

**Town and Country Planning Act 1990 – Section 78 Town and County
Planning (Development Management Procedure) (England) Order
2015 Town and Country Planning (Inquiries Procedure) (England) Rules 2002**

**Proof of Evidence of Adrian Carloss
for Stop The Quarry Campaign – Rule 6 Party
Proof of Evidence of Dust Impact on local community & surrounding area**

Land at Lea Castle Farm, Wolverley Road, Broadwaters, Kidderminster, Worcestershire

**Proposed sand and gravel quarry with progressive restoration using site derived and imported
inert material to agricultural parkland, public access and nature enhancement**

Application reference: 19/000053/CM

Appellant's name: NRS Aggregates Ltd

Appeal reference: APP/E1855/W/22/331009

22 January 2023

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1.0 Qualification

1. My name is Adrian Carloss
2. Chairman - STQC
3. Parish Councillor (Wolverley & Cookley)
4. 2019 election candidate - Independent Health Concern party.
5. Loading Bank Health & Safety / Dangerous Good clerk / Deputy Bank Foreman / Unite Shop Steward - TNT Express
6. I have lived in the local area most of my life and have been a resident of Cookley for the last 15 years. I am familiar with the site passing it on a daily basis and regularly walking the public footpath network crossing the site. I am asthmatic & therefore take a high interest in dust / air pollution research.

2.0 Introduction

1. My evidence at this time is concerned with air quality.
2. STQC commissioned an AQA as follows:
 - A. Title: Air Quality Review: Lea Castle Farm, Date: 2 March 2020, Reference: S1003_A_1.
 - B. Carried out by Dr Austin Cogan (author, for Air Pollution Services, St Dunstons House, Bedminster Down Road, Bristol, BS13 7AB Tel: 01179 112434. Email: contact@airpollutionservices.co.uk)
 - C. Approved by Dr Claire Holman (for Air Pollution Services) on 4 March 2020.
 - D. Silicosis and airborne dust objection to Lea Castle Farm quarrying proposal.pdf) Malcolm Eykyn. (MB., CHB GP - retired) & Dr. Tony Cox (MBE, MA, PhD, CEng, FIMechE, FAE)

3.0 Current Position

1. Site is close to:
2. Designated AQMA.
3. Multiple schools / residential properties / local amenities
4. Massive risk of PM10 / PM2.5 / vehicle emissions impacting on all the above.
5. Air Quality Policy MLP 29: Air Quality Contributing to: Objectives MO2, MO3, MO4, MO5
Planning permission will be granted where it is demonstrated that the proposed mineral development, including associated transport, will not give rise to unacceptable adverse effects on air quality, and will help secure net improvements in overall air quality where possible. A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime, and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, the proposed development will: a) not cause unacceptable harm to sensitive receptors, sensitive habitats, or designated sites of importance for biodiversity from air quality. Particular consideration will need to be given to air quality impacts in or impacting upon

areas where air quality is known to be poor, such as designated Air Quality Management Areas (AQMAs) or areas that are at risk of designation; and b) deliver improved air quality even when legally binding limits for concentrations of major air pollutants are not being breached, unless it is clearly demonstrated that this is not possible. Proposed

4.0 List of source material

1. Dust Impact Assessment for a Proposed Sand and Gravel Quarry and Restoration Scheme for Land at Lea Castle Farm, Worcestershire, NRS AGGREGATES LTD, R19.10059/3/AG Date of Report: 18 September 2019 (Vibroch)
2. Air Quality Review: Lea Castle Farm Date: 2 March 2020 (Air Pollution Services)
3. Weather History at Birmingham Airport, United Kingdom (weatherspark.com)
4. The Four Forces That Influence Wind Speed & Wind Direction (sciencing.com)
5. IAQM Guidance to Industry
6. IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning
7. WCC Planning & Regulatory Committee, Section 212, 24 May 2022
8. National Library of Medicine (National Centre for Biotechnology Information), "Lung Function and Respiratory Health of Populations Living Close to Quarry Sites in Palestine: A Cross-Sectional Study".
9. UK Health Security Agency (Guidance Statement on the differential toxicity of particulate matter according to source or constituents: 2022 (Updated 27 July 2022))
10. 989-29321.10.14_From_WRS_re_Air_Quality(1).pdf
11. 989-26111.01.18_WRS_Further_Comments.pdf

5.0 Evidence

• 5.1

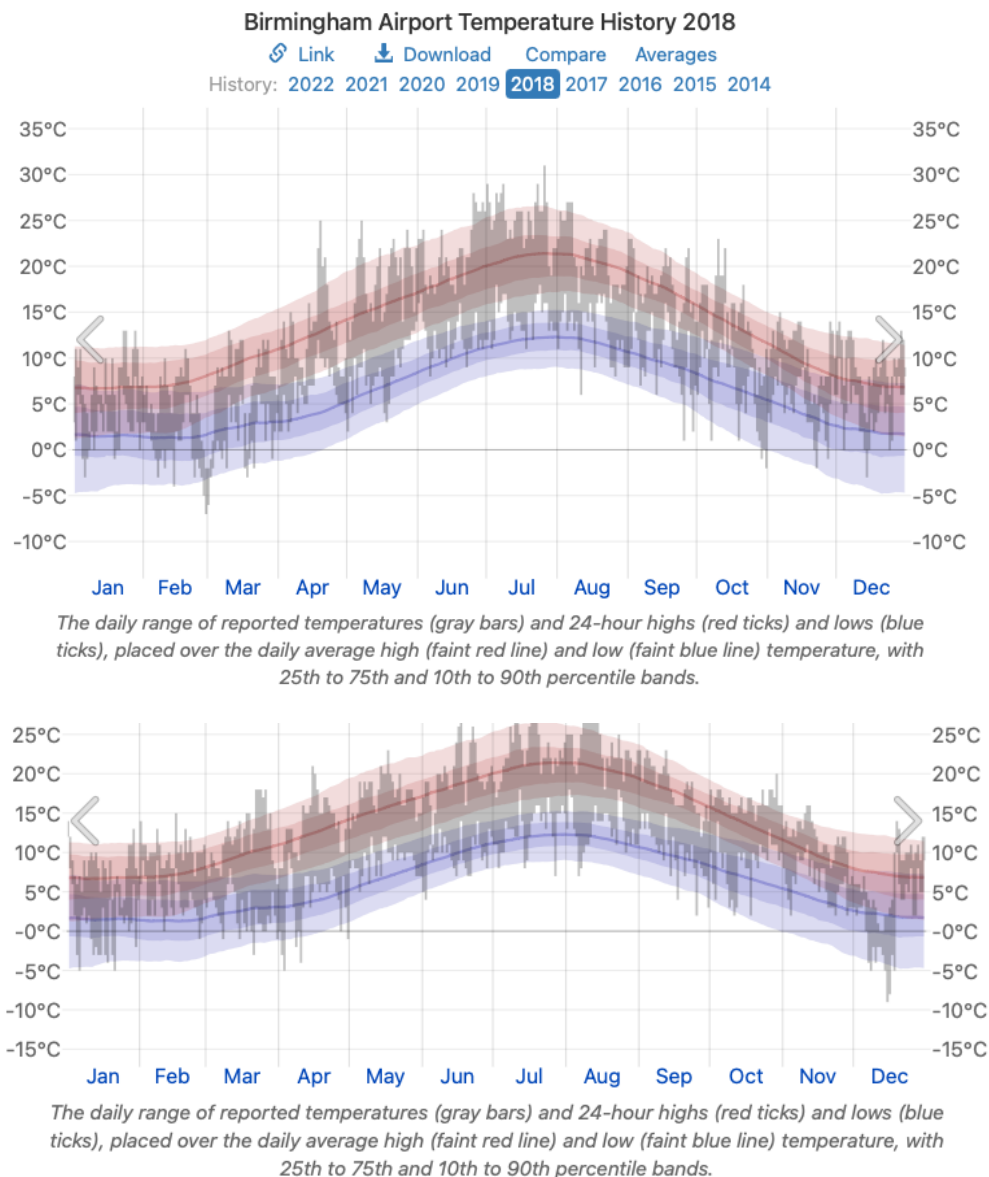
A. On behalf of NRS, (Section 8, p.41 of the above document) Vibrock state:

