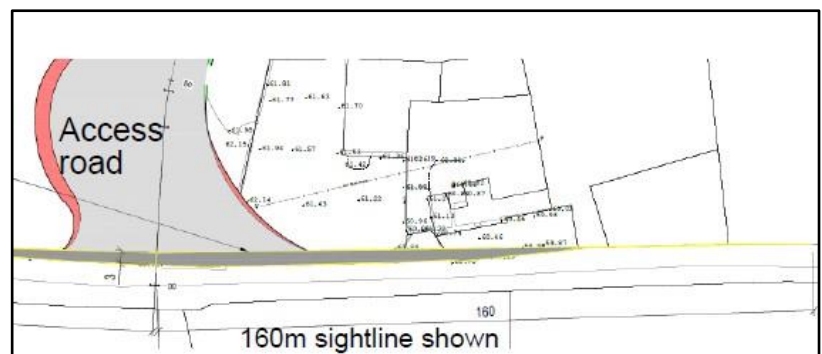


Figure 9: MWP Drg. 21337-MWP-WF-00-DR-C-3000

The sightline distance of 160m looking south as shown on MWP Drg. No. 21337-MWP-WF-00-DRC-3000 is currently not achievable.

5.0 Geology of proposed substation site 5.1 Apex Geophysics 9th Nov. 2023

Figure 10 shows the proposed substation superimposed on Apex Drg. 23061_4

Two main zones of rock with a potential high degree of karstification with clay infill are interpreted across the site. One deeply penetrating zone (Z1) is present in the central part of the site. This zone is interpreted as a WSW – ENE feature shown on Drawing AGP23061_04 summary map. Borehole BH05/RC05 targeted this zone and encountered fractures with clay smearing, infilled cavities with sandy gravelly clay within highly weathered to slightly weathered to fresh rock over a depth range of 8.65 to 20.3 m bgl. A

second area of low resistivity values in the bedrock is present as a broader feature at the top of the rock at the NE of profile R4. This feature (Z2) penetrates to 22 m bgl.⁵

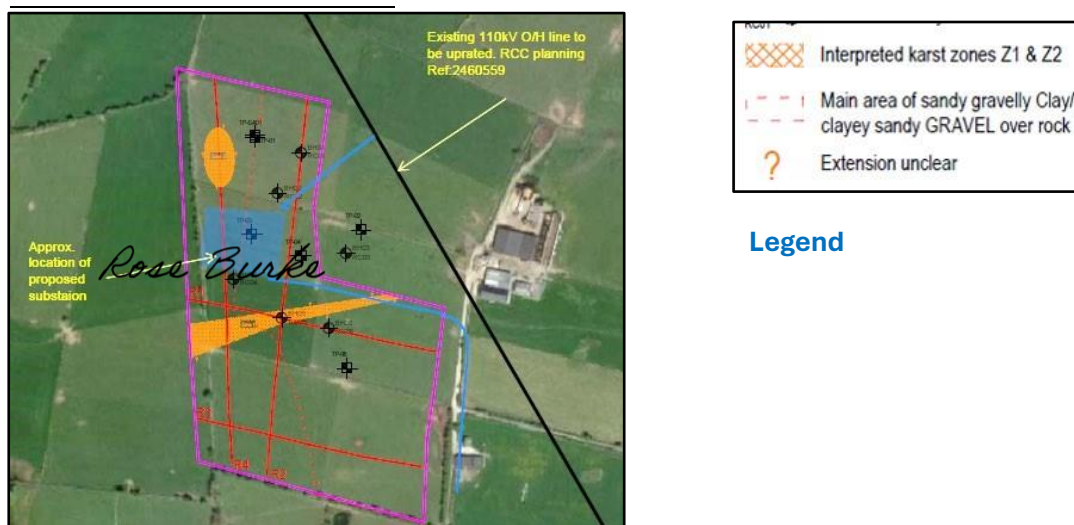


Figure 10: Proposed substation superimposed on Apex Drg. 23061_4

5.2 Ground Investigation Report by Ground Investigations Ireland Oct 2023

The rotary core boreholes recovered strong to very strong massive light grey fine grained fossiliferous LIMESTONE interstratified with Moderately weak to medium strong massive light brownish grey crystalline medium grained DOLOMITIC LIMESTONE with vugs. Cavities which were infilled with clay or sand were noted in the borehole logs. The depth to rock varies from 4.05m BGL in BH+RC-04 to a maximum of 12.20m BGL in BH+RC-01. The total core recovery is good, typically 100% with some of the runs dropping to 80 or 90% where cavities are noted.⁶

