S.37

File With

SECTION 131 FORM

Appeal No: ABP— 319188-24

Defer Re O/H: ☐

Having considered the contents of the submission dated/received 01/04/24 from Joseph Kehoe and Jacqueline O'Neill I recommend that section 131 of the Planning and Development Act, 2000 be/not be invoked at this stage for the following reason(s):

No new material planning issues. Board to consider same.

Section 131 not to be invoked at this stage. ☑

Section 131 to be invoked — allow 2/4 weeks for reply. ☐

Signed: Daniel O Connor — Date: 9/4/24

EO

Signed: — Date:

SEO/SAO

M

Please prepare BP — Section 131 notice enclosing a copy of the attached submission.

To: — Task No: — Allow 2/3/4 weeks: BP

Signed: — Date:

EO

Signed: — Date:

AA

last day = 2/04/24

DAN.

TASK - 379018 - 24 - BP40

An Bord Pleanála

Planning Appeal Online Observation

Online Reference
NPA-OBS-003322

Online Observation Details

Contact Name	Lodgement Date	Case Number / Description
Joseph Kehoe	01/04/2024 17:41:38	319198

Payment Details

Payment Method	Cardholder Name	Payment Amount
Online Payment	Joseph Kehoe	€50.00

Processing Section

S.131 Consideration Required

☑ Yes — See attached 131 Form ☐ N/A — Invalid

Signed Ronan Meagher **Date**

EO

Fee Refund Requisition

Please Arrange a Refund of Fee of €

Lodgement No LDG— 071120 - 24

Reason for Refund

Documents Returned to Observer ☐ Yes ☐ No

Request Emailed to Senior Executive Officer for Approval ☐ Yes ☐ No

Signed **Date**

EO

Finance Section

Payment Reference ch_3P0nvSB1CW0EN5FC0eT5fxVe

Checked Against Fee Income Online

EO/AA (Accounts Section)

Amount €

Refund Date

Authorised By (1)

SEO (Finance)

Authorised By (2)

Chief Officer/Director of Corporate Affairs/SAO/Board Member

Date

Date

Bord Pleanála Case reference Number: ABP-319198-24
Carlow Co. Co. Planning Reference: 23/60042

Observer Details
Dr. Joseph Kehoe and Jacqueline O'Neill
Bannagaole,
Old Leighlin,
Carlow
R21 AY86

Location of Proposed Development
Bannagagole,
Old Leighlin,
Co. Carlow,
R93 XN26.

Introduction/Observations

We wish to make our observations on **Milford Quarries Ltd Appeal (Ref: ABP-319198-24)** to An Bord Pleanála in response to Carlow County Council's refusal of planning permission (Ref: 2360042) for the development of a dimension stone quarry at Bannagagole, Old Leighlin, Co. Carlow, R93 XN26. This document consists of two parts:

i. Our own observations;
ii. A commissioned report by IE Consulting on groundwater issues associated with this development.

This proposed quarry development is in contravention of many aspects of the Carlow County Council Development Plan 2022-2028. It will actively work against the aims of the Development Plan particularly but not exclusively Chapter 6: Infrastructure and Environmental Management, Sections 6.1 to 6.5 and Sections 6.9 to 6.9.8 and Chapter 14: Rural Development. It will not protect or enhance the lives of its citizens. It will have a detrimental impact on the social and economic fabric of the local community.

Contrary to their response, The Applicants, Milford Quarries Ltd, had ample opportunity to address the concerns of the Carlow County Council Planning Authority. Milford Quarries and their associates are not newcomers to this field and should have the required expertise to perform due diligence. They had ample time when preparing their first submission request, which was not compiled under time pressure, to provide all the necessary information that is required for this type of submission. The first application was basic and provided minimum detail. They had further opportunity on appeal to provide adequate responses to questions raised by the lack of information in the first submission. It was perfectly clear what was being asked of them by Carlow County Council and the numerous raised objections from local residents and businesses.

