| Further Response to Representations | |
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# 1 Introduction

1.1.1 This document has been prepared in response to a further representation received with regard to the planning application for the proposed extraction of sand and gravel with low level restoration to meadow species rich grassland with an ephemeral water body at land off Crab Apple Lane, Haddiscoe, Norfolk, NR14 6SJ (Application No. FUL/2022/0056).

1.1.2 This document provides a response to matters raised by Michael Bull and Associates Ltd (MBA) in a document titles Haddiscoe Quarry – Response to Representations – Air Quality Assessments 13 February 2024 (4th March 2024) and to Richard Buxton Solicitors in a letter dated 10th May 2024.

1.1.3 The issue of missing dust sensitive receptors has also been revisited.

# 2 Michael Bull and Associates

## 2.1. Introduction

2.1.1 The note provided by MBA responds to the Response to Representations document provided by Air Quality Assessments Ltd, Document Number J0835/1/F1 dated 13th February 2024.

## 2.2. Appropriate Threshold Concentrations

2.2.1 MBA continue to assert that an inappropriate assessment threshold has been used in assessing the potential health impact due to emissions of fine particulate matter ($PM_{10}$ and $PM_{2.5}$).

### *$PM_{10}$ or $PM_{2.5}$*

2.2.2 MBA argue that the potential health effects due to fine particulate matter should be based on emissions of $PM_{2.5}$. The following explains why this is incorrect and that $PM_{10}$ is the right particulate fraction to use when assessing health impacts from a minerals site.

2.2.3 $PM_{10}$ particles emitted as part of dust from a quarry would mostly be in the coarse range, i.e., larger than $PM_{2.5}$; therefore, $PM_{10}$ should be the focus when assessing the potential health impacts due to quarry operations. MBA provide a quote from IAQM construction dust guidance which states (IAQM, 2024a):

*"Exposure to $PM_{10}$ has long been associated with a range of health effects, with an increasing focus on the smallest particles such as $PM_{2.5}$ and smaller".*

2.2.4 The statement relates to health effects from $PM_{10}$ and $PM_{2.5}$ in general, not specific to dust. Most $PM_{2.5}$ is due to combustion emissions. The IAQM construction dust guidance states:

*"According to the Greater London Authority road transport is the largest individual source of $PM_{2.5}$ in London, accounting for 30 per cent of local emissions. Construction, which includes emissions from Non-Road Mobile Machinery, is the third largest source making up 15 per cent of local emissions. The primary source of the smallest particles is therefore likely to be related to the use of (non-road mobile machinery or NRMM) where not properly controlled."*

2.2.5 The IAQM construction dust guidance then goes on to describe a risk assessment methodology that covers the health effects due to $PM_{10}$ only, with no separate assessment for $PM_{2.5}$. It should be noted that the IAQM construction dust guidance was published after the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 that set out two new legally binding targets for $PM_{2.5}$ came into force. With regard to the construction dust guidance and $PM_{2.5}$, the IAQM include the following statement on their website that indicates that there is insufficient knowledge with regards $PM_{2.5}$ emissions from construction sites for those emissions to be included in the assessment method (IAQM, 2024b):

*"Please note that, in relation to small particulates, this guidance is focused on $PM_{10}$. This is due to a current lack of empirical evidence regarding $PM_{2.5}$ emissions from*

*construction sites specifically. Updates to this guidance will be made where appropriate as more evidence on $PM_{2.5}$ is gathered."*

2.2.6 The IAQM construction dust guidance does include an estimate of the $PM_{2.5}$ content of $PM_{10}$:

*"For construction as a whole, it is recommended that the average $PM_{2.5}$ content of $PM_{10}$ should be assumed to be 10%."*

2.2.7 The fraction of $PM_{2.5}$ in $PM_{10}$ from a sand and gravel minerals site is likely to be similar, if not lower due to the lack of cementitious materials, to that at a construction site. As stated by the IAQM, most of the $PM_{2.5}$ fraction coming from a construction site is due to uncontrolled NRMM emissions, not dust. Therefore, it is clear that an assessment of dust health effects based on $PM_{2.5}$ would miss more than 90% of the fine particulate emission due to dust.

2.2.8 The Minerals nPPG is clear that health impacts from minerals sites should be assessed against the $PM_{10}$ air quality objectives and as the Minerals nPPG has not been amended since the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 came into force it is this current guidance that needs to be followed.

### *World Health Organisation Air Quality Guidelines*

2.2.9 The WHO guidelines provide a target for national, regional and city governments to work towards to improve air quality. The WHO guidelines are not air quality standards or legally binding recommendations; they provide WHO Member States with an evidence-informed tool that they can use to inform legislation and policy. The WHO states (World Health Organisation, 2024):

*"Governments across the world use the guidelines in different ways depending on their technical capabilities, economic capacity, air quality management policies and other political and social factors. Before adopting the WHO guideline values as legally based standards, governments should consider their unique, local conditions."*

2.2.10 The WHO air quality guidelines are not meant to be directly implemented as air quality standards.

2.2.11 The WHO guidelines recognise that it is not possible to immediately achieve the guideline values and include interim targets that are higher than the guideline levels, but which authorities in highly polluted areas can use to develop pollution reduction policies that are achievable within realistic time frames. The WHO states that :

*"While achievement of the AQG levels should be the ultimate goal of actions to implement the guidelines, this might be a difficult task for many countries and regions struggling with high air pollution levels. Therefore, gradual progress in improving air quality, marked by the achievement of interim targets, should be considered a critical indicator of improving health conditions for populations."*

2.2.12 The UK annual mean objectives/limit values for $PM_{10}$ and $PM_{2.5}$ are lower than the WHO interim target 2 values of 50µg/m$^3$ and 25µg/m$^3$ respectively. The UK $PM_{2.5}$ annual mean interim target value is lower than the WHO interim target 3 value and the UK $PM_{2.5}$ annual mean target value is at the WHO interim target 4 value.