5.3 ABP- 321328-22 EIAR Chapter 6: Land and Soil

Page 6:11

The geophysical survey identified 2 no. zones of potential karstification within the site of the electricity substation. However, no karst features were noted during the drilling of the 6 no. boreholes. Bedrock is identified at an average depth of 8.6mbgl and no significant karst conduit features have been logged throughout the 129.3m of drilling. The results of the drilling provides confidence in stating that the local limestone bedrock is overlain by thick overburden deposits and bedrock is comprised of strong, fine to medium grained limestone or dolomitic limestone with discreet weathered zones and intermittent clay fractures. Page 6:13

As described at Section 6.3.5 above, no significant areas of karst were identified during the site investigations (trial pits and boreholes). Whilst weathered limestone bedrock and clay infilled fractures were identified, these are typical across all limestone bedrock in Ireland.

Page 6:18

The site investigation data also outline the absence of any significant karst features below the thick subsoil layers which could impact on ground instability

⁵ ABP-321238-24 EIAR Annex 62 Geophysical Investigation Report

⁶ ABP-321238-24 EIAR Annex 62: Ground Investigation Report

6.6.1.2 Soil, Subsoil and Bedrock Excavation

The negative effect of the project is the disturbance and relocation of 25,250m³ of spoil. on the basis of the design measures incorporated into the project combined with the 'low' importance of the soil and subsoil deposits and the 'medium' importance of the local bedrock, it is assessed that the residual effect is likely to be negative, slight, direct, likely, permanent effect on peat, subsoils and bedrock due to disturbance and relocation within the project site.

6.6.1.5 Ground Instability and Failure

The engineering design of the project is underpinned by a comprehensive site investigation dataset. The risk of ground failure during construction is very low. No residual effects are assessed as likely.

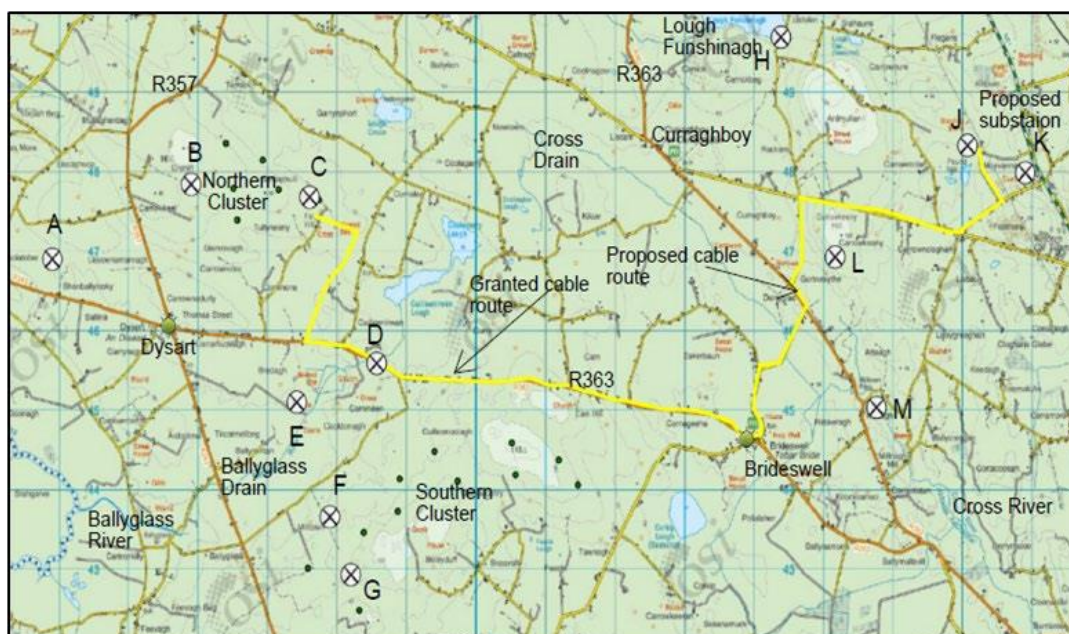
For the reasons outlined above, and with the application of the mitigation measures outlined above, no significant effects are assessed as likely to occur.

