



Second Regulation 25 Response	
Hamble Lane Reg 25, Hampshire	
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## 1 Introduction

1.1.1 This document has been prepared in response to a request for further information by Hampshire County Council under Regulation 25 of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

1.1.2 The request for further information relates to the planning application for the proposed extraction of sand and gravel, with restoration to grazing land and recreation using imported inert restoration materials, the erection of associated plant and infrastructure and the creation of a new footpath and access onto Hamble Lane at Hamble Airfield (Application No. CS/22/92277). With regard to dust and air quality, the Regulation 25 request requires the following information:

*“5. Update the ES to include additional information on the proposed mitigation and their impacts on the AQMA, more information on the consideration of changes from the Environment Act (2021) in relation to PM<sub>2.5</sub>;*

*6. Provide details/evidence from comparable existing sites where possible to include:*

- complaints histories;*
- measurements of TPM, PM<sub>10</sub> and PM<sub>2.5</sub> at various distances and directions from site boundaries;*
- the effects of variation in relative humidity and wind speed on dust migration and secondary dust emissions;*
- Modelling techniques, such as polar plots could use this data to help demonstrate source attribution, effects of wind speed and direction etc;*
- Conclusions drawn could be used to support the assumptions made during the qualitative assessment of the proposed site;*

*7. Provide modelled dust emission exposure patterns on local receptors, including an assessment of the annual average, 24-hour average, hourly averages and the impact of seasonal weather conditions on the release and transport of particulates;*

*8. Provide a response to the UKHSA who have requested details of current level of total suspended particulates (TSP), PM<sub>10</sub> and PM<sub>2.5</sub>. Identify existing local sources of PM<sub>10</sub> and TSPs in the local area;*

*9. Provide a standalone Dust Management Plan;*

*10. Provide additional on-site Meteorological data to demonstrate the potential pathway for wind-blown dust exposure at sensitive receptors surrounding the site, taking account of the varying wind direction, relative humidity, and rainfall. These assessments should ideally be supported by data from similar sites.”*

1.1.3 With regard to human health/air quality, the Regulation 25 request requires the following information:

*“A clarification response on the matters raised by Eastleigh Borough Council, UKHSA and Hamble Peninsular Residents Group letter (dated 9th July 2023) is requested in relation to air quality and human health. This should include but not be limited to:*

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- *reference to World Health Organisation (WHO) stance relating to non-threshold effects and the significance of respirable particulates on health.*
  - *clarification based on the modelled data for source apportionment for activities including quarrying, stockpiling, vehicle movements, mineral processing, and the processing of imported infill materials;*
  - *clarification provision of a 'dust monitoring programme' in the vicinity of the proposed quarry has been used in the baseline data for quarry emissions;*
  - *provision of a Health Impact Assessment;*

*A clarification response on the matters raised by Hamble Peninsular Residents Group letter dated 9th July 2023 is requested in relation to human health."*

## 2 Regulation 25 Responses

### ***5. Update the ES to include additional information on the proposed mitigation and their impacts on the AQMA, more information on the consideration of changes from the Environment Act (2021) in relation to PM<sub>2.5</sub>.***

- 2.1.1 The air quality impact on receptors adjacent to roads affected by the proposed development and within the Hamble Lane AQMA has been assessed using an air quality dispersion model and the impacts have been found to be negligible. The assessment takes account of the total pollutant concentration at each receptor with the proposed development in operation and the change in concentration due to the proposed development. As the air quality impact is negligible at all receptors, the impact on local receptors and the AQMA due to HGV emissions is deemed to be not significant and additional mitigation due to road traffic emissions is not required.
- 2.1.2 The Environment Act 2021 requires the government to set at least one long-term air-quality target, as well as a target for fine particulate matter (PM<sub>2.5</sub>). New PM<sub>2.5</sub> targets were implemented in law in England by The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (The Stationery Office, 2023). The regulations set out two legally binding targets for PM<sub>2.5</sub>, with interim targets for each set out in the Environmental Improvement Plan 2023 (Defra, 2023b). The PM<sub>2.5</sub> targets are:
- 10µg/m<sup>3</sup> annual mean concentration PM<sub>2.5</sub> nationwide by 2040, with an interim target of 12µg/m<sup>3</sup> by January 2028; and
  - 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.
- 2.1.3 A new Air Quality Strategy for England was published in April 2023 (Defra, 2023a). The Air Quality Strategy sets out the actions that Defra expects local authorities to take in support of long-term air quality goals, including the new PM<sub>2.5</sub> targets, and provides a framework to enable local authorities to make the best use of their powers and make improvements for their communities. No reference is made in the new Air Quality Strategy to a previous PM<sub>2.5</sub> objective of 25µg/m<sup>3</sup>; therefore, air quality impacts are now assessed against the annual mean air quality limit value for PM<sub>2.5</sub> of 20µg/m<sup>3</sup>, as established by the Air Quality Standards Regulations 2010, with the PM<sub>2.5</sub> limit value amended to 20µg/m<sup>3</sup> by S.I. 2020/1313. The Air Quality Standards Regulations 2010 (as amended) set legally binding limit values for concentrations of major air pollutants in outdoor air that impact public health, including NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> (The Stationary Office, 2010).
- 2.1.4 Annual mean PM<sub>2.5</sub> concentrations of 9.3 to 11.2µg/m<sup>3</sup> have been predicted at roadside receptors in 2023 in the Air Quality ES Chapter, well below the PM<sub>2.5</sub> 20µg/m<sup>3</sup> limit value. The % change in PM<sub>2.5</sub> concentrations at roadside receptors due to traffic generated by the proposed development is 0%; therefore, the impact is described as negligible.
- 2.1.5 The predicted 2023 concentrations are below the 12µg/m<sup>3</sup> January 2028 interim target; therefore, the proposed development will not hinder progress towards the interim target.