1. 8.1 It is unlikely that any significant decrease in local air quality will occur due to the proposed development at Lea Castle Farm Quarry. Any dust occurrence event will be limited and of short duration and will be minimised by implementation of the dust control recommendations.
2. 8.2 With regard to PM₁₀ and PM_{2.5} dust levels from the site, analysis has been made of the air quality data. The conclusion of the analysis was that AQO will not be exceeded.

3. 8.3 Overall the effect on air quality of this development with the implementation of suitable dust mitigation measures is considered to be not significant.

- B. In reply to 8.1 - There will be a significant decrease in air quality, invisible PM_{2.5} dust undetectable to naked eye, thus failing to trigger proposed mitigation.
- C. In reply to 8.2 & 8.3 - PM₁₀ and PM_{2.5} dust research from the site is superficial.
- D. International research proves dangerous levels (PM_{2.5} dust) have potential to be exceeded.
- E. Climactic conditions have warmed since Vibrock data compiled.
- F. The graphs below show a 2-3 degree annual air temperature increase (2018 - 2022). Vibrock data (2018) should be considered out of date / inadmissible. Pershore (Vibrock data) & Birmingham Airport (STQC data) are similar distances from Kidderminster.

G. (Source Appendix G) - <https://weatherspark.com/h/y/147820/2022/Historical-Weather-during-2022-at-Birmingham-Airport-United-Kingdom#Figures-Temperature>



H. (Source Appendix C) - <https://weatherspark.com/h/y/147820/2018/Historical-Weather-during-2018-at-Birmingham-Airport-United-Kingdom#Figures-Temperature>)

• **5.2 Existing Environment**

- A. Annual air temperature increase. This factor affects numerous other conditions, including wind speed.
- B. "...Warm air is less dense than cold air, so warm air rides up and over the cold air, causing winds..."
- C. (The Four Forces That Influence Wind Speed & Wind Direction, How Are Winds Formed? Updated November 22, 2019 By David Barber. Para 2, Under heading "Temperature". See Appendix C - Source - <https://sciencing.com/list-7651707-four-wind-speed-wind-direction.html>)
- D. As air temperature increases year on year throughout the life of the quarry, wind speed will increase & thus the distance travelled by particulates.

• **5.3 Dust impact risk**

- A. Research submitted details data proving above point, along with accurate maths proving PM10 / PM2.5 impact to be far greater than NRS data.
- B. Absence of HSE research proving / disproving PM10 / PM2.5 receptor impact outside the site

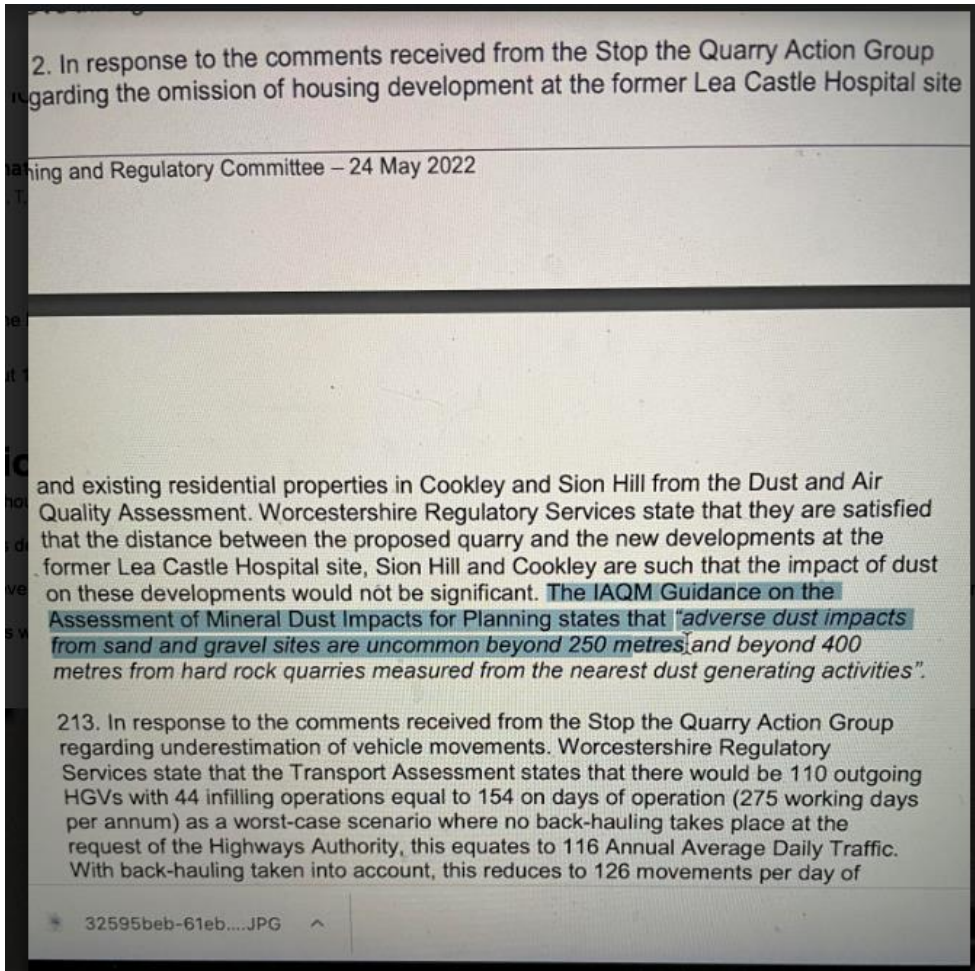


does not prove absence of risk. The following shows receptor proximity to site:

- C. The Vibrock report fails to detail distance to closest receptors (The Bungalow / Heathfield School), only giving vague approximations.

