

Air Quality Technical Note

Date:	7 th June 2021	Ref:	402.12078.00001
Subject:	Rebuttal to Air Quality Content of Pre-Application Enquiry Response, Warren Hastings Court, Gravesend. Prepared for: Grays Thurrock Properties Ltd.		

1.0 INTRODUCTION

SLR Consulting Ltd (SLR) has been commissioned by Grays Thurrock Properties Ltd to review Gravesham Borough Council's (GBC) air quality content of the response to a pre-application enquiry regarding the re-development of the ground floor of Warren Hastings Court, Gravesend (the 'Site') into four residential dwellings (the 'Proposed Development').

In relation to air quality, the pre-application enquiry response states:

"Air Quality

a) Prior to determination, details for an air handling system shall be submitted to and approved, in writing, by the Local Planning Authority. The air quality handling system shall then be installed in accordance with the approved details. For the avoidance of doubt the installation of the air handling system will ensure the indoor air quality of each apartment is good and will enable the windows to be kept closed to reduce disturbance from outside noise. The air handling system must bring in clean air to each residential apartment so as to create positive pressure to ensure that pollution from outside is prevented from entering the unit. The scheme must also include:

- i. An inlet flow greater than the outlet flow to ensure a positive pressure;*
- ii. Heat recovery;*
- iii. Sealed windows on all roadside elevations when required by the ventilation company to ensure the air system works as required;*
- iv. The air supply must come from a suitable clean source e.g. a rear roof of building etc. Care must be taken to locate the inlet such that it ensures that only clean air is brought into the residential units and that excessively hot or cold air is not brought in; and sound attenuation such that there is no breakout noise or vibration from the system."*

The scope of this rebuttal is to review the above pre-application response, to determine whether the request for an 'air handling system' at the Proposed Development Site is warranted and defensible based upon the existing air quality at the Site. This rebuttal considers:

- a review of the Proposed Development and GBC's Local Air Quality Management (LAQM) status;
- a review of ambient air quality, including monitoring data in the public domain and the 'Northfleet Industrial Area Air Quality Management Area (AQMA)';
- a review of previous assessments undertaken to support planning applications within the vicinity of the Proposed Development; and
- the suitability of the Site for residential use.

2.0 BACKGROUND

The Proposed Development seeks to redevelop the ground floor of the building known as Warren Hastings Court into four residential dwellings (C3 use-class). The ground floor of Warren Hastings Court is currently vacant but has previously been used for and is currently permitted to operate as industrial/workshop use. The upper two floors of the property are in residential use and comprise of eight dwellings.

The immediate surrounds of Warren Hastings Court consist predominantly of existing residential dwellings and commercial buildings. The area immediately south of the Site is entirely residential and east of the Site is largely commercial. To the west of the Site is a new development consisting of 598 residential dwellings and retail space (planning reference: EDC/17/0038), which is currently under construction. Located to the north of the Site lies the River Thames.

A review of GBC's latest publicly available LAQM report (the Annual Status Report 2019 (ASR19)) indicates that GBC currently has declared four AQMAs within their administrative area. Of relevance to the Proposed Development is the 'Northfleet Industrial Area AQMA' which was declared in 2002 for exceedences of the particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀) annual mean Air Quality Objective (AQO) of 40µg/m³. This AQMA is situated immediately north and east of the Site. The Proposed Development will introduce new receptors of 'relevant exposure'¹ into this AQMA.

3.0 REVIEW OF AQMA DESIGNATION & LOCAL MONITORING DATA

3.1.1 Review of AQMA Designation

The 'Northfleet Industrial Area AQMA' is described in GBC's ASR19 as: *"an area encompassing the Northfleet Industrial Area in Gravesham"*. At the time of declaration in 2002, the PM₁₀ annual mean concentration in the area was slightly above the AQO of 40µg/m³ with a concentration of 40.8µg/m³.

Through LAQM obligations, after the declaration of an AQMA the local authority was required to produce an Air Quality Action Plan (AQAP) to reduce air pollutant concentrations pursuant to the AQO. Within ASR19, there are three AQAP measures which specifically take aim at reducing PM₁₀ concentrations within the 'Northfleet Industrial Area AQMA', namely measures 27, 28 & 29. Measures 27 & 28 have been declared as 'completed', while 29 is 'on-going'.

Measure 27's aim was: *"Reducing overall dust emissions from Lafarge Cement UK Northfleet Works through changes to process technology and procedures"* and it is quoted that this measure resulted in a reduction of annual mean PM₁₀ concentrations by 5µg/m³ within the 'Northfleet Industrial Area AQMA'.

Measure 28's aim was: *"Relocation of the Lafarge Cement UK Northfleet Works"*, the result of which was the closure of the cement works.