- 2.1.6 It should be noted that PM<sub>2.5</sub> emissions arise primarily from combustion sources and would not form a significant fraction of PM<sub>10</sub> emissions due to minerals operations.
- 2.1.7 It should also be noted that the planning application for the proposed development was submitted in December 2021, which predates the The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 and Air Quality Strategy for England, published in April 2023.

**6. Provide details/evidence from comparable existing sites where possible to include:**

- **complaints histories;**
  - **measurements of TPM, PM<sub>10</sub> and PM<sub>2.5</sub> at various distances and directions from site boundaries;**
  - **the effects of variation in relative humidity and wind speed on dust migration and secondary dust emissions;**
  - **Modelling techniques, such as polar plots could use this data to help demonstrate source attribution, effects of wind speed and direction etc;**
  - **Conclusions drawn could be used to support the assumptions made during the qualitative assessment of the proposed site.**
- 2.1.8 Cemex have investigated complaints histories at the nearest similar sites Hamer Warren, Langley, Datchet, Bramshill and Eversley. The site managers have advised that there have not been any air quality complaints during the operation of these sites.
- 2.1.9 Cemex have not been asked to monitor air quality to this level at any site previously and as such do not have any air quality or meteorological monitoring data from similar sand and gravel quarries that it operates; therefore, there is no data to analyse.
- 2.1.10 Some monitoring data is available in Appendix 2 of The Institute of Air Quality Management (IAQM)<sup>1</sup> Guidance on the Assessment of Mineral Dust Impacts for Planning (2016). The IAQM Guidance includes graphs showing the fall-off in PM<sub>10</sub> concentrations with distance from the source at mineral sites, produced using data provided by members of the IAQM Mineral Guidance Working Group. Full details and an analysis of this data is set out below in the response to the UKHSA (at Paragraph 2.1.22).

**7. Provide modelled dust emission exposure patterns on local receptors, including an assessment of the annual average, 24-hour average, hourly averages and the impact of seasonal weather conditions on the release and transport of particulates.**

- 2.1.11 There is a lack of UK derived emission factors for minerals sites that could be used for dispersion modelling. Without reliable emission factors any output from a dispersion model would have a very high level of uncertainty, i.e. rubbish in, rubbish out. Therefore, it is not possible to accurately predict impacts using a dispersion model. The Institute of Air Quality Management (IAQM)<sup>2</sup> Guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016) states that: “Detailed dispersion

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<sup>1</sup> The IAQM is the professional body for air quality professionals <https://iaqm.co.uk>.

<sup>2</sup> The IAQM is the professional body for air quality professionals <https://iaqm.co.uk>.

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*modelling of dust impacts from minerals sites in the UK is extremely rare and is not generally recommended by the IAQM given the lack of accurate UK emissions data for this sector.”*

2.1.12 With regard to dust emissions, the Local Air Quality Management Technical Guidance published by Defra to support local authorities in carrying out their duties under LAQM states that (Defra, 2022):

*“Emissions from these sources are not well quantified, and it is therefore difficult to predict PM<sub>10</sub> concentrations with any accuracy.”*

**8. Provide a response to the UKHSA who have requested details of current level of total suspended particulates (TSP), PM<sub>10</sub> and PM<sub>2.5</sub>. Identify existing local sources of PM<sub>10</sub> and TSPs in the local area.**

2.1.13 The responses provided below reference the UKHSA response dated 22<sup>nd</sup> February 2023.

2.1.14 UKHSA accept the methodology used for the road traffic assessment and consider that this element of the assessment is not UKHSA’s primary concern.

2.1.15 UKHSA raise concerns that the dust assessment relies on Defra background mapping data to provide an estimate of baseline air quality and that no monitoring has been undertaken. However, it should be noted that the UKHSA accept the methodology used for the road traffic assessment, which uses the same Defra background mapping data added to the predicted road traffic emissions contribution, to determine total predicted pollutant concentrations.