- D. Section 212 (WCC Planning & Regulatory Committee, 24 May 2022) re STQC comments, WCC state:
- E. "...The IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning states that "adverse due impacts from sand and gravel sites are uncommon beyond 250 meters..."
- F. **NO REFERENCE** made to impact **AT LESS THAN 250 meters...** Evidence submitted demonstrates proof concerning receptor safety within that distance / absolute need for proper dust control.
- G. IAQM (section 2.1, p.8) states:
- H. "...Those particles up to 10 µm (micrometres) in diameter (known as PM₁₀) remain suspended in air for long periods and because they are fine enough to be breathed in and can, potentially, cause health effects..."
- I. **NO MITIGATION factored in for controlling dust when site is closed.**
- J. Compounded effects above require increased water suppression, resulting in raised operating costs / encouraging relaxation of water suppression.
- K. PM10 / PM2.5 will travel greater distances, exceeding previous estimations.
- L. Table 1: Summary of Limit Values and Objectives for suspended Particulate Matter (p.8, IAQM Guidance to Industry) references dates 2010 & 2020. IAQM data is outdated.
- N. The table (p.28 Vibrock report) states:
- O. "...dust impacts from sand & gravel are uncommon beyond 250 meters of the operation..."
- P. The following shows international health impact research for within 500 meters of a quarry:
- Q. "...A cross-sectional comparative study was conducted among 79 exposed participants, who lived less than 500 m away from the quarry sites, and 79 control participants who lived more than 500 m away.... ...Higher levels of airway restriction were found among the exposed group. Among the exposed group, lung function parameters worsened with the increasing closeness of home to the quarry site..." (para 1, under the heading "abstract") . This disproves the following screenshot from WCC (Planning & Regulatory Committee - 24 May 2022):

- R. Source Appendix R



(Source - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7504702/>)

• **5.4 WCC stance:**

- A. Neil Kirby (WRS) to Steve Aldridge (WCC) as per his email of 14 October 2021 (13:17pm) comments as below:
- B. “...Until the new WHO guidelines are incorporated into UK law these are the objectives that air quality is compared to. Whether the proposal would comply with the new WHO Guidelines is immaterial when reviewing an Air Quality Assessment as far as I’m concerned. ...”
- C. (Source - 989-29321.10.14_From_WRS_re_Air_Quality(1).pdf)
- D. STQC believe WHO research is valid. UK Health Security Agency “Guidance Statement on the differential toxicity of particulate matter according to source or constituents: 2022 (Updated 27 July 2022), section 18, acknowledges WHO research in reference to ANSES review, when looking at particulate impact on public health:
- E. 18. The ANSES reviewers took the REVIHAAP report (WHO, 2013) as their starting point, and considered subsequent literature up to February 2016...”

F. (Source Appendix F) - <https://www.gov.uk/government/publications/particulate-air-pollution-health-effects-of-exposure/statement-on-the-differential-toxicity-of-particulate-matter-according-to-source-or-constituents-2022>)

G. **This lack of recognition of these facts is akin to: Smoking does not harm your health / Asbestos was not a health risk.**

H. The email from Joseph Green, WRS, to Steve Aldridge, WCC, 18 January 2021 (15:20pm) shows deferential leaning towards favouring the Appellant. Evidence is subjective:

I. "...WRS believe that the agreed noise and dust action plans are robust enough to deal with issues raised; **however, you may wish to run these by the applicant's noise and dust specialist** and we would be happy to work with them should any changes to the action plans be made..."

J. (Source - 989-26111.01.18_WRS_Further_Comments.pdf)

6.0 Additional Research

A. STQC research (Silicosis and airborne dust objection to Lea Castle Farm quarrying proposal.pdf): shows comments from Malcolm Eykyn. (MB., CHB GP - retired) & Dr. Tony Cox (MBE, MA, PhD, CEng, FIMechE, FAE):

B. Refers to PM2.5 particulate - more deadly than PM10 that Vibrock refer to, thus indicating an omission beneficial to the Appellant.

C. "...A cluster of children born with anatomical defects had been identified, whose families lived within a 3 kilometre radius of the toxic site..." (p.13, para 4)

D. "...an arithmetic error in a well-known 1995 research report "The Environmental Effect of Dust from Surface Mineral Workings", that had been relied upon by the defendants' experts. Both sides' experts then agreed that this was an error, and my calculations were then accepted by the Judge..." (p.14, para 1)

E. The effect of this error was that the PM10 particles would be typically carried 3km on the wind rather than the 1km suggested in the 1995 report. For PM2.5 particles, which were not mentioned in the 1995 report, but which are more dangerous to respiratory health, the distances are far greater - of the order of 10s of kilometres. The Judge found in favour of the claimants and his decision was upheld after appeal..." (p.14, para 2)

F. **The Inspector is respectfully invited to appraise himself of the full content of the document above (referred to in 6.0 A) & to note the ramifications of the evidence contained therein.**

G. The following (from the above pdf file) demonstrates that NRS were previously aware of these risks:

H. "...the site was subject to an enquiry in early 2020 which NRS will have been aware included damning evidence of the potential impact of particulate air pollution from silica dust and risk of silicosis on local residents submitted by Barford Residents Association. The submission led to questions being asked in the House of Commons and the beginnings of national action to bring Government guidelines up to date..." (p.3, para 2)