The claim on page 3 paragraph 1 to have provided '*comprehensive and detailed responses to various concerns and objections raised by third parties*" can be seen to be comprehensively untrue on reading the said submission. In fact, they failed to respond to a number of the concerns raised. The major area of concern particularly for the local community is the drastic effect of a second quarry on the water supply in the area. This has been completely disregarded, instead, they refer disingenuously, to the presence of the existing quarry as evidence of no effect on the community.

The fact that a quarry has been operating in the area for some years is not justification enough to create a second quarry in the same area. To suggest as they do on page 3 Paragraph 3 that a second quarry will not increase the production of dust and noise and will not further deplete the supply of water available in the area or run the risk of polluting a regional aquifer is nonsensical.

It has not been concluded beyond "*all reasonable scientific doubt*" (Page 4 Paragraph 2) that this proposed development will have no adverse effects on the QI's, the SCI's and on the integrity and extent of the River Barrow and River Nore SAC. We retained IE Consulting who provided us with the report included at the end of this document which confirms there is indeed an adverse risk involved in this project.

In this document we will show that their grounds for appeal are spurious. First we will show that the first party appeal by Tom Phillips and Associates misrepresents the situation as it stands. Then we list some of the errors and inaccuracies in the EIAR Addendum that call its conclusions into question. Following this we show that the Noise report has used inaccurate information to calculate noise levels thus underestimating the noise levels at the nearest residential homes. Then we proceed to survey some of the literature regarding air pollution and water pollution that shows problems and issues omitted from the applicants initial and subsequent documents. Finally, we re-examine the problems of infrastructure and landslide risk which have not been addressed properly by the applicant.

The report by IE Consulting that we commissioned is appended to the end of this document and it clearly points out other serious flaws in the Applicants' reports both to Carlow County Council and An Bord Pleanála. Milford Quarries submission was made on March 5th but it was Mar 19th before the community received notification of the appeal. A broader and more in-depth report could have been submitted if we had received more prompt notice.

Issues with Tom Phillips and Associates Cover Letter

On page 9 (section 5.1) of the First Party Appeal (Tom Phillips and Associates) the argument is made that "*cumulation impacts*" do not apply to this project because the existing quarry is "*long established*" (page 10 paragraph 3). This argument has no standing and makes little sense particularly as they themselves state that the EU guidance refers to cumulate effect with regard to "*permitted or planned projects*" (page 10 first paragraph) and their own letter refers specifically to the existing quarry as "*permitted and operational*" in the fifth

paragraph of the same page. If it is a "permitted" project, as they state it is, then they must investigate the cumulative effects.

It is clear, and admitted by Tom Phillips and Associates, that the existing quarry is a "*permitted project*" and under the EU guidance (2017), that they themselves quote, cumulative effects should have been addressed. Examples include: assessment of dust pollution where the extra dust produced by their quarry when combined with existing dust levels from the existing quarry will exceed EU safety guidance; water draw down where the combined draw down of both quarries will severely affect all surrounding well sources and finally combined pollution of local water streams which would affect the Barrow-Nore SAC.

On page 3 Paragraph 4 it is stated that this type of quarrying has been carried out in this area without incident. This is not an accurate summary of the current situation. Just some of the many incidents over the years which have affected the lives of the local community living in close proximity to the present quarry include:

1. Water supplies operating at low levels during the hours the quarry is operational leaving the water pressure in homes severely diminished with one working farm left needing to dig a second well to provide for a dairy herd.

2. Local residents' homes and gardens near the existing quarry have been flooded. The Flood Risk Assessment (section 7.3.3.4) indicates very clearly that there was no local assessment or interaction with residents to determine recent or historical local flooding of nearby homes or fields.

3. Discharge of surface water from the quarry into public drains will be disastrous for a system which already frequently exceeds its maximum capacity and is already prone to overflowing onto the roads at times of heavy rainfall. Section 7.5.1.3 states that all surface water from the site will be diverted to settlement tanks for 24 hours before being released into the roadside drains. The drains and fields downhill from the quarry are already continually over-flowing and unable to manage excess water levels. This is despite the local councils regularly clearing and in some cases widening the drains.

4. Until quite recently, when the quarry was operating the electrical supply to local homes was often adversely affected.