2.1.16 The Defra background concentration maps are produced to assist local authorities in carrying Local Air Quality Management (LAQM) Review and Assessments and are used extensively by local authorities and air quality professionals. The current background maps have been validated against national monitoring undertaken in 2018 and are considered to provide a robust estimate of background concentrations. The predicted road contribution of PM<sub>10</sub> emissions has been added to the Defra background concentration to provide the baseline air quality at receptors close to roads affected by the proposed development. The road contributions have been predicted using an atmospheric dispersion model, which has been verified against local monitoring data. The highest baseline (background + road emissions) PM<sub>10</sub> concentration locally, i.e., within 250m of dust emitting activities, would be at receptor R1, close to the B3397. The maximum predicted annual mean PM<sub>10</sub> concentration at receptor R1 is 14.6µg/m<sup>3</sup> in 2019. Annual mean PM<sub>10</sub> concentrations going into the future, and further from the road, would be lower than this baseline concentration.

2.1.17 No PM<sub>10</sub> monitoring is undertaken by Eastleigh Borough Council within the study area; however, an automatic monitoring site (site ES1) is located within an Air Quality Management Area (AQMA) close to the A335 in Eastleigh, approximately 10km to the north of the proposed quarry. Annual mean PM<sub>10</sub> concentrations at the roadside site ranged from 21.1-22.5µg/m<sup>3</sup> between 2016 and 2019 and the 40µg/m<sup>3</sup> annual mean objective has been achieved by a wide margin. PM<sub>10</sub> concentrations close to the application site, which is not within an AQMA and is in a more rural location, would be lower than those measured at the ES1 automatic monitoring site.



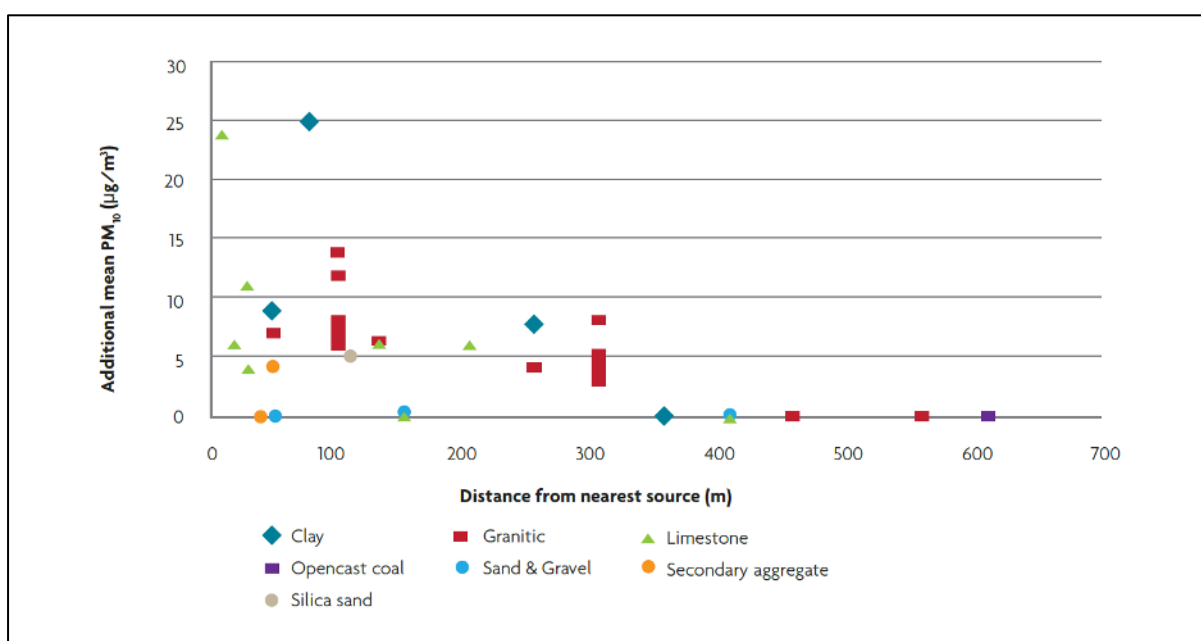
- 2.1.18 It is considered that the predicted concentration at receptor R1 in 2019 provides a robust estimate of baseline PM<sub>10</sub> concentrations within the area that may be affected by dust emissions from onsite operations and that monitoring should not be necessary prior to determining the planning application.
- 2.1.19 UKHSA raise concerns that a solely qualitative assessment has been undertaken but accepts that emissions data is lacking for mineral sites and that this would reduce the accuracy of any modelling. It is not possible to accurately predict impacts using a dispersion model without robust emissions factors. The IAQM state that: *“Detailed dispersion modelling of dust impacts from minerals sites in the UK is extremely rare and is not generally recommended by the IAQM given the lack of accurate UK emissions data for this sector.”*
- 2.1.20 UKHSA has asked that, to increase confidence in the qualitative assessment, they would prefer that it was supported by evidence from comparable existing sites and state that:
- “Evidence should include complaints histories, measurements of TPM, PM<sub>10</sub> and PM<sub>2.5</sub> at various distances and directions from site boundaries and the effects of variation in relative humidity and wind speed on dust migration and secondary dust emissions. Modelling techniques, such as polar plots could use this data to help demonstrate source attribution, effects of wind speed and direction etc. Any conclusions drawn could be used to support the assumptions made during the qualitative assessment of the proposed site.”*
- 2.1.21 It should be noted that PM<sub>2.5</sub> emissions arise primarily from combustion sources and would not form a significant fraction of PM<sub>10</sub> emissions due to minerals operations.
- 2.1.22 Cemex do not have monitoring data from similar sand and gravel quarries that it operates; however, data is available in Appendix 2 of The Institute of Air Quality Management (IAQM)<sup>3</sup> Guidance on the Assessment of Mineral Dust Impacts for Planning (2016). The IAQM Guidance includes graphs showing the fall-off in PM<sub>10</sub> concentrations with distance from the source at mineral sites, produced using data provided by members of the IAQM Mineral Guidance Working Group. A graph showing the mineral site PM<sub>10</sub> increment as a function of distance from quarry operations by mineral type has been reproduced in **Figure 1** below. **Figure 1** shows that sand and gravel quarries are likely to increase PM<sub>10</sub> concentrations be less than 1µg/m<sup>3</sup> (almost zero) at distances of around 50m, 150m and 400m from quarry operations.
- 2.1.23 Appendix 5 of the IAQM Guidance provides a range of information sources to estimate a PM<sub>10</sub> process contribution from a minerals site. The annual mean PM<sub>10</sub> process contributions from the proposed development estimated using these sources would be in a range from 2-5µg/m<sup>3</sup>.
- 2.1.24 Assuming a very conservative annual mean background PM<sub>10</sub> concentration of 22.5µg/m<sup>3</sup>, from the ES1 automatic monitoring site, and the most conservative PM<sub>10</sub> process contribution from the IAQM Guidance of 5µg/m<sup>3</sup>, would give a total annual mean PM<sub>10</sub> concentration of 27.5µg/m<sup>3</sup>, well below the annual mean PM<sub>10</sub> objective