I. Due to the lack of detail contained therein, STQC believe minimal weight should be given to the Vibrock report.

- J. Dust mitigation relies on the Appellant to self-police PM discharge.
- K. Vibrock (Appendix 3) report relies on generalisations. Independent scientific evidence is absent.
- L. The Vibrock report refers to pre-existing moisture content in extracted material as viable dust suppression factor.
- M. Further to the above point (as per the link in section 6.0 P, below), Section 2.2.3, (p. 2-18, para 1) of the EPA (United States Environmental Protection Agency) document “Air Pollution Control Techniques for Non-Metallic Minerals Industry” states:
- N. “...The inherent moisture content or wetness of the rock processed can have a substantial effect on uncontrolled emissions... .. **However, as new fine particles are created by crushing and attrition, and as the moisture content is reduced by evaporation, this suppressive effect diminishes and may even disappear. Depending on the geographic and climatic conditions, the moisture content of the mined rock ranges from nearly zero to several percent...**”
- O. Climate adjustment reinforces the rate of evaporation from extracted material, showing reliance on flawed methodology.
- P. See Appendix P - (Source - <https://nepis.epa.gov/Exe/ZyNET.exe/P1005MOG.txt?ZyActionD=ZyDocument&Client=EPA&Index=2006%20Thru%202010&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C06THRU10%5CTX%5C00000012%5CP1005MOG.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=32>)
- Q. The same document continues re. particulate emission from loading extracted material. Section 3.1.3 (Quarry loading operations) states:
- R. “...Particulate emissions from the loading of broken rock by loaders or shovels are difficult to control...”
- S. Section 3.1.4 (Haul Roads) comments:
- T. “...A large portion of the fugitive dust generated by quarrying operations results from the transportation of material from the quarry to the processing plant over unpaved haul roads. Emissions from hauling operations are a function of the condition of the road surface and the volume and speed of vehicular traffic. Consequently, control measures include methods to improve road surfaces or suppress fugitive dust and operational changes to minimize the effect of vehicular traffic...”
- U. See Appendix U - (Source for both the above statements - <https://nepis.epa.gov/Exe/ZyNET.exe/P1005MOG.txt?ZyActionD=ZyDocument&Client=EPA&Index=2006%20Thru%202010&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5C06THRU10%5CTX%5C00000012%5CP1005MOG.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=32>)

V. Proving:

W. The Appellant claims intent to use water suppression on roads / stock piles. STQC do not believe this will be affectively applied due to cost & lack of instantaneous scientific PM monitoring.

X. No evidence in Vibrock report addressing 3.1.3 (Quarry loading operations) specifically: "...loading of broken rock...", thus major dust issues remain outside mitigation methodology.

Y. Roads proposed by Appellant fall in description of 3.1.4 (Haul Roads). **NO OPERATOR CAN GUARANTEE CONSISTENT DRIVER COMPLIANCE THROUGHOUT THE SITE ON EVERY WORKING DAY.**

Z. Further areas of concern arising from Vibrock report are:

AA. "...7.5 Regular visual inspections will be conducted within the site and on the local road network by the site personnel, as deemed necessary and especially during dry windy conditions to ensure that any dust sources are identified and dealt with promptly..."

BB. This process fails because:

CC. It relies on discretion of staff on the day.

DD. No set regularity to monitoring process.

EE. No stipulated guidance for assessing "...windy conditions..."

FF. No technical apparatus stipulated to give precision monitoring.

GG. No independent oversight of this process.

HH. **The above points (AA - GG) demonstrate a high probability of dangerous, toxic PM discharge being missed.**

II. "...7.6 A complaints log will be held on site... ...The site foreman shall investigate the complaint and take any remedial action which is deemed appropriate..."

JJ. As per the previous point, there is no enforceable protocol for controlling something which should be seen as a high level COSHH incident.

KK. "...7.7 In the event of a failure of dust mitigation measures, for example in extreme weather conditions, the dust generating activity shall be temporarily suspended, until appropriate dust mitigation is implemented or until a change in weather condition occurs..."

LL. There is no guidance detailing "...extreme weather conditions..." Evidence detailed herein shows how PM2.5 particles are impossible for a person to detect. Thus rendering Vibrock's point 7.7 mute.

7.0 Highways pollution

The Air Pollution Services report covers this in great detail. The knowledge required to fight this critical subject is far beyond the ability of members of the general public involved in this campaign.

This only demonstrates the imbalance within the planning system, highlighting companies that have greater financial resources for specialists, thus creating an unfair advantage which in this instance favours the Appellant.

The Inspector is therefore most respectfully asked to take this into consideration when weighing the evidence presented & to give maximum weight to the one professional report that STQC have been able to commission from Air Pollution Services.

8.0 Conclusion

STQC have provided proof that a quarry on Lea Castle Farm site would place sensitive receptors in direct harm & which would have far reaching legal & health related consequences.

A similar objection case has also previously been accepted by a Judge in a Court of Law, the same weight of validity should be attributed at this Appeal.

Evidence herein shows the Appellant to be aware of known health risks, yet proposed mitigation fails to guarantee prevention against cataclysmic public health ramifications.

STQC believe there are sufficient grounds for the Appeal to be rejected.