5. The lorries currently operating from the existing quarry will, even in winter on dry days, create a haze of dust as they drive which affects all road users, homes, gardens and surrounding fields. In the summer this is clearly visible on hedgerows and some trees, gateways, windows and roofs.

6. Exposure to nuisance dust levels in homes and gardens is a continuous issue. On a personal note, since moving to the area in 2003 Jacqueline has been medically diagnosed with a severe dust allergy that requires daily medication to keep in check.

7. When walking, cycling or horse-riding there is the continuous risk posed by large trucks trying to navigate narrow country lanes. It is often necessary to climb into the ditch to avoid risk, the roads in some places being so narrow there is not enough room for both a truck and a pedestrian.

8. The roads show evidence of stress from HGVs with potholes, worn roads and churned up ditches. On most roads in this area there is not enough room for two vehicles and there is a constant need to reverse, often some distance, to pull in to enable both vehicles to pass each other.

9. On a number of occasions in recent years, HGVs have failed to successfully navigate the junction just metres from our house which leads to the quarry and have ended up in the roadside drain.

10. People walking, cycling or driving are at risk from the large pieces of stone, which, in spite of current regulations requiring lorries to be covered still manage to regularly fall from the lorries servicing the present quarry, endangering people, animals and cars on an ongoing basis.

11. At night, the light pollution from the current quarry can be seen far and wide and often negates viewing of the night sky. This obviously also has an effect on night flying insects and local bat populations.

In the Conclusion by Tom Phillips + Associates they claim the decision to refuse permission is *"poorly substantiated and based on exaggerated concerns which have little basis in scientific fact"*. Many of the concerns raised by both the County Council and third parties have been backed up with citations from published studies by well-respected and renowned institutions and scientists specializing in these particular areas of study.

The growth of research regarding the effects of pollution and drawdown caused by the extractive industries is increasing at a rapid pace. The WHO have stated that

> *"Addressing air pollution, which is the second highest risk factor for noncommunicable diseases[1], is key to protecting public health.*

[1] https://www.who.int/data/gho/data/themes/air-pollution/total-burden-of-disease-from-household-and-ambient-air-pollution

Most sources of outdoor air pollution are well beyond the control of individuals and this demands concerted action by local, national and regional level policy-makers working in sectors like energy, transport, waste management, urban planning and agriculture."[2]

In regard to concerns over access to water and water security the NGI Land Use Indicators states:

"Dewatering from mines and sediments from quarries can both negatively impact water quality. Mines and quarries are a significant pressure for 6% of Ireland's waterbodies: for 6 waterbodies, mining or quarrying is the only pressure that puts the waterbody at risk of not achieving its water status objectives (DHLGH, 2021)"[3]

Indeed, Section 12.2.9 of the EIAR the Applicants provided states that *"once the quarrying operations extend below the groundwater table, groundwater levels in the surrounding area will be lowered"* and *"Drawdown may have a negative impact on local private groundwater wells"*.

As they have provided no evidence to prove their statement of *"poorly substantiated and exaggerated concerns"*, or, perhaps, have not troubled to read their own report, this cannot be considered as part of any grounds for appeal.

Errors and Omissions from the EIAR addendum

There are a number of errors and omissions in the EIAR addendum that makes its conclusions untenable. We have listed these errors below.

In the EIAR addendum it is stated that the closest receptor is 70m away from the quarry but this is untrue. There are three receptors within 100m and two of those are only 40m and 45m away (as identified by Carlow County Council). This calls into question the accuracy of the figures and conclusions given in the EIAR.

When discussing dust pollution the report cites, but does not provide any reference for, IAQM 2016. The IAMQs guidelines of 2016 are rather dated and do not reflect best practice under EU legislation.

IAMQ states:

"This guidance is designed specifically for use in England..... Caution should be used in attempting to apply this guidance elsewhere and careful consideration should be

[2] https://iris.who.int/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1

[3] Government of Ireland. National Land Use Evidence Review Phase 1 Document 05 Land Use Indicators 2023

given to its applicability:.....there are likely to be different climates, working practices and impact assessment criteria." (Section 1: Introduction & scope, pg. 5)[4]

The EU Action Plan sets out that the EU plans to adopt limits that are more closely in line with WHO guidance for air quality in 2022. This was scheduled for 2022 to allow for an anticipated WHO update to its air quality guidance.