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<sup>3</sup> The IAQM is the professional body for air quality professionals <https://iaqm.co.uk>.

of  $40\mu\text{g}/\text{m}^3$ , and the air quality assessment level (AQAL) of  $32\mu\text{g}/\text{m}^3$  to ensure compliance with the 24-hour mean  $\text{PM}_{10}$  objective.

2.1.25 It is considered that undertaking  $\text{PM}_{10}$  monitoring at the application site would not provide any useful additional information with regard to determining the baseline air quality, and that  $\text{PM}_{10}$  monitoring of baseline air quality, and the extended analysis of monitoring data, should not be required for the planning application. There are currently no significant  $\text{PM}_{10}$  emissions sources at the application site, or in the local area, and it is considered that the estimated baseline  $\text{PM}_{10}$  concentration determined by adding the Defra background concentration to the road emissions contribution from the dispersion model provides an appropriate estimate of baseline  $\text{PM}_{10}$  concentrations for the planning application. Monitoring of baseline air quality would be undertaken prior to works commencing, as set out in the DMP for the scheme, if the proposed development is granted planning consent.



**Figure 1: Mineral Site  $\text{PM}_{10}$  Increment as a Function of Distance from Quarry Operations by Mineral Type**

2.1.26 UKHSA go on to discuss the meteorological data used in the assessment and provide a wind rose that shows close agreement with the data used in the assessment. UKHSA also provide plots that show seasonal variation in the wind data. UKHSA go on to suggest that seasonal variation should be considered in the assessment and state that:

*“Given this variation we recommend that further consideration be given to the effects of varying wind direction, relative humidity, and rainfall. These assessments should ideally be supported by data from similar sites as discussed above.”*

2.1.27 Operations at the site will take place across the whole year and will not be limited to particular seasons. The dust risk assessment method is based on average weather conditions across the whole year.

2.1.28 The seasonal plots provided by UKHSA show some small variation in wind direction; however, the predominant wind direction in each seasonal plot is from the southwest

and undertaking detailed analysis of the meteorological data to consider seasonality would not change the conclusions of the assessment. The assessment acknowledges that additional water suppression may be needed during prolonged dry weather and/or high winds and the DMP sets out corrective actions should visible dust beyond the site boundary be generated by operations at the proposed development.

- 2.1.29 UKHSA go on to state that they do not endorse the approach to risk assessments relating to PM<sub>10</sub> set out in the IAQM Guidance, i.e., that there is little risk that a process contribution from a dust source would lead to an exceedance of the objectives where background ambient PM<sub>10</sub> concentrations are below 17µg/m<sup>3</sup>. The IAQM approach to screening PM<sub>10</sub> is intended to prevent the need for unnecessarily detailed consideration of PM<sub>10</sub> emissions where there will not be an adverse effect. It should be noted that the screening criterion is conservative as it is used for screening impacts from all mineral's 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<sup>3</sup>. The IAQM approach has been endorsed in planning appeal decisions, including an Appeal Decision from earlier this year Appeal Ref: APP/E1855/W/22/3310099. The Planning Inspector found that no further consideration of PM<sub>10</sub> impacts from the proposed development were required as Defra background concentrations were below the 17µg/m<sup>3</sup> screening threshold. The quote from the planning inspector in that case is provided below:

*"The IAQM Guidance on mineral dust advises that where the long-term background PM<sub>10</sub> concentration is less than 17µg/m<sup>3</sup> there is little risk that additional contributions from a mineral site would lead to an exceedance of the annual mean air quality objective. The guidance advises that if this is the case then no further consideration is typically required. As noted above the Defra data predicts annual mean background concentrations of 11.18-12.01 µg/m<sup>3</sup> in the locality, i.e. well below the recommended screening value of 17 µg/m<sup>3</sup>. On this basis, I accept that no further consideration of potential PM<sub>10</sub> impacts from the proposed development would be required."*

- 2.1.30 UKHSA also note that the Air Quality Chapter adopts the IAQM approach to the assessment of impact on health and uses UK air quality objectives (AQO) as a threshold for the assessment of health impacts. UKHSA go on to state that:

*"we do not accept the premise that simply not exceeding current UK thresholds demonstrates that there is no risk to health."*

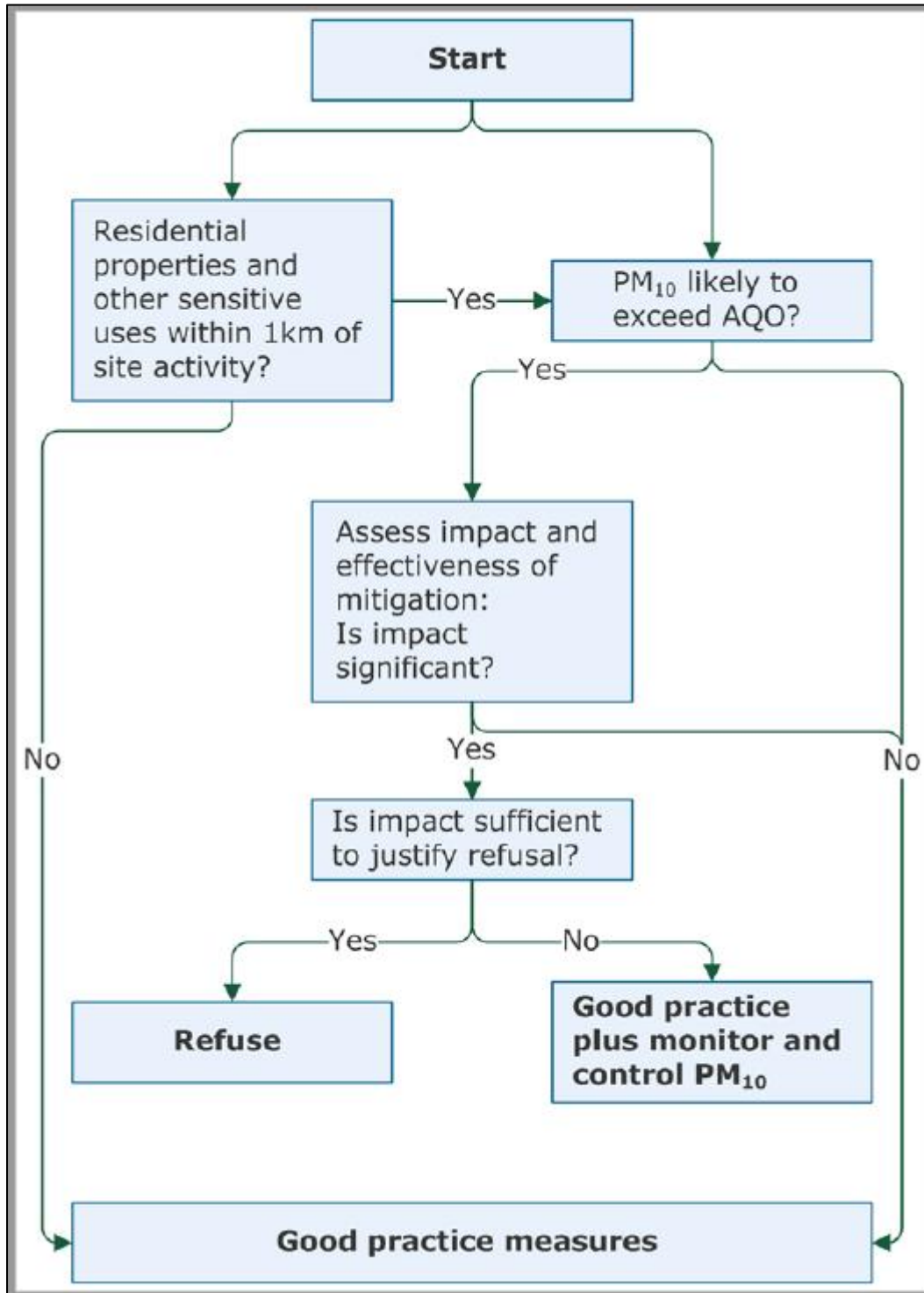
- 2.1.31 The reasoning behind the UKHSA position is that there is increasing evidence that particulates in the PM<sub>10</sub> fraction have no safe level of exposure and that the WHO have significantly reduced recommended exposure levels. However, the use of the AQOs as a threshold for the assessment of health impacts is established in the national Planning Practice Guidance (nPPG). The nPPG states that:

*"Operators should follow the assessment framework for considering the impacts of PM<sub>10</sub> from a proposed site."*<sup>4</sup>

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<sup>4</sup> Paragraph: 030 Reference ID: 27-030-20140306, Revision date: 06 03 2014

2.1.32 The assessment framework is a site assessment flow chart, reproduced at **Figure 2**<sup>5</sup>. The assessment framework is clear that, where PM<sub>10</sub> concentrations are not likely to exceed the AQOs, good practice measures should be sufficient, without the need for monitoring and specific controls on PM<sub>10</sub> emissions.



<sup>5</sup> Paragraph: 032 Reference ID: 27-032-20140306, Revision date: 06 03 2014

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**Figure 2: nPPG PM<sub>10</sub> Assessment Framework**

2.1.33 Appendix 1 of the IAQM Guidance provides examples of recent appeal decisions that consider dust from minerals sites. Regarding PM<sub>10</sub>, the appeal decisions indicate that the site assessment flowchart in the minerals section of the nPPG should form the basis of an assessment, and decisions about acceptability are based on whether the predicted concentrations are likely to fall below the relevant Air Quality Objective.

2.1.34 The evidence provided using Defra's background maps, atmospheric dispersion modelling and the data from the ES1 automatic monitoring site, indicates that baseline PM<sub>10</sub> concentrations within the study area would be well below the annual and 24-hour mean objectives. Given that the contribution to PM<sub>10</sub> concentrations due to the onsite operations at the quarry would likely be significantly less than 1µg/m<sup>3</sup>, it is considered that the AQOs would be achieved by a wide margin and that good practice measures, as set out in the DMP for the scheme, are sufficient to protect the health of local receptors.

2.1.35 UKHSA then states:

*"To avoid uncertainty over the impact of the quarry operations UKHSA recommends that measurements be taken to confirm the current level of Total suspended particulates (TSP), PM<sub>10</sub> and PM<sub>2.5</sub> exposure in the vicinity of the site. This would validate the DEFRA predictions and allow existing sources of particulates in the vicinity be identified. This information could then be used in conjunction with data obtained from similar quarries and used to model or estimate the likely impacts on different receptors as a result of the operation of the proposed site."*

2.1.36 With regard to the predicted Defra background concentrations, these have been validated by Defra using 2018 background monitoring data from sites operated by the UK Government. Monitoring of baseline air quality would be undertaken prior to works commencing, as set out in the DMP for the scheme, if the proposed development is granted planning consent.

2.1.37 UKHSA make some comments regarding restoration materials and plant; however, with the designed in mitigation measures set out in the DMP, the magnitude of dust effect from these sources would be negligible.

2.1.38 UKHSA provide a final statement as follows:

*"We accept that qualitative assessments, using a source / pathway/ receptor methodology, are standard where measured data is not available. However, we recommend that the applicant be asked to increase confidence in their assessment by the inclusion of monitoring and modelling data obtained from similar operational sites elsewhere in the UK.*

*If the planning authority is minded to grant permission at the present time, we recommend that consideration be given to the imposition of planning conditions requiring pre agreed constraints with regards to dust suppression and assessment.*

*1. The local planning authority should consider if the particulate emissions from the site may constitute a material consideration in the determination of this application. If this is agreed, then you may consider asking the applicant to:*

*a. Produce a dust management plan satisfying the local planning authority that the operation of the site will not result in a significant increase in PM<sub>10</sub> levels above the existing background levels.*

*b. Validate the DEFRA Undertake monitoring in the vicinity of the site to confirm background levels for Total Suspended Particulates (TSP), PM<sub>10</sub> and PM<sub>2.5</sub>.*

*Identify existing local sources of PM<sub>10</sub> and TSP in the local area.*

*c. Provide evidence of the numbers of complaints received, and measured levels of PM<sub>10</sub> generated by comparable operational quarries within the UK.*

*d. Use the measured data to model typical dispersion patterns including the effects of relative humidity, wind direction, rainfall, wind speed and wind frequency.*

*e. Use the modelled data to undertake source apportionment for activities including quarrying, stockpiling, vehicle movements, mineral processing, and the processing of imported infill materials.*

*f. Apply these results to the Hamble proposal to validate the qualitative assessment and provide an assessment of the contribution the quarry will make to nuisance dust and PM<sub>10</sub> exposures around the proposed site.*

*2. Prior to the commencement of operation, and as part of the dust management plan, data from other operational sites should be used to identify specific site operations and conditions of wind speed, temperature and relative humidity that result in elevated PM<sub>10</sub> and PM<sub>2.5</sub> and:*

*a. That dust suppression requirement be implemented when pre agreed meteorological conditions are met or if visible dust emissions are observed from the site.*

*b. If dust suppression is required and appropriate equipment or water is unavailable then all quarrying, processing, and tipping operations should cease until dust suppression can be fully reinstated.”*

2.1.39 With regard to point 1a, a DMP for the proposed development has been produced.

2.1.40 With regard to point 1b, it is considered that the Defra background data and data from the dispersion model provide sufficient information to determine the background PM<sub>10</sub> concentrations in the vicinity of the application site.