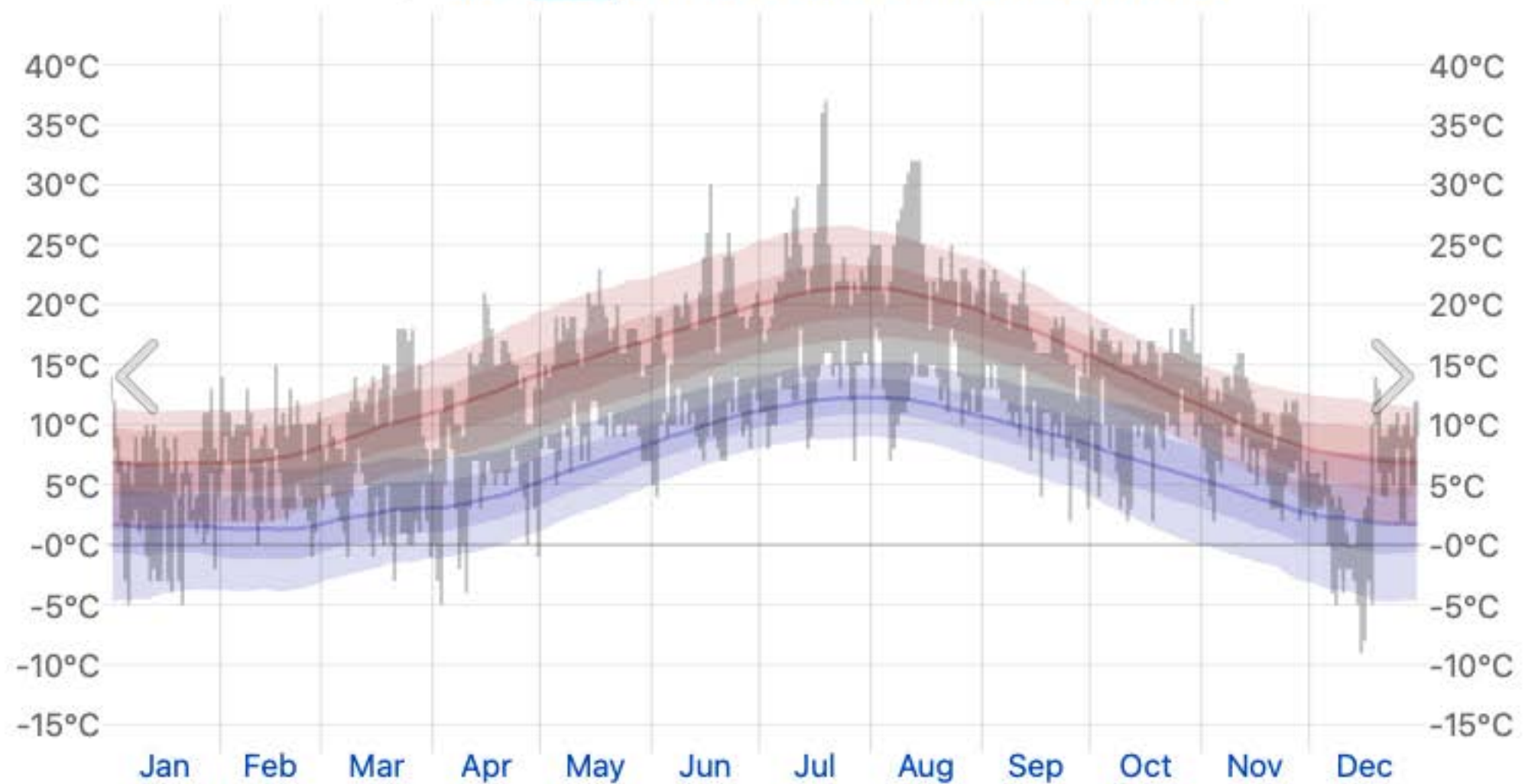
Appendix 5.1 G

This report shows the past weather for Birmingham Airport, providing a weather history for 2022. It features all historical weather data series we have available, including the Birmingham Airport temperature history for 2022. You can drill down from year to month and even day level reports by clicking on the graphs.

Birmingham Airport Temperature History 2022

[Link](#) [Download](#) [Compare](#) [Averages](#)

History: [2023](#) **2022** [2021](#) [2020](#) [2019](#) [2018](#) [2017](#) [2016](#) [2015](#)



The daily range of reported temperatures (gray bars) and 24-hour highs (red ticks) and lows (blue ticks), placed over the daily average high (faint red line) and low (faint blue line) temperature, with 25th to 75th and 10th to 90th percentile bands.

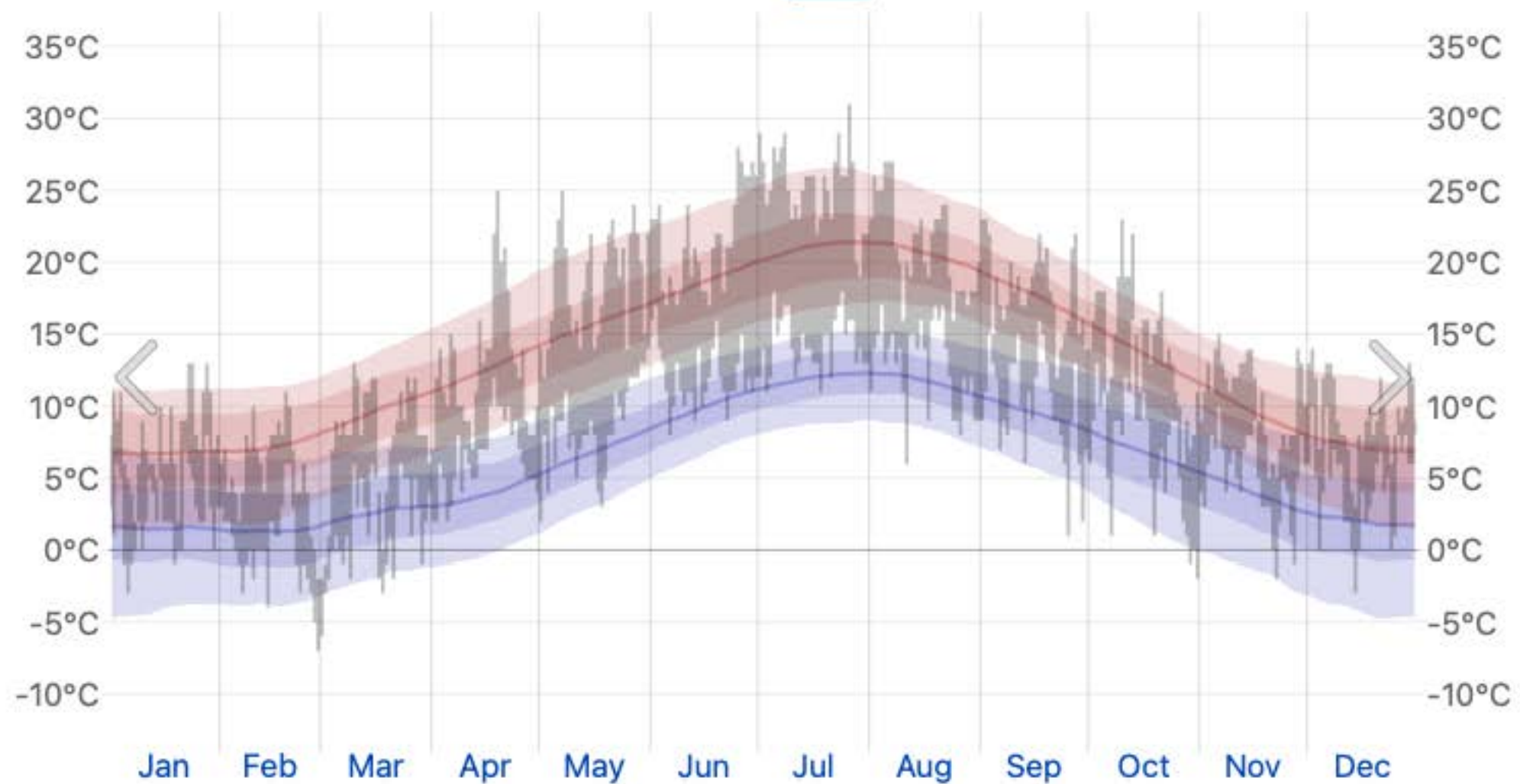
Appendix 5.1 H

This report shows the past weather for Birmingham Airport, providing a weather history for 2018. It features all historical weather data series we have available, including the Birmingham Airport temperature history for 2018. You can drill down from year to month and even day level reports by clicking on the graphs.