> *"Pollutants for which new guidelines for annual mean values have been set are PM2.5, with a guideline value half the previous one, PM10, which is decreased by 25%, and that for nitrogen dioxide (NO2), which is four times lower than the previous guideline."*[5]

Even if we were to accept the IAQM report as acceptable, the IAQM guidance states that local topography must be taken into account when estimating dust levels (including prevailing winds and any *"valley or hill formations in altering local wind patterns*"). However, the report relies on non-local weather readings from Oak Park (which lies in a flat locality some 24km distance by car from Old Leighlin). The proposed quarry site, in contrast, is on an exposed hillside. This suggests that the methods used to obtain their own figures are not in compliance with the IAQM standards that they are using.

They have produced no figures for PM_{10} or $PM_{2.5}$ pollution or tested existing levels. Under the previous Directive 2008/50/EC of the EU parliament the maximum allowable limits (50 μg of PM_{10}, 24 μg of $PM_{2.5}$ must be adhered to. They have not shown that they will remain under the maximum safe limits.

When discussing raised dust levels due to the existing quarry (Old Leighlin Quarry) they quote a maximum amount of dust concentration of 158mg/m^2. The 2021 Annual Environmental Audit made by Old Leighlin Quarry shows levels at higher concentrations (183mg/m2 from sensor D1 and 254mg/m^2 from sensor D3) alongside 152mg/m^2 from sensor D2. Although the EIAR report says that the higher figures are not included because those sensors (D1 and D3) were compromised they are not recorded as invalid or compromised in the official Environmental Audit. Even their 158mg/m^2 figure is not the highest for sensor D2 (it is 193 mg/m^2 from 22/4/22 to 26/5/22). This again shows the EIAR figures to be unreliable. Even if we accept that they will only produce the same amounts of dust as the existing quarry (see below) the combined figures would easily exceed the 350mg/m^2/day limit.

Dust level comparisons with the existing quarry cannot be regarded as valid as the existing quarry is in a different stage of its lifecycle. It does little crushing of aggregate and all work is carried out below ground level resulting in less dust and noise pollution. The proposed

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[4] https://iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf

[5] https://www.who.int/publications/i/item/9789240047693

quarry will be working at ground level and crushing 80% of the stone thus producing much greater amounts of dust and noise nuisance.

Error in Noise Pollution Report

The predicted cumulative noise effects at the nearest (most affected) Noise Sensitive Location (Table 1, page 2 section 2.1 of EIAR Addendum) predicts a noise level of 55dB, just within compliance. However this table is based on a NSL distance of 70m from the quarry. As mentioned above this is incorrect. There are two residential houses (NSL's) at a distance of 40m and 45m. Given this new(?) information the table is inaccurate and the correct noise levels at half the distance from the quarry (the correct value of 40m) would be higher than 55dB and thus above the proscribed limits.

Air Pollution Issues

Natura Impact Statement

4.3.2 Potential for In-combination Effects Page 47 Paragraph 2

There is much valid and ongoing study that has based its research on the extractive industries and the risks posed to human populations from exposure to particulates. Each study that is conducted has confirmed the high risks associated with not just those working in the industry but for those in the locality around the quarry and further afield.

Study reviews by COMEAP and government agencies around the world are now clear on the devastating effects on human health caused by air-borne pollution. This includes but is not limited to increased long-term Ischaemic (coronary) heart disease and cerebrovascular disease incidence. It also lists increased short term respiratory and cardiovascular hospital admissions across all ages and Long-term chronic bronchitis symptoms, long-term cognitive decline and dementia, long-term all-cause mortality, long-term respiratory morbidity in children and, long-term asthma.[6]

In 1996 a report was produced by the Quality of Urban Air Group for The UK Department of the Environment, it was found that:

> *"The smallest particles (1 nm diameter) last only for some 10 minutes, but their loss is due to agglomeration with other particles (and growth into the accumulation size range) and not loss of material from the atmosphere.*
>
> *In the accumulation size range, particles are likely to be removed from the lower atmosphere by rain in about 10 days (dry deposition alone would take 100 to*

[6] Committee on the Medical Effects of Air Pollutants. UK.