2.1.41 With regard to point 1c, Cemex do not have PM<sub>10</sub> monitoring data from other comparable sites in the UK as air quality monitoring is not a normal requirement for sand and gravel sites. Monitoring of baseline air quality and air quality after the commencement of operations would be undertaken as set out in the DMP for the scheme, if the proposed development is granted planning consent.

2.1.42 With regard to point 1d, measured PM<sub>10</sub> concentration data could not be used to set up a dispersion model, reliable emissions data would be required, which is not available, as acknowledged by UKHSA.

2.1.43 With regard to point 1e, source apportionment could only be undertaken if extensive emissions data were available. The dust risk assessment has determined the risk of dust effects from each source qualitatively.



2.1.44 With regard to point 1f, there should be no requirement to undertake an unnecessarily detailed assessment of the dust and PM<sub>10</sub> emissions. The qualitative dust risk assessment has provided a robust assessment of the risk due to visible dust emissions. The IAQM approach to screening PM<sub>10</sub> is intended to prevent the need for unnecessarily detailed consideration of PM<sub>10</sub> emissions where there will not be an adverse effect. Baseline PM<sub>10</sub> concentrations within the area that may be affected by dust emissions from the proposed development are low, and there is no risk of exceedances of the AQOs for PM<sub>10</sub>. With regard to The Minerals nPPG PM<sub>10</sub> site assessment flow chart, good practice measures, as set out in the DMP for the scheme, are sufficient to protect the health of local receptors.

2.1.45 With regard to point 2a and 2b, meteorological conditions will be monitored at the proposed development, and remedial actions taken during adverse conditions, as set out in the DMP.

***9. Provide a standalone Dust Management Plan.***

2.1.46 A Dust Management Plan has been prepared.

***10. Provide additional on-site Meteorological data to demonstrate the potential pathway for wind-blown dust exposure at sensitive receptors surrounding the site, taking account of the varying wind direction, relative humidity, and rainfall. These assessments should ideally be supported by data from similar sites.***

2.1.47 No site specific meteorological data is available from the application site, or other similar sites operated by Cemex. A meteorological station would need to operate for at least a year before the data could be used to review seasonal variability.

***A clarification response on the matters raised by Eastleigh Borough Council, UKHSA and Hamble Peninsular Residents Group letter (dated 9th July 2023) is requested in relation to air quality and human health. This should include but not be limited to:***

***• reference to World Health Organisation (WHO) stance relating to non-threshold effects and the significance of respirable particulates on health.***

2.1.48 The WHO guidelines provide a target for the worlds governments to work towards to improve air quality. The WHO guidelines are neither standards nor legally binding criteria. Legally binding limit values for air quality in the UK are set in the Air Quality Standards Regulations 2010 (as amended), as shown in **Table 1**.

2.1.49 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 set out two legally binding targets for PM<sub>2.5</sub>, with interim targets for each set out in the Environmental Improvement Plan 2023 (The Stationery Office, 2023; Defra, 2023b). The PM<sub>2.5</sub> targets are:

- 10µg/m<sup>3</sup> annual mean concentration PM<sub>2.5</sub> nationwide by 2040, with an interim target of 12µg/m<sup>3</sup> by January 2028; and
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

2.1.50 Assessment of air quality impacts is undertaken against the air quality objectives/limit values, not the WHO guidelines.

**Table 1: The Air Quality Limit Values for NO<sub>2</sub> and PM<sub>10</sub> and the PM<sub>2.5</sub>**

Pollutant	Concentration Measured As	Limit Values
NO <sub>2</sub>	1-hour Mean	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m <sup>3</sup>
PM <sub>10</sub>	24-hour Mean	50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual Mean	20 µg/m <sup>3</sup>

• **clarification based on the modelled data for source apportionment for activities including quarrying, stockpiling, vehicle movements, mineral processing, and the processing of imported infill materials.**

2.1.51 It is not possible to accurately predict impacts using a dispersion model without robust emissions factors. The Institute of Air Quality Management (IAQM)<sup>6</sup> Guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016) states that: *“Detailed dispersion modelling of dust impacts from minerals sites in the UK is extremely rare and is not generally recommended by the IAQM given the lack of accurate UK emissions data for this sector.”*

• **clarification provision of a ‘dust monitoring programme’ in the vicinity of the proposed quarry has been used in the baseline data for quarry emissions.**

2.1.52 As discussed above, the baseline air quality at the application site has been determined using Defra background maps.

2.1.53 Cemex will undertake monitoring of visible, or nuisance dust, through a daily visual inspection carried out by the Quarry Manager, or an appropriately trained operator. The inspection would consist of a walk around the active areas with observations made of any visible dust emissions.

2.1.54 Dust deposition to a surface can be measured using a slide or sticky pad to indicate the level of soiling, or the dust deposition mass can be measured by collecting dust in a container over a fixed period, usually a month. The dust flux can also be measured, i.e., the rate of dust travelling through the air.