6.0 Known subterranean cavities, conduits and swallow holes 6.1 Overview

GSI's submission to the Board in relation to granted ABP-313750-22 expressed concern to the Board and to Energia regarding geohazards on both the Northern and Southern sites

Damage to the underlying karst bedrock and karst features such as swallow holes, enclosed depressions and turloughs resulting from heavy plant machinery traffic and turbine installation operations. Potential collapse of sinkholes and cavities due to weight and activity of overlying construction.⁷

Figure 11 illustrates some of the known potential geohazards in and around the granted development and the proposed development.



⁷ GSI Additional Response to the Proposed Seven Hills Wind Farm Development in Co. Roscommon 04.11.2020

Figure 11: Known potential geohazards adjacent to granted and proposed developments

Location	Type	Source
A	Cave	SMR -RO047-033
B	Souterrain Cave	SMR -RO047-067 See Photos 3, 4 and 5
C	Souterrain	SMR-RO047-084
D	Conduit	See section 3.6
E	Swallow Hole	GSI Groundwater Data Viewer
F	2.4m cavity 12.3m bgl	ABP-313750-22 EIAR Appendix 4.3 IGSL T11-RC03.
G	Karstified limestone @ 1.4m bgl	ABP-313750-22 EIAR Appendix 4.3 Apex Geophysics T13
H	Swallow Hole at Lough Funshinagh	GSI Groundwater Data Viewer
J	Zones of highly karstified rock up to 22m deep. Extent unknown	ABP-321238-24 EIAR Annex 6.1: Geophysical Investigation Report
K	Souterrain	SMR -RO048 -156
L	Grey, brown, LIMESTONE very weathered with clay bands from 19.0m to 29.5m bgl	RCC Planning application Reg. Ref. 04/2280 TES Consulting Engineers BH No.2
M	Traced outfall from Lough Funshinagh	Drew (1996)

Table 1: Details of known potential geohazards

Souterrain (from French sous terrain, meaning "under ground"). Souterrains may be a man made cave or a natural karst cave.

6.2 Known subterranean cavities, conduits, swallow holes, turloughs etc. adjacent to subject property.

Figure 12 shows the geohazard, karst features, turloughs, caves etc in close proximity to the subject property.

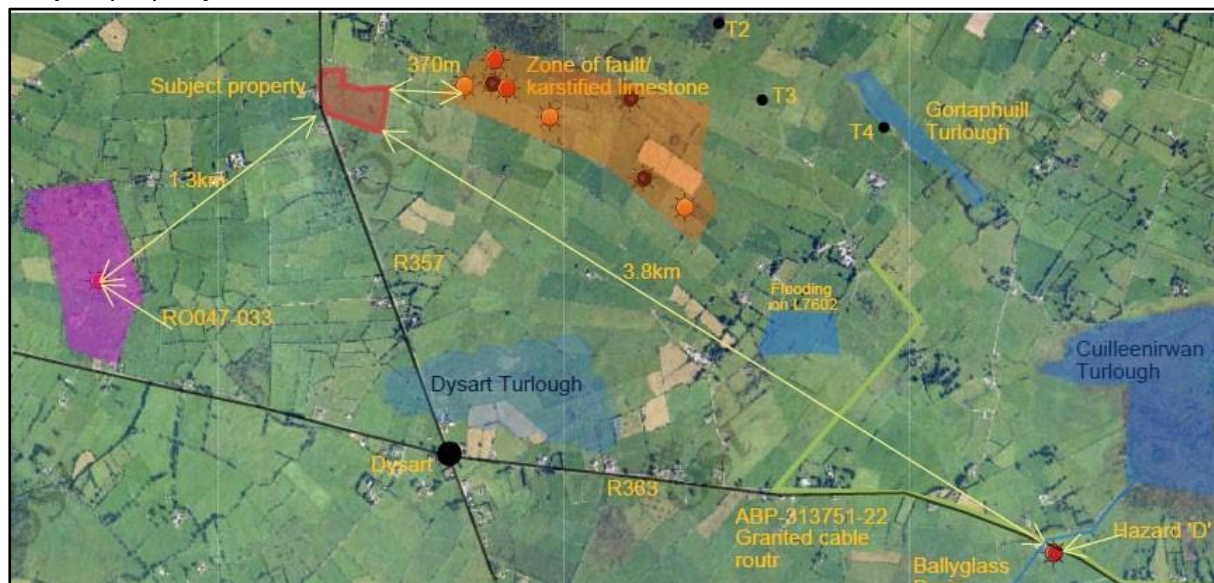


Figure 12: Known geohazard, karst features, turloughs, caves etc adjacent to subject property.

There is no doubt that the area of the site is one of active karst (i.e. features continuing to develop with time). The presence of enclosed depressions, dolines, turloughs, small caves, the Burren like karren area at the adjoining townlands of Coolatober, Shanballylosky etc. are all clear evidence of this. The rate at which the large Turloughs, e.g. Cuilleenirwan, empty in the spring are evidence that drainage network in the rock comprises relatively large sized openings⁸

RO047-033---- : Redundant record : COOLATOBER
Description: Marked only on the 1915 ed of the OS 6-inch map as a 'Cave' in an area of limestone karst with expsoed limestone paving. There is no trace of a souterrain and the site is likely to be a swallow hole or natural cave. No swallow holes are evident apart from one which may have been backfilled with stones.
Compiled by: Michael Moore
Date of upload: 24 August 2010

The area referred to by Dr. Long in his 2011 report is shown highlighted in purple in Figure 12. It is approx. 60 acres of pristine limestone karst, untouched by modern agricultural practices, it is located approx. 1.3km SW of the subject property.

RO047-033 is point 'A' on Figure 9 and the SMR description is shown in Figure 13

Figure 13

6.3 Geohazard 'D' as shown in Figure 12

In May 2011, a landowner noticed a new depression in a field which fronts onto the R363 and is adjacent to the location of a nineteenth century drain which had been dug in an unsuccessful attempt to drain Cuilleenirewan turlough.



Photo 3: Collapsed subsoil

overburden and at a depth of approx.



loose

5m

revealed a portion of a horizontal conduit approx. 600mm deep by 900mm wide. Photo 3 shows the collapsed subsoil and Photo 4 shows the conduit. The collapse is approx. 3.8km from the subject property and approx. 25m from the R363 and the granted ABP-313750-22 cable route.

Photo 4: Dormant karst conduit located approx.

⁸ Report by Dr. Michael Long, Associate Professor in the School of Civil Engineering UCD after site visit May 2011

The minimum flowpath lengths for upland and lowland karsts are similar with flowpath lengths in upland karst ranging from 9.4 m–14 km, averaging 3.3 km and the range for lowland karst is 6.4 m–15.7 km, averaging 4.2 km.⁹

7.0 Groundwater flow direction in the subject area.

According to the GSI's Initial Characterisation Report of the Funshinagh GWB, the highly karstified nature of the bedrock means that, locally, groundwater flow directions can be highly variable, but overall groundwater flow will be towards Lough Ree (GSI, 2003). The private well assessment assumes that the groundwater flow direction will generally be towards Lough Ree, situated c. 2km east of the substation location.⁹

As noted by the applicant the GSI Funshinagh GWB Description dates from 2003. Knowledge gained since that date regarding karst aquifers suggests that there is a lot to learn.

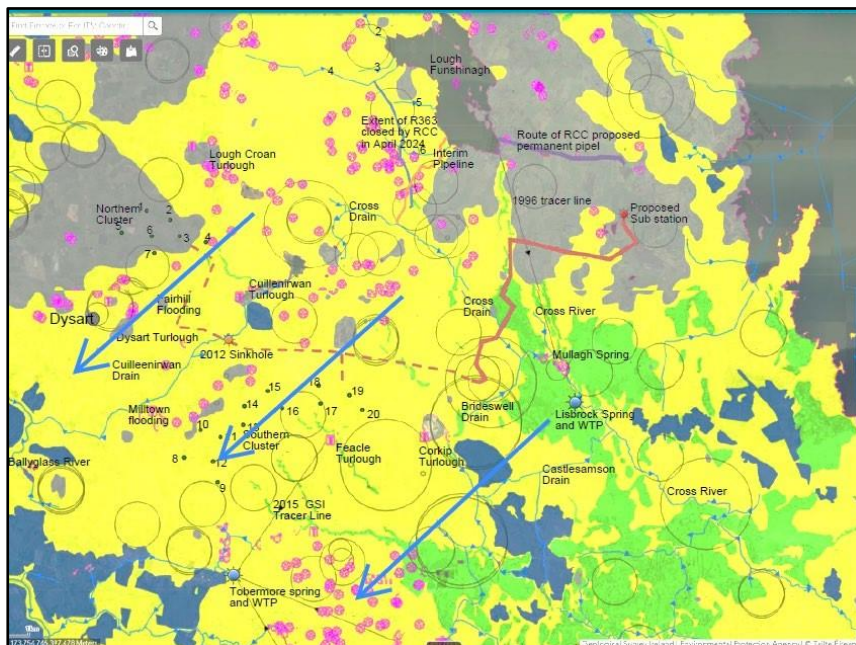
A recent letter from the Department of the Environment, Climate and Communications (DECC) notes

Groundwater flow direction within karst environments such as Lough Funshinagh is subject to significant uncertainty. Thus, while an eastern flow direction cannot be ruled out, the only scientific evidence of groundwater flow direction in the region is a 1996 tracer study carried out by David Drew and Morgan Burke which identifies flow towards Cross River to the South (see here for more information: <https://www.gsi.ie/documents/GWNewsletterNo30.pdf#page=9>)¹⁰

The DECC are of course correct the only scientific evidence of groundwater flow in the environs of Lough Funshinagh is a twenty eight year old tracer study.

⁹ ABP-321238-24 EIA Section 7 - Water

¹⁰ Reply letter 19.12.2024 from DECC Re: AIE request AIE202476



However by combining evidence such as subsoil permeability, GSI recorded karst features, rock outcrops, flooding and borehole records etc. it can be safely assumed that the overall groundwater flow direction is SW towards the Suck River as shown in Figure 14 and not east towards Lough Ree.

Figure 14: Overall groundwater flow direction in the vicinity of the subject site

⁹ Drew, D. 2018. Karst of Ireland: Landscape Hydrogeology Methods. Published by Geological Survey Ireland

8.0 Karst Hydrogeology

Karst Hydrogeology differs significantly from what could be described as standard hydrogeology. The following is a non-exhaustive list of differences

- There is usually a water table of sorts in karstic aquifers, but it may be a semidiscontinuous surface as evidenced by the considerable variations in standing water levels recorded in adjacent boreholes in many karst areas. The significance of the water table is less than in conventional groundwater hydrology as so much of the groundwater is in localised conduits rather than being evenly distributed through the aquifer.¹¹
- Boreholes may miss the conduits in the karst, attempting to define the groundwater level in a karstic aquifer by reference to water levels in boreholes or turloughs will be unsuccessful
- Given the unpredictable nature of karst groundwater, particularly the direction of groundwater flow, establishing ZOCs (Zone of Contributions) requires specific techniques, significant resources, suitable antecedent weather conditions and time.¹²
- Groundwater flow in karst is three dimensional, hence reliance on ground contours to establish groundwater contours is unreliable **ABP -313750-22**

Arising from that review, the following items informed the methodology (refer to Section 9.2 below) of this assessment

- *Seasonal water level monitoring in local turloughs is required, and this shall be coupled with groundwater level monitoring in as many local domestic wells and groundwater monitoring wells as possible, and contemporary rainfall monitoring to be undertaken*

¹¹ Drew, D. 2018. Karst of Ireland: Landscape Hydrogeology Methods. Published by Geological Survey Ireland

¹³ ABP-313750-22 EIAR and NIS Chapter 9:Water ¹⁴ ABP-321238-24 EIAR Chapter 7 Water

- *There should be no Wind Turbine Generator (WTG) proposed over known or suspected karst anomalies¹³*

ABP-321238-24

No groundwater strikes were recorded during the drilling of the boreholes

The bedrock below the electricity substation site does not contain an abundance of karst flow systems

A comprehensive site investigation dataset has been accrued within the site of the electricity substation and has not identified any significant karst features within the underlying bedrock; The data from the rotary core drilling shows that the bedrock is generally strong limestone or dolomitic limestone;

Seasonal groundwater level monitoring completed at the substation site in 2 no. wells (Well 1 and Well 2) between October 2023 and August 2024. Groundwater monitoring has revealed that groundwater levels are below the existing ground level (c. 3mbgl at RC02), and hence below the formation levels for the proposed infrastructure.¹⁴

9.0 Timeline of events

19 th June 2023	Version 1 of geophysics results for ABP-321328-24.
14 th – 18 th of August 2023	Boreholes and trial pits carried out on site for ABP-321328-24.
23 rd November 2023	Board grants planning permission for ABP-313750-22
13 th February 2024	Board received a letter from <i>Energia</i> requesting <i>pre-application consultations under section 182E of the Planning and Development Act 2000, as amended.</i> ¹¹
11 th March 2024	Mr. J.J. Kennedy granted leave for a Judicial Review of Board decision ABP- 313750-22.
8 th April 2024	First pre-application consultation meeting between the Board and <i>Energia</i> to discuss a proposed development, which would comprise of a 110kV 'loop-in loop-out' electricity substation and approximately 6.5km of underground electricity cables at <i>Movannan</i> . The prospective applicant stated that due to the recent changes in the available capacity at <i>Monksland</i> substation in <i>Athlone</i> , connection at that point is no longer guaranteed to be feasible and hence why an alternative grid connection option is being pursued. <i>Energia</i> noted the absence of complex geologies and stated the next steps regarding the proposed development are to continue preparing the <i>EIAR</i> and <i>NIS</i> and continuing consultations with the <i>Planning Authority</i> and the roads section of the local authority. Public consultations will commence in the coming weeks. ¹²

¹² Record of 1st Meeting ABP-319042-24

19 th June 2024	Affidavit of Mr. Robert Scott, Head of Development and the Senior Manager with responsibility for the project team for the Seven Hills wind farm development with Energia Renewables ROI Ltd.
6 th September 2024	Outline Written Legal Submission of the Board.
18 th - 19 th September 2024	Case heard in The High Court Planning & Environment [2024] IEHC 570. The case proceeded on the basis of the granted connection to the grid at the existing substation in Monksland, Athlone. No indication that this connection was ‘ <i>no longer feasible</i> ’ was given by the Notice Party or by the Board. The meeting of the 8 th of April was not made known to Mr. Kennedy nor was the advanced state of the preparation of the necessary EIAR and NIS disclosed.
7 th October 2024	Judgment of Humphreys J. delivered. The Court found in favour of the Board apart from one point. An order of certiorari was not made.
25 th November 2024	Energia applied to the Board for planning permission for a 110 kV substation, approximately 7.5 km of underground electricity line and all associated works at Moyvannan, Feamore, Lisbaun, etc.

10.0 Potential Collapse 10.1 ABP-313325-24

The site investigation data also outline the absence of any significant karst features below the thick subsoil layers which could impact on ground instability. The risk of ground failure during construction is very low. ¹³ The applicant is confusing risk with probability.

Likelihood	Harm severity			
	Minor	Marginal	Critical	Catastrophic
Certain	High	High	Very high	Very high
Likely	Medium	High	High	Very high
Possible	Low	Medium	High	Very high
Unlikely	Low	Medium	Medium	High
Rare	Low	Low	Medium	Medium
Eliminated	Eliminated			

Risk is the product of the likelihood of an event occurring and the severity of harm that event would incur. Based on recorded occurrences of collapse, the presence of two zones of *potential high degree of karstification with clay infill* (extent unknown) and the GSI warning *potential collapse of sinkholes and cavities due to weight and activity of overlying construction* the likelihood of ground failure at the proposed

substation is at a minimum ‘likely’.