Therefore, the UK government has taken steps to improve air quality and work towards the WHO air quality guideline values.

2.2.13 In Section 6 Implementation of the Guidelines the WHO state:

*"The WHO air quality guidelines set goals for protecting public health on a worldwide scale. They were established through a rigorous process of revision and evaluation of scientific evidence on the health effects of air pollutants and, like other WHO guidelines, are not legally binding recommendations. National standards are developed through a policy-making process by each country, have legal status and are based on the specific conditions of the country itself."*

2.2.14 The Air Quality Standards for PM in the UK are the limit values set out in **Table 1** and these are the relevant assessment criteria for health effects due to PM. The Air Quality Standards have been set as policy objectives with regards Local Air Quality Management (LAQM).

**Table 1: The Air Quality Limit Values for $PM_{10}$ and $PM_{2.5}$**

| Pollutant | Concentration Measured As | Limit Values |
|---|---|---|
| **$PM_{10}$** | 24-hour Mean | 50 µg/m$^3$ not to be exceeded more than 35 times a year |
| | Annual Mean | 40 µg/m$^3$ |
| **$PM_{2.5}$** | Annual Mean | 20 µg/m$^3$ |

2.2.15 With regard to air quality, the NPPF refers to limit values and objectives, stating that:

*"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, …"*

2.2.16 The Minerals nPPG is clear that impacts due to $PM_{10}$ emissions should be assessed against the air quality objectives.

2.2.17 The Norfolk Core Strategy and Minerals and Waste Development Management Policies Development Plan Document 2010-2026 includes Core Strategy Policy CS15-Transport, part of which states that air quality impacts relate to the air quality objectives:

*"c) Unacceptable impacts on air quality (particularly in relation to any potential breaches of National Air Quality Objectives and impacts on any Air Quality Management Areas) and residential and rural amenity, including from odour and noise; …"*

2.2.18 The IAQM minerals dust guidance is current guidance that includes the 17µg/m$^3$ screening threshold for $PM_{10}$ based on achieving the $PM_{10}$ objectives.

2.2.19 Therefore, any planning decision concerning the potential air quality health impacts of the proposed development should be made with regard to the air quality limit values/objectives. The WHO guidelines are not relevant.

### *European Union Air Quality Standards*

2.2.20 The UK left the European Union on 31st January 2020 and any future changes made to European air quality standards will not apply in the UK.

# 3 Richard Buxton Solicitors

3.1.1 Richard Buxton Solicitors state:

*"Given the detail set out by Dr Bull about the clear evidence that there are health effects of fine particulate matter (as $PM_{10}$) below the 17µg/$m^3$ level as evidenced by the changes in standards and targets and that there is an increasing focus on $PM_{2.5}$ rather than $PM_{10}$, the Council should be considering whether it is appropriate in the circumstances to allow the applicant's assessment to remain as it is. Especially in the circumstances of so many close by sensitive receptors, the Council should be adopting the precautionary principle here. It should also be asking that the applicant's expert to follow their own institute's code of conduct to be "guided by the principle of applying the most appropriate science".*

3.1.2 It has been established that $PM_{10}$ is the correct PM fraction to use when assessing health impacts from minerals sites. It has also been established that the $PM_{10}$ air quality limit values/objectives are the correct assessment criteria.

3.1.3 The screening threshold of 17µg/$m^3$ for $PM_{10}$ health effects is extremely precautionary, as it is used for screening impacts from all mineral sites, including those with higher dust emission potential, such as clay quarries and hard rock quarries using blasting, and assumes that there could be a process contribution of up to 15µg/$m^3$. Evidence from the IAQM indicates that the process contribution from a sand and gravel quarry would be well below 1µg/$m^3$.

3.1.4 With regards the IAQM Code of Conduct, the full text of item 1 is that members will:

*"Maintain professional integrity at all times and be guided by the principle of applying the most appropriate science/practice for any given task. This requires members to display objectivity and refrain from being selective or partial when presenting data or facts for a written report or in oral form. Actions must not be taken that misrepresent the IAQM or are contrary to the interests of the IAQM."*

3.1.5 By ensuring that the Air Quality Assessment for Haddiscoe Quarry has been completed in accordance with current UK air quality legislation, planning policy and guidance, including guidance published by the IAQM, the assessor has complied with IAQM Code of Conduct.

# 4 Missing Receptors

4.1.1 The fact that not all receptors that may be affected by dust emissions from the proposed development were included in the original assessment has been addressed in the previous Response to Representations (Document Number J0835/1/F1).

4.1.2 The closest dust sensitive receptors in all directions were included in the assessment to provide a representative sample of potential impacts. Including every single receptor in the vicinity of the application site is unnecessary and does not affect the conclusions of the assessment. Impacts at receptors further from potentially dust emitting sources would be smaller than at the representative receptors closest to the application site.

4.1.3 With the 20m deep belt of trees and shrubs will be retained between the extraction works and the receptors, and the screening bunds constructed between the extraction works and the vegetation belt, there will be a negligible risk of dust effects at sensitive receptors.

# 5 References

IAQM. (2024a). *Guidance on the Assessment of Dust from Demolition and Construction v2.2.*

IAQM. (2024b). *Guidance*. Retrieved from IAQM: https://iaqm.co.uk/guidance/

World Health Organisation. (2024). *What are the WHO Air quality guidelines?* Retrieved from https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines