



Hatfield Aerodrome

Town and Country Planning Act 1990,
Section 78

Application for the establishment of a new quarry on land at the former Hatfield Aerodrome, including a new access onto the A1057, aggregate processing plant, concrete batching plant and other ancillary facilities, together with the importation of inert fill materials for the restoration of the minerals working

Application Ref. 5/0394-16

Section 78 Appeal against refusal of planning permission by
Hertfordshire County Council.

Appeal Ref. APP/M1900/W/21/3278097

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**Proof of Evidence (text) of Gordon Allison BSc
(Hons) MSc, MIAQM, CEnv – Air Quality**

October, 2021

Brett Aggregates Limited

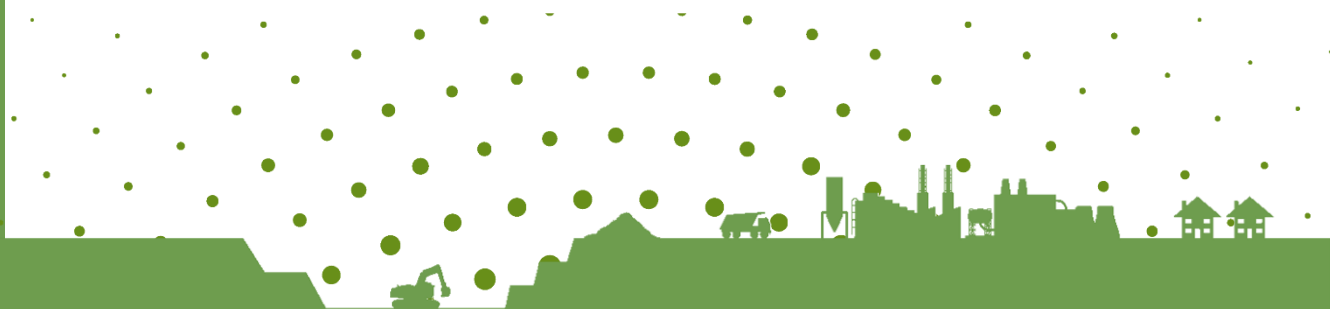


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Introduction

1. My name is Gordon Allison. I work as a principal consultant at DustScan Ltd, trading as DustScanAQ. I have a Bachelor of Science degree in environmental chemistry, and a Master of Science degree in air pollution management and control. I have over twenty years' experience in air quality measurement, management and consulting. I have been a guest lecturer at Birmingham University in air pollution management and control for twenty years. I am member of the Institute of Air Quality Management (IAQM), and a Chartered Environmentalist. I am a director of clearSkies Mark Ltd, an emissions and quality scheme for the domestic stove industry. I am currently the project lead for a joint research project by DustScanAQ and Birmingham University on the 'real-time source apportionment' of particulate matter, which is sponsored by High Speed Two Ltd, and which is relevant to the measurement of fugitive dust emissions. See link <https://transition-air.org.uk/research/>
2. The evidence which I have prepared and provide for this appeal reference APP/M1900/W/21/3278097 in this proof of evidence is true and I confirm that the opinions expressed are my true and professional opinions.
3. DustScanAQ provide dust measurement and air quality consulting services to the minerals industry, including to sand and gravel quarry operators in the South of England.
4. DustScanAQ were contracted by Brett Group to provide air quality expert witness services for this planning appeal. The air quality assessment of the proposed mineral development at Hatfield Aerodrome has been carried out by SLR Consulting Ltd (SLR). I have reviewed the work published by SLR in detail, including the CD1.2 ES1 air quality chapter and appendix, and the CD2.2 ES2 air quality chapter and appendices.

Air Quality Assessment in CD1.2

5. CD1.2 (Environmental Statement of January 2016 – ES1) assesses the impacts on local air quality from the scheme traffic and finds that there is negligible impact caused, which has no significant effect. It follows the appropriate guidance of the time, which was the IAQM Guidance: “Development Control: Planning for Air Quality” then current. The assessment uses data from 2015, and therefore is in need of up-dating, since it relies on traffic data and air pollution data that is now readily replaceable with more recent measurements.
6. Following the best practice guidance, the assessment quantifies the impact of the emissions from the development traffic on nearby residential properties.
7. The effect of the traffic movements to and from the development are assessed at 15 properties selected to represent the greatest change in air quality.
8. The assessment compares the air quality at the receptors with and without the traffic from the development.
9. The traffic data was provided for the assessment by SLR.
10. The traffic data used for the air quality assessment is presented in the assessment. The development traffic is limited to 174 HGV movements/day, joining the A1057 which carries over 14,000 vehicles per day. This is a change of around 1%.
11. The air quality assessment reports, as expected since the development traffic movements are so low, that the impact on air quality at the selected residential properties is negligible. There is no significant effect.
12. I agree that there is no significant effect. Not only is the change in volume of traffic very low, there are no residential properties very close to the roads serving the site. By ‘very close’, I mean dwellings within 5m of the road edges, which is a definition used in Technical Guidance TG16: Local Air Quality Management as ‘roadside’. Traffic emissions dilute very rapidly away from the road edge, so the distance from the road of the nearest properties is a factor which reduces the potential adverse effect of the development traffic.
13. CD1.2 assesses the risk of nuisance being caused by dust emissions from the mineral extraction. The dust risk assessment uses a matrix/tabulation method broadly analogous to the method used by DustScanAQ at the time, and the one we still use. It is derived from the Department for Environment, Transport and the Regions publication “Environment Effects of Surface Mineral Workings”, 1995. The methodology developed at DustScanAQ at that time was largely adopted into guidance produced by IAQM later in 2016. My colleague Dr Hugh Datson was closely involved in the development of that guidance.
14. CD1.2 concludes, and I agree, that there will be a low risk of adverse dust effects at neighbouring properties, with the appropriate mitigation measures in place.

Planning Officer's Report and Determination Notice

15. The Planning Officer's report agrees that the effect on local air quality is 'minor (not significant) adverse'. The detail in the Officer's Report is as follows:

8.68 In terms of air quality, the site is not within an air quality management zone and there is no local air quality monitoring data for existing levels of pollutants. The local Environmental Health Unit advised that background air quality monitoring should be undertaken for a sixth month period prior to the commencement of mineral extraction. This scheme forms part of the planning conditions. Monitoring locations have been agreed with the Environmental Health Unit.

8.69 The traffic generated by the development forms a relatively small proportion of the overall traffic using the A1057. The proposal provides for air quality monitoring. The proposal has demonstrated that it will not give rise to significant degradation to air quality. The proposal complies with Policy 18 (Operational criteria for the control of mineral development) of the adopted Hertfordshire Minerals Local Plan in respect of air quality.

16. The decision notice disagrees with the Officer's report, stating the development is against Policy 18.

17. The policy objection by the planning authority in 2021 is as follows:

The proposed mineral working would have unacceptable impacts on the local environment related to the additional HGV traffic using the A1057, generating emissions to air (noise and dust), including the transport of minerals within the site and the use of local roads for the transport of minerals and inert fill. The proposal would result in unacceptable impacts on the local environment contrary to the provisions of Minerals Policy 16 (Transport) and Minerals Policy 18 (Operation Criteria for the Control of Mineral Development) of the Hertfordshire Minerals Local Plan Review 2002-2016 (Adopted March 2017) and Policies R18 (Air Quality) and R19 (Noise and Vibration Pollution) of the Welwyn Hatfield District Plan (Adopted 2005). The impacts of concurrent mineral workings would adversely affect the local environment, contrary to Minerals Policy 11 (Cumulative Impact) of the Hertfordshire Minerals Local Plan Review 2002-2016, Adopted March 2017

18. Policy R18 of Welwyn Hatfield District Plan is specific to air quality and is as follows:

The Council will have regard to the potential effects of a development on local air quality when determining planning applications. Consideration will be given to both the operational characteristics of the development and to the traffic generated by it. Any development within areas designated as Air Quality Management Areas must have regard to guidelines for ensuring air quality is maintained at acceptable levels as set out in the Air Quality Strategy.