1000 days). Larger particles (say 10 μm diameter) are likely to be airborne for 10 or 20 hours before dry deposition removes them. In the lower troposphere the mean wind speed is about 7 m/s, so the larger particles travel distances of 20 or 30 km while the smaller particles (0.1 to 1 μm) may travel several thousand km.....

The combined effect of persistence and transport of atmospheric aerosols was vividly illustrated by 137Cs from the Chernobyl accident were measurable for over 2 months, showed a mean residence time of about 10 days, and reached all parts of the northern hemisphere.[7] *"*

In September 2021 the World Health Organisation (WHO) updated their air quality guidelines based on the latest scientific evidence for the protection of human health and the environment (WHO, 2021).

"The WHO air quality guidelines were last published in 2006..... since they were issued, air pollution has become recognized as the single biggest environmental threat to human health based on its notable contribution to disease burden. This is particularly true for PM (both $PM_{2.5}$, i.e. particles with an aerodynamic diameter equal to or less than 2.5 μm, and PM_{10}, i.e. particles with an aerodynamic diameter of equal to or less than 10 μm). "[8]

On 26 October 2022, as part of the European Green Deal, the Commission proposed to revise the Ambient Air Quality Directives. The revision aligns the air quality standards more closely with the recommendations of the World Health Organization.[9]

The EU Action Plan sets out the zero pollution vision for 2050; *"a healthy planet for all"*, where air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems.

To steer the EU towards the 2050 vision, the EU Action Plan sets out key 2030 targets to speed up pollution reduction. Relevant to air quality, the EU should reduce by 2030 more than 55% of the health impacts (premature deaths) of air pollution.

The Carlow County Council Development Plan 2022-2028 will help the county move towards these targets.

Two further published studies on the effects of dust pollution on people are shown below:

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[7] https://uk-air.defra.gov.uk/assets/documents/reports/empire/quarg/quarg_11.pdf

[8] https://iris.who.int/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1

[9] https://ec.europa.eu/commission/presscorner/detail/en/ip_24_886

Clinical Conditions Associated with Environmental Exposures: an Epidemiologic Study in Two Communities in Juana Díaz, Puerto Rico: [10]

> *Rock extraction and truck transportation make quarry operation both a stationary and a mobile source of particulate matter, respectively (14–17). A study from Taiwan found high concentrations of PM2.5 and PM10 in a quarry's neighbor surroundings (14). In Wales, UK, a study found rock particulates between PM2.5 and PM10 and PM2.5 soot particulates from the diesel used in the explosions of a limestone quarry (15). In fact, a major source of soot particulate in quarries is derived from the diesel exhaust of the trucks used to transport the extracted minerals (18). Diesel engines emit a complex mixture of air pollutants, composed of a variety of harmful gases and solid materials which include carbon particles and over 40 other known cancer-causing substances (19–20). Also, trucks disperse particulates to the surroundings when they transit the unpaved roads of quarries and from dispersion of their cargo (16–17).*
>
> *"Diesel exhaust and particulates from quarries are suspended in the air, thus exposure to these pollutants occurs whenever a person breathes air that contains these substances. Those living or spending time near the quarries or the roads with the diesel-truck traffic face exposure to higher levels of particulate matter and may face higher health risks (18, 21–22). Multiple studies have shown that particulate matter pollution from quarry operation and diesel exhaust is associated with an increase of several diseases such as heart diseases, respiratory diseases, and several types of cancer (1, 7, 19, 21).*

Lung Function and Respiratory Health of Populations Living Close to Quarry Sites in Palestine: A Cross-Sectional Study: [11]