Finally, measure 29's aim is: *"Reduction in PM₁₀ emissions from combined impact of industrial processes in Northfleet"*. The progress to date in relation to this measure is described as: *"Significant"*

¹ Relevant Exposure to annual mean objective defined within LAQM.TG(16) as: *"where individuals are exposed for a cumulative period of 6-months in a year"*

reduction in emissions to below objectives therefore measure has been completed but work carries on ensuring the levels of PM₁₀ are kept as low as possible”.

Through the combination of these measures, the maximum 2018 monitored PM₁₀ annual mean concentration within the ‘Northfleet Industrial Area AQMA’ is now 21.9µg/m³, as stated within Table 2.1 of GBC’s ASR19. This is a large reduction in annual mean concentrations, with 2018 annual mean concentrations representing 45.3% headroom with the PM₁₀ annual mean AQO. The success of the AQAP measures can be further demonstrated as the ASR19 references that there has not been an exceedence of the PM₁₀ annual mean AQO within the ‘Northfleet Industrial Area AQMA’ for the preceding 10 years.

3.1.2 Review of Local Air Quality Monitoring

A review of the local air quality monitoring within the locale of the Site has been undertaken, with reference to diffusion tubes detailed within GBC’s ASR19 and the monitoring results recorded at the Gravesham Industrial Background automatic monitor.

The Gravesham Industrial Background automatic monitor is located approximately 1.6km from the Site and is of an ‘industrial background’ classification, defined by Local Air Quality Management Technical Guidance (LAQM.TG(16)) as: “An area where industrial sources make an important contribution to the total pollution burden [but at a] location distanced from sources and therefore broadly representative of [...] background concentrations”. It is assumed that this monitor was commissioned to monitor the pollutant concentrations within the ‘Northfleet Industrial Area AQMA’. Furthermore, given the proximity of the Gravesham Industrial Background automatic monitor to the Proposed Development, it is considered that monitored concentrations are representative of those at the Site.

Table 1 below details the monitored PM₁₀ and nitrogen dioxide (NO₂) concentrations recorded at the Gravesham Industrial Background automatic monitor between 2017 – 2020. The data has been downloaded from the UK-Air website.

Table 1
Gravesham Industrial Background automatic monitor - Results

Pollutant		2017	2018	2019	2020
NO ₂	Annual mean concentration (µg/m ³) ⁽¹⁾	23.9	23.5	24.6	22.0
	No. 1-hour means >200µg/m ³ ⁽²⁾	0	0	0	0
PM ₁₀	Annual mean concentration (µg/m ³) ⁽³⁾	19.4	21.9	22.3	21.2
	No. 24-hour means >50µg/m ³ ⁽⁴⁾	4	3	10	8
Table notes: 1. Compared to the AQO of 40µg/m ³ ; 2. 18 1-hour mean concentrations in excess of 200µg/m ³ are permitted per year; 3. Compared to the AQO of 40µg/m ³ ; and 4. 35 24-hour mean concentrations in excess of 50µg/m ³ are permitted per year.					

The data in Table 1 indicates annual mean and 24-hour mean PM₁₀ concentrations are in compliance with the respective AQOs during all considered years. It is noted that annual mean PM₁₀ and numbers of days where the 24-hour mean PM₁₀ concentrations exceeds 50µg/m³ increased slightly in 2017 and 2018. Notwithstanding, as quoted by the ASR19 concentrations are still “*comfortably below the AQO*”. Under the heading ‘Comments / Barriers to Implementation’ of AQAP measure 29 of Table 2.2 within GBC’s ASR19, it is quoted saying that these increases in concentrations “*may be due to the introduction of new infrastructure developments along the river in Essex*”. If so, it is reasonable to assume increases in PM₁₀ are temporary and will decline once more after the construction of the new infrastructure developments. Therefore, based upon the above, annual mean and 24-hour mean PM₁₀ concentrations do not represent a development constraint or requirement for embedded mitigation.

The data in Table 1 further indicates annual mean and 1-hour mean NO₂ concentrations are in compliance with the respective AQOs during all considered years. Over the considered 2017 – 2020 period, a maximum annual mean NO₂ concentration of 24.6µg/m³ was monitored in 2019 representing 38.5% headroom with the annual mean AQO.

GBC further monitor annual mean NO₂ concentrations by passive diffusion tubes. A review of the GBC ASR19 indicates diffusion tube locations GR61 and GR139 are located within approximately 0.75km of the Site. However, it is noted that all monitoring locations in close proximity to the Site are located adjacent to the major road network (principally the B2175 London Road / A226 Overcliffe) and are of a ‘roadside’ classification defined by LAQM.TG(16) as: “*A site sampling typically within one to five metres of the kerb of a busy road*”². The Site is located >200m from the B2175 London Road / A226 Overcliffe and any roads considered to be classified as ‘busy’. Therefore, in accordance with the Design Manual for Roads and Bridges LA 105 (DMRB LA 105) the Site is outside of the ‘affected road network’ and only negligible contributions from B2175 London Road / A226 Overcliffe road traffic emissions would be experienced at the Site. Therefore, the closest GBC diffusion tubes to the site are not considered to provide a representative concentration dataset to the Site and are not presented. However, it is noted that annual mean NO₂ concentrations monitored at diffusion tube locations GR61 and GR139 were below the AQO during all considered years reported within the ASR19. Therefore, based upon the above monitored annual mean NO₂ concentrations do not represent a development constraint or requirement for embedded mitigation.