19. No evidence has been presented by the council following the decision notice as to why the 'not significant' air quality effect is unacceptable.

Air Quality Assessment in CD2.2

20. CD2.2 (the Environmental Statement of September 2021 – ES2) updates the air quality assessment following up to date guidance and using more recent input data, including traffic data, emissions factors and air quality measurements. It arrives at the same conclusion as ES1, as there has been no material change in air quality legislation and policy since 2016, nor the layout or operation of the scheme, nor in the existing air quality. The change to the site access road and the removal of the batching plant will decrease the effects of emissions, which are negligible in any case.
21. The CD2.2 dust risk assessment moves beyond the simple matrix model in IAQM 2016 and uses detailed dispersion modelling relating the modelled dust deposition to the ‘custom and practice’ limit of 200 mg/m²/day put forward in the Environment Agency Technical Guidance Note M17 “Monitoring Particulate Matter in Ambient Air around Waste Facilities”. In my opinion, and of the IAQM guidance for mineral planning, the 200 mg/m²/day limit is not a reliable guide to nuisance from dust soiling in modern times. However, since the dust deposition predicted is so much lower than this threshold, this point makes no difference to the conclusion that the dust emissions from the quarry will be sufficiently low that the risk of disamenity dust is small.
22. DustScanAQ has produced a dust risk assessment following the IAQM 2016 guidance (see appendix), which also concludes that the risk of disamenity dust is negligible. At worst, there will be a temporary slight adverse effect at Popefield Farm and the nearest dwellings in Ellenbrook during the soil and overburden removal, handling and placement, which is estimated to last only six weeks.
23. CD2.2 assesses the effect of potential emissions of Respirable Crystalline Silica (RCS) on neighbouring residents.
24. Silica (chemical compound SiO₂, silicon dioxide) is a natural compound which is found everywhere as quartz in rocks, sand and clay. Crystalline silica in common use and understanding is white sand. White Cornish beaches are largely crystalline silica, where the sand is derived from granite. Ordinary glass is 70% non-crystalline silica. The hardness and chemical inertness of silica helps to give construction materials such as concrete and mortar their necessary properties of strength and durability. The sands and gravels to be extracted from the quarry therefore by necessity contain crystalline silica. ‘Respirable’ means a very small particle, which is less than 4 millionths of a metre in diameter, and can be inhaled into the lung. It is given the acronym PM₄. The lung disease silicosis is well characterised in workers exposed to high concentrations of silica through their occupations. The issue of RCS in the environment around mineral workings, where crystalline silica has the potential to arise, is at times a matter of public interest in the UK. There is no guideline or standard for the concentration of RCS in ambient air. By way of example, however the California Office of Environmental Health Hazards Assessment published a chronic reference exposure limit of 3 micrograms (µg) per cubic metre as respirable particles, PM₄.
25. Dust emissions from the quarry will be low, since the material will be extracted wet, and kept wet, and controlled by other means as well. A quantitative assessment of the

potential impacts from RCS found that even with conservative assumptions (in particular assuming that all of the larger fraction PM_{10} (particulate matter less than 10 microns) emitted from site is actually RCS), the site contribution to airborne concentrations of RCS at the nearest properties will be no more than 11% of the California guideline level. It concludes that there will be no significant effect from RCS. A recent UK study¹ measurement study found urban background RCS levels were typically below $0.3 \mu g/m^3$ and the median RCS level, at a rural background location, was $0.02 \mu g/m^3$. These reported ambient RCS concentrations may provide useful baseline values to assess the wider impact of fugitive, RCS containing, dust emissions into the wider environment.

26. The limitations of the RCS modelling are set out in the work. It is relevant to this evidence that I am leading the 'real time source apportionment' research and development project, because I am confident that we can demonstrate by measurement what the size fractions of particulate matter around the site will be, and what their sources are by statistical analysis. Our DS Cloud instrument is 'low cost' at only a few thousand pounds, and therefore is readily available to be used in the measurement condition (41) agreed between the applicant and planning authority. That is to say, it will be possible to demonstrate by measurement that the site is not emitting large quantities of material in the PM_4 size range.