> Our results indicate that living in close proximity to quarry sites, which is a main source of dust, is a potential factor for increasing the prevalence of eye and respiratory symptoms. It has been found that dust is one of the most invasive and potentially irritating sources for the eyes and respiratory system [14,15,36].
>
> *Studies from India found silicosis and other respiratory inflammatory diseases among close populations to stone mining [14], while a study conducted in Puerto Rico found an elevated prevalence of bronchitis and nasal allergy among the communities who live close to quarry sites compared to others who live far from them [15].*
>
> *One study, conducted in Nigeria, assessed lung function among a mixed group of workers and residents who live near quarry sites compared to a control group [22]. The Nigerian study's findings, although including a mixture of workers and residents,*

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[10] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3885176/

[11] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7504702/

were similar to ours, as it found that workers and exposed residents had lower lung function parameters than the unexposed control group [22]."

Issues with Water Pollution

The statement in the Nature Impact statement section 5.2.4 that quarrying activities have not impacted on local groundwater wells is incorrect and belies the everyday experience of private well users in this area. Water supplies operate at low levels during the hours the quarry is operational leaving the water pressure in homes severely diminished.

The land on which many of the community live has a very low groundwater recharge of 1-50mm. The area the quarry is situated is only slightly better with a rate of 51-100mm[12]. This would mean the extremely high levels of water withdrawal required by a second quarry to operate will leave local residents and farms in a very precarious situation. The amounts required would mean the volume-rate abstracted would be less than the volume-rate recharge.

The water table is already under significant pressure and the considerable extra usage of water required by a second quarry would be detrimental to all homes in the area, to the present operational quarry, the large dairy farm and other dairy farms and pig units close by.

In section 6.3 of the NIS Enviroguide the reports for Groundwater Quality and Groundwater Levels are based on monitoring by Four On-site Boreholes only and one Borehole immediately adjacent to the site on land owned by Milford Quarries. EIAR Hydrology 7.2.1 cites methodology as a Desk Study prior to site investigations and site walkover assessments with on-site sampling and monitoring only taking place from August to Dec 2022.

Private wells in the community surrounding the proposed quarry site were not tested. There was no broad co-ordination of ecological, groundwater and surface water investigations outside the quarry site . A full hydrological year (October to September) of observations and monitoring is needed to define the baseline conditions adequately.

The search using the GSI database to determine private well locations is located within a very tight radius 1-100m of the site. In spite of Site visits the report precludes the mention of two houses directly opposite the site which are within 40m of the proposed site location. The report does however acknowledge the low yields of local wells.

[12] https://dcenr.maps.arcgis.com/apps/mapviewer/index.html?layers=86f8f702a7604280a29e1bcc7aa84556

The GSI database clearly acknowledges its limitations and should not be used as the only resource to determine conditions at a local level. This is not a comprehensive qualitative assessment of the groundwater resources or of the potential risk to local water supplies.

If approved, the testing and monitoring should be ongoing internally and externally, on the site and surrounding areas continuously both while the site is active and during and after the restoration has been completed.

The day-to day functioning of a second quarry and many of the measures suggested for the continuous control of dust levels (in the FI EIAR CEMP Nov 2023 6. Environmental Impacts and Controls 6.4.20 Control of Dust) and for other work-related activities will require extremely large volumes of water and will seriously impact on local groundwater water levels. This has still not been addressed in the appeal to An Bord Pleanála.

A study on the impact of quarries on groundwater and surface-water symptoms in the US found the following potential impacts:

> *"Limestone quarries are found in southeastern Minnesota from the Twin Cities south to Iowa and west to Mankato. Some of these operations mine below the water table. In order to do this, the 6 quarries must be dewatered. Dewatering can locally depress the water table, altering ground-water flow paths and affecting nearby wells, springs, and surface-water bodies. Concerns have also been raised to DNR Waters and local government staff about the impacts of quarry blasting on domestic wells*
>
> *Water-Level Impacts. At all three sites, the quarry dewatering has altered the local ground-water hydrology. In essence, the quarries act as huge wells, lowering the water table in the aquifer.*
>
> *This lowering could affect neighboring wells and testifies to the need for careful evaluation of quarry dewatering proposals and long-term monitoring of the dewatering impacts on the local aquifer.*
>
> *Limestone quarries have some particular information needs due to their potential to affect water resources that are not immediately adjacent to the site.*
>
> *..... Properly assessing the hydrology of a limestone area should aid in siting new quarries in locations where they will not affect springs and streams.* [13]"

[13] https://files.dnr.state.mn.us/publications/waters/hdraulic-impacts-of-quarries.pdf

Groundwater Vulnerability

The geological composition of this area renders it susceptible to pollution from quarrying activities. A fact directly acknowledged in the EIAR report 7.5.1.1 Potential Impacts on Groundwater Vulnerability.

> *"The Proposed Development….will increase the groundwater vulnerability of the underlying Regionally Important Karstified Aquifer which is currently regarded as being of Very High Importance. ….Therefore, the groundwater vulnerability at the proposed extraction area will increase to Extreme (X) across the whole extraction area."*

Studies conducted on limestone extractive industries worldwide indicate the irreparable damage that can and often does occur:

> *Karstic system (limestone) has a very low self-purification capacity (Kresic et al. 1992)[14] which makes the water flowing through the karst system very susceptible to pollution. Mining activities can substantially change the direction of discharge and thereby change water quality (Bhatnagar et al. 2014[15]).*
> *In aggregate mining, the target limestone, if unsaturated, may also act as a protective cover for the underlying aquifer. If this cover is removed due to mining, the hole created by the mining may direct the surface water to the groundwater, and if the surface water is contaminated, the quality of the groundwater can quickly degrade. Quarrying can also cause the formation of sinkholes that result in the capture of surface water. Dust can enter conduits and smaller openings and can be transported to the groundwater (Hobbs and Gunn 1998)[16].*
> *Based on the investigation conducted by (Eugene and Singh 2014)[17] on water quality due to limestone mining in East Jaintia Hills, Meghalaya, India, it was concluded that in most cases water quality showed elevated levels of pH, electrical conductivity, total*

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[14] Kresic N, Papic P, Golubovic R (1992) Elements of groundwater protection in a karst environment. Environ Geol Water Sci 20(3):157–164

[15] Bhatnagar D, Goyal S, Tignath S, Deolia D (2014) Impact of opencast limestone mining on ground-water in Katni river watershed, Madhya Pradesh, India—A geoinformatics approach. J Geomatics 8(1)

[16] Hobbs S, Gunn J (1998) The hydrogeological effect of quarrying karstified limestone: options for prediction and mitigation. Q J Eng Geol Hydrogeol 31(2):147–157

[17] Eugene LR, Singh O (2014) Degradation in water quality due to limestone mining in East Jaintia Hills, Meghalaya, India. Int Res J Environ Sci 3(5)(2319–1414):13–20

dissolved solids, hardness, alkalinity, calcium and sulphate concentrations due to the mining and processing of limestone.[18]

The report produced by IE Consulting explains in detail other serious problems with the new proposed quarry. It is appended at the end of this document.

Issues with Infrastructure

The EIAR does not address any of the concerns raised about infrastructure. Section 4.5.2.8 of the original EIAR states that there will only be an increase of at most 25% in overall traffic but their own figures (Chapter 12) show that the number of heavy vehicles using the roads is at present 15 in one 24 hour period and that the number of heavy vehicle trips required to facilitate the new quarry will be 30 per day. This is, in fact, a tripling of heavy vehicle traffic (from 15 to 45) using the local roads.

Assuming an 8 hour work day that is an increase from one heavy vehicle every 30 minutes to one heavy vehicle every 10 minutes. Traffic of this frequency would make the roads unusable for people in the local community, including farmers moving livestock and machinery between fields.