Birmingham Airport Temperature History 2018

[Link](#) [Download](#) [Compare](#) [Averages](#)

History: [2022](#) [2021](#) [2020](#) [2019](#) **2018** [2017](#) [2016](#) [2015](#) [2014](#)



The daily range of reported temperatures (gray bars) and 24-hour highs (red ticks) and lows (blue ticks), placed over the daily average high (faint red line) and low (faint blue line) temperature, with 25th to 75th and 10th to 90th percentile bands.

Appendix 5.3 R



Updated November 22, 2019 *By David Barber*

Wind is defined as the movement of air in any direction. The speed of wind varies from calm to the very high speeds of hurricanes. Wind is created when air moves from areas of high pressure toward areas where the air pressure is low. Seasonal temperature changes and the Earth's rotation also affect wind speed and direction.

Temperature

Air temperature varies between day and night and from season to season due to changes in the heating Earth's atmosphere. Because of the sun's warming effect, there are more winds during the day. Air masses also differ in temperature. A warm front precedes a warm air mass. Warm air is less dense than cold air, so warm air rides up and over the cold air, causing winds. Conversely, a cold front, the leading edge of a cold air mass, also creates wind.

Air Pressure

Air pressure is the weight of a column of air reaching the top of the atmosphere from the ground. Air pressure decreases with increasing altitude and fluctuates across Earth's surface due to differences in land elevation. At the Earth's surface, wind blows horizontally from high pressure to low pressure areas. The speed is determined by the rate of air pressure change, or gradient, between the two pressure areas. The greater the pressure difference, the faster the winds.



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Appendix 5.3 R

[Int J Environ Res Public Health](#). 2020 Sep; 17(17): 6068.
Published online 2020 Aug 20. doi: [10.3390/ijerph17176068](https://doi.org/10.3390/ijerph17176068)

PMCID: PMC7504702
PMID: [32825513](https://pubmed.ncbi.nlm.nih.gov/32825513/)

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

[Maysaa Nemer](#), [Rita Giacaman](#), and [Abdullatif Hussein](#)

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Abstract

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Environmental exposure to dust from quarrying activities could pose health dangers to the population living nearby. This study aimed to investigate the health effects of dust exposure on people living close to quarry sites and compared them with those who live far from the quarry sites. A cross-sectional comparative study was conducted among 79 exposed participants, who lived less than 500 m away from the quarry sites, and 79 control participants who lived more than 500 m away. All participants answered a questionnaire on dust exposure at home and health effects, as well as performed a lung function test in which both reported and measured health effects were investigated. People who live in close proximity to the quarry sites reported exposure to dust at home (98%), land destruction (85%), plant leaves covered with dust (97%), and an inability to grow crops (92%). The exposed group reported significantly higher eye and nasal allergy (22% vs. 3%), eye soreness (18% vs. 1%), and dryness (17% vs. 3%), chest tightness (9% vs. 1%), and chronic cough (11% vs. 0%) compared to the control group. Lung function parameters were significantly lower among the exposed group compared to the control group; mean forced vital capacity (FVC) was 3.35 L vs. 3.71 L ($p = 0.001$), mean forced expiratory volume in the first second (FEV₁) was 2.78 L vs. 3.17 L ($p = 0.001$). Higher levels of airway restriction were found among the exposed group. Among the exposed group, lung function parameters worsened with the increasing closeness of home to the quarry site. This study demonstrates the negative health effects of environmental dust exposure among two communities living near quarry sites in Palestine. The results highlight the importance of developing and strictly enforcing rules and regulations in Palestine to protect population health.

Keywords: environmental exposure, quarry dust, respiratory disease, lung function tests, Palestine

1. Introduction

[Go to: ▶](#)

Appendix 5.4 C

From: Neil Kirby <neil.kirby@worcsregservices.gov.uk>
Sent: 14 October 2021 13:17
To: Aldridge, Steven <SAldridge@worcestershire.gov.uk>
Subject: RE: Lea Castle Farm Quarry - Air Quality Query

Hi Steve

Here's my fourpenny worth:

The air quality objectives are set by the Air Quality (England) Regulations 2000 as amended 2002 which sets targets of:

Nitrogen Dioxide: 1 Hour Mean - 200 $\mu\text{g}/\text{m}^3$ Not to be exceeded more than 18 times per year
Annual Mean - 40 $\mu\text{g}/\text{m}^3$

PM₁₀: 24 Hour Mean - 50 $\mu\text{g}/\text{m}^3$ Not to be exceeded more than 35 times per year
Annual Mean - 40 $\mu\text{g}/\text{m}^3$

PM_{2.5}: Annual Mean - 25 $\mu\text{g}/\text{m}^3$

Until the new WHO guidelines are incorporated into UK law these are the objectives that air quality is compared to. Whether the proposal would comply with the new WHO Guidelines is immaterial when reviewing an Air Quality Assessment as far as I'm concerned.

You are correct in assuming that the Dust Assessment is assessing the impact of dust from the mineral extraction and vehicle movements on site and the Air Quality Assessment is modelling just off site vehicle emissions.

Regards

Neil

Neil Kirby

Senior Technical Officer

Tel: 01562 732584

Wyre Forest House, Finepoint Way, Kidderminster, Worcestershire, DY11 7WF

Mobile: 07779 628996

Fax: 01562 745516

E-mail: neil.kirby@worcsregservices.gov.uk

Web: <http://www.worcsregservices.gov.uk/>



Appendix 5.4 F

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- Particle toxicology
- Miscellaneous
- Other considerations
- References
- Annex A: Oxidative potential of particulate matter: PubMed selected papers
- COMEAP sub-group on the differential toxicity of particulate matter according to source or constituents
- Acknowledgements

specific pollutants and the high number of confounding variables, occupational exposures to PM were considered beyond the scope of this report, as they were in most of the papers considered

- the biological constituents or contaminants of PM such as endotoxin content
- the consequences of any interaction between PM and gaseous co-pollutants

ANSES review

18. The ANSES reviewers took the REVIHAAP report (WHO, 2013) as their starting point, and considered subsequent literature up to February 2016. They addressed PM components (for example, EC and PAHs), particle size (coarse, fine and ultrafine) and sources (such as coal combustion, traffic, agriculture, and so on). Publications investigating PM₁₀ and PM_{2.5} without chemical speciation or source apportionment were not included. Epidemiological (in humans) and toxicological (in animals) studies were considered, but not findings from in vitro or in silico studies (for example, cell cultures). Human 'semi-experimental' studies were included, for example, studies where students moved between urban and sub-urban areas, or in the vicinity of a steel plant, or cross-over trials with subjects travelling with or without air purifier respirators. Animal evidence was based on (sub)acute and (sub)chronic exposures, whereas single exposure studies alone were considered to be 'inadequate' levels of evidence. Health outcomes were separated into effects of short- (one to several days) and long-term (one to several years) exposures as well as further categorised as respiratory health, cardiovascular health, all-cause mortality, all-cause hospitalisations, neurological health, perinatal health, reproductive health, lung cancer, other cancers, and diabetes. The review aimed to address the quantity and quality of the evidence for individual constituents but not to rank the relative risks and potencies or toxicities of the various PM compounds or sources. In paragraphs 19 to 27, the sub-group has summarised the conclusions of the ANSES report.

19. There was a large volume of new studies to be considered, but the amount of evidence varied greatly for different PM constituents (see Figure 1). Associations were found for both/either short and/or long-term exposures, depending on the constituents and health parameter combination. Summary tables reflecting the weight of new evidence are replicated below.

20. **Coarse and ultrafine PM** There has been an increase in evidence supporting the



Print this page

Appendix 5.4 J

From: Joseph Geesin <Joseph.Geesin@worcsregservices.gov.uk>
Sent: 18 January 2021 15:20
To: Aldridge, Steven
Subject: RE: Action Group Comments - Land at Lea Castle Farm, Kidderminster, Worcestershire - Ref: 19/000053/CM

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Steve

Re: Dust and Noise

WRS believe that the agreed noise and dust action plans are robust enough to deal with issues raised; however, you may wish to run these by the applicant's noise and dust specialist and we would be happy to work with them should any changes to the action plans be made.

Kind regards
Joe Geesin

From: Aldridge, Steven [mailto:SAldridge@worcestershire.gov.uk]
Sent: 13 January 2021 15:12
To: Joseph Geesin; Neil Kirby
Cc: WRS Enquiries
Subject: External Email : Action Group Comments - Land at Lea Castle Farm, Kidderminster, Worcestershire - Ref: 19/000053/CM

Hi Joseph and Neil,

Application Ref: 19/000053/CM **Grid Ref:** (E) 383959, (N) 278992
Applicant: NRS Aggregates Ltd
Proposal: Proposed sand and gravel quarry with progressive restoration using site derived and imported inert material to agricultural parkland, public access and nature enhancement
Location: Land at Lea Castle Farm, Wolverley Road, Broadwaters, Kidderminster, Worcestershire

Further to your comments on the above proposal, the Action Group have now submitted their comments (see attached), which includes sections on noise and air quality (including dust). I would be grateful if you can confirm in light of these comments whether your comments are still valid, or whether you may wish to add or amend your comments in any way? I would be grateful for a response by **3 February 2021**, if this is not possible, please let me know.

All the best

Steve

Steven Aldridge

Team Manager – Development Management
Worcestershire County Council
County Hall, Spetchley Road, Worcester, WR5 2NP
Tel: 01905 843510
Mob: 07985334367
Email: saldridge@worcestershire.gov.uk



From: Joseph Geesin <Joseph.Geesin@worcsregservices.gov.uk>
Sent: 26 November 2020 14:34
To: Aldridge, Steven <SAldridge@worcestershire.gov.uk>
Subject: RE: Further Information (Regulation 25) - Land at Lea Castle Farm, Kidderminster, Worcestershire - Ref: 19/000053/CM

Dear Steven

Thank you for your email. And further to this morning's telephone conversation, WRS can confirm that we believe the developer's noise and dust management plan to be robust enough to be both proactive (concerns) and reactive (complaints) in minimising any noise and dust issues should they arise.

WRS believe that our previous comments still stand. We would not recommend any variation on the hours originally stipulated by us, and any change to the seasonal timescale for clearance works should only be undertaken on agreement with the Local Planning Authority, with additional mitigation should it be required.

Kind regards
Joe Geesin

Joseph Geesin

Technical Officer
Wyre Forest House, Finepoint Way, Kidderminster, Worcestershire, Worcestershire
E-mail: Joseph.Geesin@worcsregservices.gov.uk
Web: <http://www.worcsregservices.gov.uk/>



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From: Aldridge, Steven [<mailto:SAldridge@worcestershires.gov.uk>]
Sent: 26 November 2020 10:42
To: WRS Enquiries
Cc: Chris Poole; Joseph Geesin
Subject: External Email : RE: Further Information (Regulation 25) - Land at Lea Castle Farm, Kidderminster, Worcestershire - Ref: 19/000053/CM

This email originated from outside of the organisation

STOP : Were you expecting this email? Does it look genuine?

THINK : Before you **CLICK** on any links or **OPEN** any attachments.

Hi Joseph,

Application Ref: 19/000053/CM **Grid Ref:** (E) 383959, (N) 278992

Applicant: NRS Aggregates Ltd

Proposal: Proposed sand and gravel quarry with progressive restoration using site derived and imported inert material to agricultural parkland, public access and nature enhancement

Location: Land at Lea Castle Farm, Wolverley Road, Broadwaters, Kidderminster, Worcestershire

Further to the re-consultation email below on the above proposal. I have received comments from a local resident raising objections on dust grounds (see attached). I would be grateful if you take these into account when providing your response to the further consultation.