¹ Stacey, P. et al. (2018) 'Determination of respirable-sized crystalline silica in different ambient environments in the United Kingdom with a mobile high flow rate sampler utilising porous foams to achieve the required particle size selection', Atmospheric Environment. Elsevier, 182(December 2017), pp. 51–57. doi: 10.1016/j.atmosenv.2018.03.032.

New WHO Air Quality Guidelines and the UK Environment Bill

27. The World Health Organisation (WHO) has published new air quality guidelines, which are lower than the set of guidelines being superseded. The new guideline levels include (annual mean concentrations):

5 ug/m³ for PM_{2.5} (previous WHO guideline 10 ug/m³)

15 ug/m³ for PM₁₀ (previous WHO guideline 20 ug/m³)

10 ug/m³ for NO₂ (previous WHO guideline 40 ug/m³)

28. An Environment Bill is currently being passed through the UK Parliament, which will put in place the mechanism for setting future standards for these air pollutants. With respect to this proposed development, it should be noted that the significance of effects in guidance such as IAQM 2016 is evaluated with respect to meeting air quality objectives set out in legislation, and not with respect to effects on health. A significant air quality effect does not directly translate into a significant health effect. Air quality effects need to be very substantial to translate into quantifiable health effects.

29. The government website (<https://www.gov.uk/government/publications/environment-bill-2020/10-march-2020-air-quality-factsheet-part-4> - accessed 13/10/21) says:

In the Clean Air Strategy, the government committed to setting a new long-term target on air quality, in order to reduce exposure to fine particulate matter (PM_{2.5}). The Bill delivers on this key commitment by introducing a duty to set a target for PM_{2.5}.

The government is committed to evidence-based policy making, and will consider the WHO's annual mean guideline level for PM_{2.5} when setting the target, alongside independent expert advice, evidence and analysis on a diversity of factors – from the health benefits of reducing PM_{2.5}, to the practical feasibility and economic viability of taking different actions.

In setting ambitious air quality targets it is essential that due consideration is given to achievability and the measures required to meet them.

30. The government is reserving judgement on committing to the WHO guidelines, and indicates that 'practical feasibility and economic viability' will need to be taken into account. It is not possible to say at this point in time what new air quality targets will be enacted.

CD1.7 - Planning Conditions Review and Recommendations

Brett Group Vehicle Emissions

31. Brett Group operates a modern fleet of HGVs, with fleet management which means that the vehicles are less than five years old, and are serviced regularly. The fleet will therefore all be of a EURO VI emissions standard. In contrast to the standard for light vehicles, EURO VI has been demonstrated to be very effective in reducing the emissions of NOx and particulate matter from heavy duty vehicles. Brett Group have a large replacement programme in progress, which is delayed by supply chain issues; however, it is anticipated that by 2022 no vehicle will be more than two years old.
32. The HGV tipper fleet has telematics (remote monitoring) installed, which means that driving can be checked and drivers are incentivized for safe and economic driving (driver style). Drivers have fuel reduction targets: lower fuel consumption means lower emissions.
33. The fleet is accredited silver under the Fleet Operator Recognition Scheme (FORS) and is looking to be accredited gold. The modules which are relevant to air quality and emissions are: a) driving fuel efficiency (LoCity training) and b) Safe Urban Driving.

Dust Soiling Measurement Recommendation

34. A dust suppression scheme is proposed and agreed as a planning condition (Condition 20) to protect amenity i.e. to control dust soiling. It is my opinion that the following evidence should be considered in applying that condition.
35. The potential for annoyance caused by dust arising from the proposed minerals operation is acknowledged in the Air Quality chapters of both CD1.2 and CD2.2. Paragraph 9.30 of CD2.2 notes that there is a range of guidance documents relating to the assessment and measurement of dust potentially arising from minerals operations, including the 2016 Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning. This, and other guidance show that there are no universal dust criteria or monitoring methods for the assessment of potential annoyance at off-site receptors.
36. Chapter 9 of CD2.2 proposes at Paragraph 9.34: *'A limit of 200mg/m²/day is proposed for use with dust gauges as a guide at which the onset of nuisance might be experienced, and has therefore been adopted within this assessment.'* This custom and practice criterion is quoted in various non-statutory guidance, including by the Environment Agency in M17, and relates to specific dust monitoring equipment (the dry-foam Frisbee sampler). As noted in the 2016 IAQM guidance, however: *'In contrast to suspended particulate matter (PM), there are no UK or European statutory standards that define the point when deposited dust causes annoyance or disamenity. This is largely due to the difficulty in accurately determining human response to dust accumulation and soiling. There are a number of "custom and practice" thresholds in use. These however are based on rather old studies, incorporate large corrections and*

assumptions, are sometimes equipment-specific, and lack validation in current conditions. More recent guidance for the minerals industry recommends that site-specific thresholds should be agreed between the site operator and the local planning authority, appropriate for both the site and its surroundings, taking into account baseline values.'

37. On the basis that once consented, the site will be regulated to ensure compliance, including in relation to potential dust annoyance it follows that an effective dust monitoring scheme should be used. From my company's extensive experience in relation to dust monitoring specifically for the minerals sector, it is my opinion that effective site management derives from an appropriate method of dust measurement. Consequently, I propose that a suitable period of baseline dust monitoring (six months at 4 locations) is used to determine site-specific thresholds for both 'Investigation' and 'Action'. These thresholds should be reviewed in relation to site operational data (including any complaints, and feedback from liaison groups and/or the regulatory authority) after a period of full operation at the site (one year).
38. Effective dust monitoring can be understood in relation to the 'source-pathway-receptor' principle. Whilst the minerals site might be recognised as a potential dust source in a locality, it is not the only one (natural sources, road traffic, construction sites, periodic Saharan dust being others). It is therefore necessary to assess dust impacts from a specific source, or sources as well as at specific receptors. To achieve this, a combination of directional and deposited dust monitoring is required: directional monitoring to determine from where, and to where dust is travelling; and deposited dust monitoring to determine dust impacts (from whatever source) at receptors.
39. My experience, and that of DustScanAQ, is that soiling-based dust monitoring is more effective than mass-based techniques. Indeed, to my knowledge there is no reliable directional dust mass monitoring method. It follows, therefore that the site can be most effectively regulated for any risk to amenity by using an array of directional and deposited dust soiling monitors. The Dust Management Plan for the site should include both an 'Investigation' Threshold at receptor or nearest boundary locations, and a slightly higher Action Level, both of which should be based on site specific background monitoring data.

Summary and Conclusions

40. DustScanAQ does measurements and has experience of dust deposition at sand and gravel quarries in Southern England. DustScanAQ and its clients are currently carrying out dust soiling monitoring at such quarries. Our experience is that these quarries do not give rise to measurable disamenity dust at their neighbours, where they are well-run.
41. I have reviewed the air quality and dust assessments in CD1.2 and CD2.2 in detail with the consultants who produced them, and I agree with their findings that the proposed development will not have a significant effect on local air quality or disamenity dust. I have identified some departures from the guidance CD7.1, however these do not materially alter the outcomes of the assessments. The 'custom and practice' dust deposition threshold of 200 mg/m²/day is no longer regarded a safe indicator of nuisance by the best practice guidance CD7.1. Measurements of soiling are better for helping manage disamenity dust than measurements of mass deposition.
42. CD2.2 assesses the effect of fugitive dust emissions using dispersion modelling, acknowledging the limitations of the technique and its input parameters. This modelling informs an assessment of the potential health impacts from RCS, which finds a negligible health risk. In my view the limitations with modelling are a technological limitation which will soon be overcome, since more sophisticated measurement techniques are becoming economically available from companies such as DustScanAQ, which will improve our understanding and control of fugitive dust and RCS emissions in the UK.
43. I walked around the site on the 11th October 2021 with my colleague Dr Hugh Datson, and this visit confirmed my opinion that the quarry can be operated without causing dust issues to its neighbours. I witnessed the relatively heavy traffic on the A1057, and saw the proximity of the nearest residential receptors, and these observations support my opinion that the effect on local air quality and disamenity dust will not be significant, as is set out in CD1.2 and CD2.2.