4.0 REVIEW OF SURROUNDING AREA

A review has been undertaken of planning applications submitted to GBC in the area surrounding the Site. An application³ for a mixed residential and retail development (the ‘Keepmoat Development’) is located approximately 150m west of the Proposed Development, was granted consent on 20th March 2019, and is currently under construction. An Air Quality Assessment and Air Quality Chapter⁴ to the Environmental Statement (ES) was submitted in support of the application for the Keepmoat Development. This included detailed dispersion modelling to quantify the impact and effect on air quality arising from change in operational phase development trips. This included assessment of ‘The Shore’ road traffic emissions which is directly adjacent to the Site.

² A ‘Busy road’ is defined within LAQM.TG(16) as a road which experiences >10,000 Annual Average Daily Traffic (AADT) flows.

³ GBC application reference: EDC/17/0038.

⁴ Barton Willmore LLP, Northfleet Embankment East, Northfleet - Environmental Statement Volume 1, Chapter 8

The Air Quality Assessment included assessment at an existing receptor location (receptor ID: E4) which corresponds to the existing dwellings at Warren Hastings Court⁵. The results of that assessment⁶ predicted maximum annual mean NO₂ and PM₁₀ concentrations of 23.3µg/m³ and 16.0µg/m³, respectively, in the 2024 completed development opening year⁷. The results of the Air Quality Assessment and Air Quality Chapter to the ES were accepted in the grant of planning.

The results of Air Quality Assessment and Air Quality Chapter to the ES provide a high level of confidence and indicator that the baseline concentrations at the Site are well below the respective AQOs.

5.0 SITE-SUITABILITY

Within the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance document '*Land-use Planning & Development Control: Planning for Air Quality*' (the 'EPUK & IAQM guidance'), there is a requirement to assess the likely exposure that future residents may experience, to ensure the Site is suitable for residential use. There are four main points of assessment to determine this:

1. the background and future baseline air quality and whether this will be likely to approach or exceed an AQO;
2. the presence and location of an AQMA as an indicator of local hotspots where the AQOs may be exceeded;
3. the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO₂), that would cause unacceptably high exposure for users of the new development; and
4. the presence of a source of odour and/or dust that may affect amenity for future occupants of the development.

With reference to the above sections, within this review SLR has ascertained that air pollutant concentrations at the Site are not in excess of the AQO, and nor are they likely to be based upon future year traffic predictions.

A review has been undertaken with regard to the 'Northfleet Industrial Area AQMA' and it can be concluded that, while the AQMA is still in place, measures undertaken by GBC through their AQAPs have resulted in a significant reduction in PM₁₀ concentrations. Annual mean PM₁₀ concentrations are now 'well below' the AQO as reported by the ASR19.

The Site is not located within the proximity of a 'heavily trafficked road' and, as discussed, is over the 200m screening distance stated within DMRB LA 105 from the B2175 London Road / A226 Overcliffe.

To determine the significance of predicted air quality impacts based upon a site-suitability assessment, the EPUK & IAQM guidance states:

⁵ As shown in ES Figure 8.4 – Modelled Receptors

⁶ As shown in ES Appendix 8.10 – Assessment Results

⁷ A sensitivity scenario was undertaken which utilised the development's operational phase (2024) traffic flows but with 2015 background concentrations and emission factors. The results of which indicate a predicted annual mean NO₂ concentration of 23.9µg/m³ at receptor ID E4.

"Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means."

As such, as it is considered there are no predicted or likely exceedences of any considered AQO at the Proposed Development, there is no requirement for embedded mitigation and the effects associated with likely exposure of future occupants is considered to be 'not significant'.

6.0 CONCLUSION

It has been assumed that the pre-application response request for an 'air handling system' at the Proposed Development is a result of its location in relation to the 'Northfleet Industrial Area AQMA', whereby it can rightly be assumed that there is potential for exceedences of AQOs. However, through a thorough review of local monitoring results, GBC's LAQM reports and previous Air Quality Assessments undertaken within the vicinity of the Proposed Development as discussed within this letter, it is clear that the ambient air quality at the Site is well below the AQOs. As such, air quality does not pose a material consideration or represent a constraint to the Proposed Development.

It is concluded, therefore, that there are no air quality grounds for an 'air handling system' at the Proposed Development and any requirement is not defensible based upon the above review.