All the best

Steve

Steven Aldridge

Team Manager – Development Management
Worcestershire County Council
County Hall, Spetchley Road, Worcester, WR5 2NP
Tel: 01905 843510
Mob: 07985334367
Email: saldridge@worcestershires.gov.uk



From: Development Control team
Sent: 19 November 2020 13:01
To: "wrsenquiries@worcsregservices.gov.uk" (wrsenquiries@worcsregservices.gov.uk)
<wrsenquiries@worcsregservices.gov.uk>
Cc: 'chris.poole@worcsregservices.gov.uk' <chris.poole@worcsregservices.gov.uk>;

'Joseph.Geesin@worcsregservices.gov.uk' <Joseph.Geesin@worcsregservices.gov.uk>

Subject: Further Information (Regulation 25) - Land at Lea Castle Farm, Kidderminster, Worcestershire - Ref: 19/000053/CM

Dear Sir/Madam,

**Re-Consultation on a Planning Application (County Matter)
Town & Country Planning Act 1990 (as amended)
Town and Country Planning (Environmental Impact Assessment) Regulations 2017
The Town and Country Planning (Development Management Procedure, Listed Buildings and
Environmental Impact Assessment) (England) (Coronavirus) (Amendment) Regulations 2020**

Submission of Further Information in respect of the Environmental Statement relating to the following planning application

Application Ref: 19/000053/CM **Grid Ref:** (E) 383959, (N) 278992

Applicant: NRS Aggregates Ltd

Proposal: Proposed sand and gravel quarry with progressive restoration using site derived and imported inert material to agricultural parkland, public access and nature enhancement

Location: Land at Lea Castle Farm, Wolverley Road, Broadwaters, Kidderminster, Worcestershire

On 10 January 2020 NRS Aggregates Ltd applied to Worcestershire County Council for planning permission for the above proposal. You will recall I consulted you on the above application for planning permission in February 2020.

Following the consideration of the comments that were received on the application and Environmental Statement, the County Council wrote to the applicant in June 2020 requesting further information in respect of the Environmental Statement. On 27 October 2020 the applicant submitted the requested further information, and the County Council are now seeking comments on this further information in relation to a number of matters including: water environment, ecology and biodiversity, landscape, agricultural land classification and soils, cultural heritage, transport movement and access, rights of way, and restoration and aftercare.

The applicant is seeking planning permission to extract approximately 3 million tonnes of sand and gravel over a total of 6 phases. The land would be progressively restored using site derived and imported inert material to agricultural parkland, public access and nature enhancement. The applicant estimates the development would take approximately 11 years to complete.

A copy of this further information together with the planning application, the plans, the Environmental Statement, the Non-Technical Summary and other documents submitted with the application can be inspected online at: www.worcestershire.gov.uk/eplanning using the application reference 19/000053/CM until **4 January 2021**. When searching by application reference, please ensure that the full application reference number, including the suffix are entered into the search field. **Please note:** when viewing the County Council's Planning Application Website you may wish to use an internet search engine such as Google Chrome, Firefox or Microsoft Edge for improved performance and functionality compared to Microsoft Internet Explorer.

I would be grateful to receive any comments that you may wish to make on the further information / application in relation to Noise, Dust, Lighting, Air Quality, Vibration and Contaminated Land by **4 January 2021** by email or by post to the address below. If this is not possible then please let me know.

Due to the coronavirus (COVID-19) pandemic the majority of Council staff are working remotely. We have made arrangements for letters sent via the postal service to be distributed to the appropriate officer. Where possible, we encourage all comments / correspondence to be submitted by email or online using the above link.

Please note that all correspondence regarding any planning application will be available for inspection by the applicant and any interested third parties.

Please do not hesitate to contact me if you have any queries.

Kind regards

Steve

Steven Aldridge
Team Manager – Development Management
Worcestershire County Council
County Hall, Spetchley Road, Worcester, WR5 2NP
Tel: 01905 843510
Mob: 07985334367
Email: saldridge@worcestershire.gov.uk



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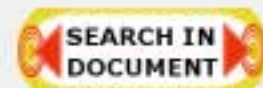


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The inherent moisture content or wetness of the rock processed can have a substantial effect on uncontrolled emissions. This is especially evident during mining, initial material handling, and initial plant process operations such as primary crushing. Surface wetness causes fine particles to agglomerate or adhere to the faces of larger stones with a resultant dust suppression effect. However, as new fine particles are created by crushing and attrition, and as the moisture content is reduced by evaporation, this suppressive effect diminishes and may even disappear. Depending on the geographic and climatic conditions, the moisture content of the mined rock ranges from nearly zero to several percent.

With regard to geographical and seasonal factors, the primary variables affecting uncontrolled particulate emissions are wind parameters and moisture content of the material. Wind parameters will vary with geographical location and season. It can be expected that the level of emissions from sources which are not enclosed (principally fugitive dust sources) will be greater during periods of high winds than periods of low winds. The moisture content of the material also varies with geographical location and season. Therefore, the level of uncontrolled emissions from both fugitive emission sources and fugitive dust sources will be greater in arid regions of the country than in temperate ones and greater during the summer months due to a higher evaporation rate.

2.3. QUARRYING

Sources of particulate emissions from quarrying operations include drilling, blasting, secondary breakage, and the loading and hauling of the mineral to the processing plant. Not all non-metallic mineral deposits require drilling and blasting to fragment portions of the deposits into pieces of material of convenient size for further processing. Some mineral deposits can be removed without blasting by the use of power equipment such as front-end loaders, drag lines, and dredges.

Particulate emissions from drilling operations are primarily caused by the removal of cuttings and dust from the bottom of the hole by air flushing. Compressed air is released down the hollow drill center, forcing cuttings and dust up and out the annular space formed between the hole wall and drill.



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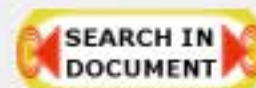
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REDUCE

3.1.3 Quarry Loading Operations

Particulate emissions from the loading of broken rock by loaders or shovels are difficult to control. However, some control may be attained by using water trucks equipped with hoses or portable watering systems to wet down the piles prior to loading.

3.1.4 Haul Roads

A large portion of the fugitive dust generated by quarrying operations results from the transportation of material from the quarry to the processing plant over unpaved haul roads.⁴ Emissions from hauling operations are a function of the condition of the road surface and the volume and speed of vehicular traffic. Consequently, control measures include methods to improve road surfaces or suppress fugitive dust and operational changes to minimize the effect of vehicular traffic.

Various treatment methods applied to control fugitive dust emissions from haul roads include watering, surface treatment with chemical dust suppressants, soil stabilization, and paving. The most common method is watering. Water is applied to the road in a controlled manner by operators of water trucks equipped with either gravity-fed spray bars or pressure sprays. The amount of water required, frequency of application, and effectiveness are dependent on climatic conditions, the conditions of the roadbed, and vehicular traffic.

Other haul road fugitive dust suppression treatments include the application of hygroscopic chemicals (substances that absorb moisture) such as organic sulfonates and calcium chloride. When spread directly over unpaved road surfaces, these chemicals dissolve in the moisture they adsorb and form a clear liquid that is resistant to evaporation. Consequently, they are most effective in areas of relatively high humidity. Because the chemicals are water soluble, however, they may have to be applied repeatedly in areas with frequent rainfall.



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