2.1.55 Dust deposition will be monitored at a suitable location, to be agreed following discussions with relevant stakeholders, with monitoring undertaken prior to operations starting at the quarry in order to determine baseline conditions.

2.1.56 An automatic particulate monitor will be installed at a suitable location, to be agreed following discussions with relevant stakeholders. Monitoring will commence prior to any dust generating activities at the site in order to determine baseline conditions. The automatic monitor shall remain in place for as long as necessary to determine

<sup>6</sup> The IAQM is the professional body for air quality professionals <https://iaqm.co.uk>.



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whether there are any air quality effects due to operations at the site. The automatic monitor will not be removed without prior agreement from stakeholders.

• ***provision of a Health Impact Assessment.***

2.1.57 This is being completed separately.

***A clarification response on the matters raised by Hamble Peninsular Residents Group letter dated 9th July 2023 is requested in relation to human health.***

2.1.58 There seems to be confusion in the Hamble Peninsular Residents Group (HPRG) letter between the impacts from road traffic emissions, visible dust deposition and health impacts from PM<sub>10</sub> due to dust generating activities.

2.1.59 Data presented in Tables 12.7, 12.8 and 12.9 in the Air Quality ES Chapter relates to the health impacts due to road traffic emissions only, not dust. The road traffic impacts have been assessed using an atmospheric dispersion model, which has been verified against local monitoring data. The road traffic emissions impacts have been assessed using the approach outlined by Environmental Protection UK (EPUK) and the IAQM in guidance on Land-Use Planning & Development Control: Planning for Air Quality (EPUK and IAQM, 2017). The air quality impacts have been described at each receptor by determining the percentage change in concentrations relative to an air quality assessment level (AQAL) based on the air quality objectives/limit values and compared this with the total long-term average concentration. Using this approach, the percentage increase in concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> relative to the AQALs has been found to be zero; therefore, the impacts due to road traffic emissions have been described as negligible. UKHSA accept the methodology used for the road traffic assessment and consider that this element of the assessment is not UKHSA's primary concern.

2.1.60 The impacts due to visible dust deposition have been assessed using the qualitative source-pathway-receptor risk assessment approach set out in the IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning. The risk assessment has determined that there would be a negligible risk due to visible dust emissions, with a slight risk at some receptors during the construction of screening bunds. This risk will be of short duration, and once the bunds are complete, they will be effective at screening local receptors from dust emissions. The DMP for the proposed development will ensure that dust assessment forms part of daily inspections, and that dust is primarily controlled by good operational practices, with appropriate measures undertaken to prevent visible dust beyond the site boundary.

2.1.61 The main focus of the comments from the HPRG relates to the potential health effects due to emissions of fine particles due to dust generating activities at the proposed development. The HPRG letter references a range of studies linking air quality and dust emissions to adverse health effects. The fact that poor air quality can have an adverse effect on health is not disputed and the UK government has developed policies and implemented legislation to protect public health with regards air quality.

2.1.62 The assessment determines whether fine particulate (PM<sub>10</sub>) emissions will have an adverse impact on local air quality, which is in effect a proxy for assessing the effects on health.

- 2.1.63 It is established in the Mineral nPPG that operators should follow the assessment framework for considering the impacts of PM<sub>10</sub> from a proposed development, and that the air quality objective for PM<sub>10</sub> is the appropriate metric for determining whether minerals operations will have an effect on health due to dust emissions. The assessment framework is clear that, where PM<sub>10</sub> concentrations are not likely to exceed the air quality objective, good practice measures should be sufficient, without the need for monitoring and specific controls on PM<sub>10</sub> emissions.
- 2.1.64 The evidence provided in the Air Quality ES Chapter, supplemented with the additional information provided above in the response to comments from the UKHSA, clearly establishes that baseline PM<sub>10</sub> concentrations at the application site, and at local receptors that may be affected by PM<sub>10</sub> emissions from the proposed development, are well below the air quality objectives.
- 2.1.65 Comments made by HPRG on the use of Table A2-6 from the IAQM Mineral Guidance to estimate the possible contribution to PM<sub>10</sub> from the proposed development are incorrect. The data from Table A2-6 is the correct data to use to estimate the PM<sub>10</sub> contribution from sand and gravel quarrying at the application site. Table A2-6 shows the contribution to PM<sub>10</sub> concentrations due to quarry emissions only, without including baseline PM<sub>10</sub> which would be specific to the location where the monitoring is being undertaken.
- 2.1.66 The data in Table A2-5 from the IAQM Mineral Guidance shows the total monitored PM<sub>10</sub> concentrations at the quarries where the monitoring was undertaken. The data in Table A2-6 is the same data, but with the local baseline (background and other local sources) removed.
- 2.1.67 Therefore, the estimate of the baseline PM<sub>10</sub> concentration in the vicinity of the application site provided in the response to UKHSA above is robust.

### 3 References

Defra. (2022). *Local Air Quality Management Technical Guidance (TG22)*.

Defra. (2023a, April 28). *Air quality strategy: framework for local authority delivery*. Retrieved from GOV.UK: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery>

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