Figure 15: Risk Matrix

Ground failure in karst may occur not just at construction stage but throughout the life of a development and up until the development is appropriately decommissioned.

The harm severity of such an event during construction would lie between the categories ‘marginal’ to ‘catastrophic. Marginal if none or non-serious injuries occurred and if no negative impacts on the groundwater and ecosystem occurred. Catastrophic if serious or fatal injuries occurred or if the multiple and tortuous flowpaths allowed serious contamination of the aquifer.

¹³ ABP-321238-24 EIAR Chapter 6: Land and Soil ¹⁷
ABP-313750-22 EIAR Appendix 4.3

During the operational phase the harm severity category becomes critical to catastrophic, a ground failure at this stage could cause untold environmental damage, flooding possible fatalities and cause a serious failure on the Athlone to Lanesboro 100kV overhead line.

Based on the risk matrix in Figure 15 the risk associated with ground failure is high to very high. The applicant has failed to demonstrate how the probability that *The risk of ground failure during construction is very low* has been arrived at.

10.2 Subject property

Figure 16 shows the 2011 turbines T13 and T14 and the T5 2022 turbine and the SMR locations and descriptions on the OSI 25" 1880 map. The 'rough pasture and cropping rock' has been cleared and dumped into the chambers, passages and souterrains and covered with topsoil.

*The geophysical data indicates the centre of **Turbine T05** is characterised by c1.5m medium dense to dense slightly clayey sandy GRAVEL/BOULDERS over very poor highly weathered /possible karstified LIMESTONE over moderately weathered/possible karstified LIMESTONE. Depth to slightly weathered to fresh LIMESTONE is 3.0m bgl.¹⁷*

The centre of Turbine T05 could as easily be described as minimum depth of topsoil over random sized loosely heaped boulders to a depth unknown.

Trial pit T05TP01 logged 100mm of topsoil over Medium dense light brownish grey slightly clayey sandy GRAVEL with medium to high cobble content and some boulders. Sand is medium to coarse. Gravel is fine to coarse, subrounded to angular. End of trial pit at 1.2m

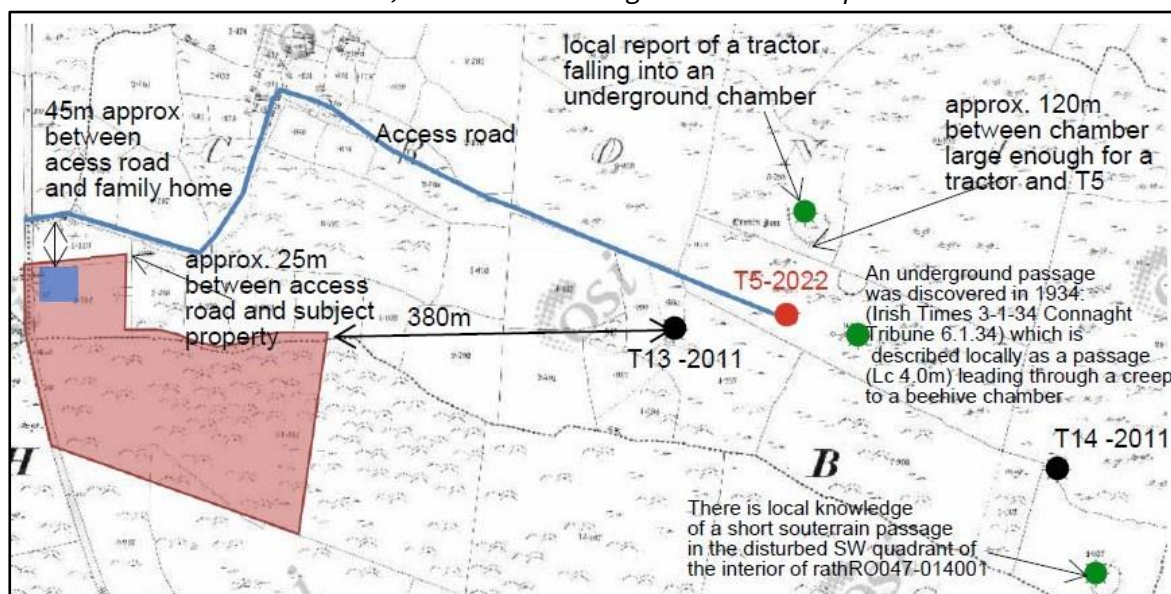


Figure 16

This is a very real, but localised hazard in parts of Roscommon. In the county there is limestone often only a few metres or less beneath the land surface. The number of known caves in the limestone is very few, but in certain areas such as Mewlaghmore near Castlerea, there are hundreds of karstic features called dolines. These are enclosed depressions with no surface water drainage associated with them. Some form by slow dissolution of the underlying limestone rock, but others can be formed as rapid collapse

events. When they occur, they are often not reported and just filled in by farmers, so we have little information on the frequency with which they happen.¹⁴

10.3 Principles to be considered

The granted development and in particular the granted T5, T6 and T7 fail to consider the following principles in EU law¹⁹ in relation to Mr. Kennedy and his family

Article 7

Respect for private and family life - Everyone has the right to respect for his or her private and family life, home and communications.

Article 17

No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in good time for their loss.

In addition the subject property is the workplace of Mr. Kennedy. The sheds and farm machinery to the rear of the private dwelling are his work implements. He has the right to a safe working environment as does everyone.

11.0 Discussion

There is ample evidence, including site investigations by Energia and from the Board's own consultant hydrogeologist, that the entire area shown in Figure 1 is dominated by Limestone, which is extensively karstified. The ABP-313750-22 and the ABP-321238-24 borehole logs and geophysics confirm this.

There is no evidence to support the applicants claims that *the bedrock geology is characterised by competent limestone; No proposed WTG is located over a known or suspected karst anomaly* (ABP-313750-22).

The bedrock is comprised of strong, fine to medium grained limestone or dolomitic limestone with discreet weathered zones and intermittent clay fractures. (ABP-321238-24).

It is unclear what is being referred to by the description '*low*' importance of the soil and subsoil deposits and the '*medium*' importance of the local bedrock. (ABP-321238-24)

Similar to the granted development ABP-313750-22 the narrative in the EIAR of the proposed development does not accurately reflect the actual data gathered on site. It is unclear why the applicant assumed that multiple consecutive site investigations would yield different results.

The process of karstification of the limestone bedrock under the glacial sediments began at the end of the Ice Age, about 10,000 years ago. Ten years hardly registers a blink from the karst.

The EIAR, geology sections of ABP-313750-22 and ABP-321238-24 describe the site the applicant wish they had as opposed to the one they do have.

¹⁴ The Geological Heritage of Roscommon: An audit of County Geological Sites in Roscommon GSI/RCC 2012 ¹⁹

Charter of Fundamental Rights of the European Union (2000/C 364/01)

Does the *possible fault zone or channel feature (is) interpreted along profile 28 at Turbine 13 stop at T13 (Phase1)*– probably not.

Are all the passages, faults, chambers shown in Figure 16 connected – likely Is

there groundwater in the chambers, passages etc. – possibly.

Will the weight and activity of overlying construction along the road, located 25m from the subject property, cause damage and possible collapse to the subject property - undoubtedly.

Could such a collapse harm Mr. Kennedy or a member of his family – yes.

If a 3.0m deep base is formed at T5 at 3.0m bgl on ‘rock’ as described in EIAR Table 8.6, will it collapse – definitely.

What will the environmental consequences of such collapses be - unknowable

12.0 Conclusions and Recommendations

Despite the applicant’s desire *that the bedrock geology is characterised by competent limestone* the site has been karstic for millennia, it is now and will be probably for the rest of time .

The collapse of conduits , caves etc in, and for an unknown extent outside both developments sites is not just a foreseeable event, it is an event which the Board, RCC and Energia have been warned about.

All these parties owe a duty of care to Mr. Kennedy and his family, and not just to this family but to all properties and owners/occupiers of such properties which may be affected as a result of the construction of the granted and the proposed developments.

For now Mr. Kennedy should submit this report as an observation on planning application ABP321238-24 but he should also seek legal advice regarding the potential implications for himself and his family should the development granted by Board Order ABP-313750-22 proceed.

Rose Burke

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