This increase in road traffic also brings the problem of particulate matter from diesel trucks, the further spreading of dust throughout the area and the increased risk of pollution from road runoff into streams and waterways. Research from Imperial College, London on tyre wear particles states that:

> *"tyre wear particles contribute significantly to the amount of synthetic (or polymeric) particulate pollution being released into our environment. Large particles are transported by road runoff due to rainwater, resulting in the leaching of toxic chemicals and damaging the environment, while smaller particles, of the micro and nanoscale, may be small enough to become airborne and breathed in* (Wagner et al., 2018)."[19]

Issues with Landslide Risk

The EIAR report neglected to outline the problems of landslides that will arise from the clearance of the ridge around and behind the proposed quarry. The Irish Geological Society has listed the ridge behind the site as having extreme landslide risk. Any clearance of gorse or removal of soil will increase the likelihood of a landslide event. As well as the inevitable environmental damage there are houses situated along the bottom of the ridge and this

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[18]https://www.researchgate.net/publication/339304868_Environmental_Hazards_of_Limestone_Mining_and_Adaptive_Practices_for_Environment_Management_Plan

[19]https://spiral.imperial.ac.uk/bitstream/10044/1/101707/9/Tyre%20wear%20particles%20are%20toxic%20for%20us%20and%20the%20environment%200223-2.pdf

puts the families in those houses at risk. The data on the high risk of landslide along the ridge surrounding the proposed quarry is freely available online[20].

Yours sincerely,

Dr. Joseph Kehoe and Jacqueline O'Neill,
Bannagagole,
Old Leighlin,
Carlow,
R21 AY86

[20] https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a5981f950e9b9c5625c

Our Ref: IE090/JK/6070

Your Ref:

Date: 26-03-24

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

Joseph Kehoe

Dear Joseph,

Re: The Proposed development of a dimension stone quarry at Bannagagole, Old Leighlin, Co. Carlow. Planning File Number 2360042 (Carlow County Council), Refused and under appeal to An Bord Pleanala

Further to your request, I have undertaken a high-level overview of the above planning file to develop an expert opinion on the assessment of groundwater issues undertaken as part of the original planning application.

I have extensive experience of both preparing and reviewing assessments for proposed quarries, in the UK and Ireland over the past 40 years.

I note that the site is located on a Regionally Important Aquifer (Rkd). The hydrogeological assessment report prepared as part of the original EIAR seems to downplay the importance of the aquifer, stating lack of evidence of significant inflows. However extensive dolomitisation (which enhances permeability) is noted in greater than 50% of recovered cores and in our opinion this together with the Rkd designation puts the site in a high-risk category, which would demand a high level of scrutiny and assessment, following the precautionary principle.

Faulting is noted on geophysics lines and labelled on sections as acting as a conduit for fluids. There is no further discussion of this in the assessment, which in my opinion is a deficiency. Faults are known to be zones of enhanced permeability, and should the quarry intercept this zone, there could be an increase in groundwater flows.

It is accepted by the applicant that there will be a need to dewater the site to access the proposed quarry floor at 56.5m O.D, which means inducing an artificial drawdown by pumping of up to 30m. Achieving this in a Regionally Important dolomitised Aquifer with a pumping volume of 75m^3/day, is in my opinion not realistic, but this value is presented and if it is to be relied upon, it should be backed up by hydraulic testing and analysis to provide quantitative evidence rather than a qualitative assessment. I would also have concerns that the applicant, would not, under the anticipation of relatively low flows, be prepared to manage any significant increase in inflows.

Nonetheless 75m^3/day is the water supply for approx. 75 houses, and again only a cursory comment in relation to impacts on neigbouring beneficial users of groundwater is presented in the EIAR. There has been no baseline assessment of neighbouring wells, which in my opinion is a pre-requisite for assessing any impacts. This omission totally undermines any impact assessment.

It is noted that the assessment mentions no karst risk, but it is well known that karst features tend to develop along the contact between Namurian Shales and Carboniferous Limestones, but these are often

masked by thick overburden, so further exploration of this is warranted. In addition, the assessment of other potential geohazards such as landslip is in my opinion not adequate.

There is an over-reliance on the neighbouring quarry, and not enough assessment of the proposed site, and as indicated in the refusal by Carlow County Council cumulative hydrogeological impacts generated by two quarries operating in close proximity have not been properly assessed.

Yours Sincerely

Jer Keohane

BSc, MSc, FCIWEM, MIEI, C.Geol, C.WEM

Director

For IE Consulting