

AIR QUALITY MITIGATION STATEMENT
18-20 FOUNTAIN ST
MANCHESTER
BREWDOG RETAIL LTD
AQA-22284-21-115
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SECTION 1 INTRODUCTION

1.1 Base Energy Services Limited (Base Energy) has been commissioned by Brewdog Retail Limited (Brewdog) to produce an Air Quality Mitigation Statement (AQMS) for the proposed redevelopment of 18-20 Fountain Street in Manchester. The scheme involves the change of use from a vacant office building to an 18-bedroom boutique hotel and bar with roof terrace.

1.2 The site is located at approximate National Grid Reference (NGR) 384140, 398344, as indicated on drawing 22284-001-001 in Appendix 1.

1.3 This AQMS has been prepared to satisfy condition 9 of planning permission reference 125900/FO/2020 dated 30 October 2020 which states the following:

'Prior to commencement of the development, mitigation measures to safeguard local air quality shall be submitted to and approved in writing by the City Council as local planning authority. As the application site is within Manchester's Air Quality Management Area and future residents / occupants may be exposed to air pollution, a clean air intake is therefore required. Any agreed mitigation measures shall be implemented as part of the development and shall remain in situ whilst the use or development is in operation'.

- i. Establish baseline air quality from a desk-based review of published data sources;
- ii. Assess the suitability of the site for the proposed development in air quality terms;
- iii. Identify potential air quality impacts associated with the proposed development;
- iv. Outline proposed mitigation measures.

1.4 This report has been prepared for Brewdog for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Brewdog and Base Energy as to the extent to which the findings may be appropriate for their use.

SECTION 3 AIR POLLUTANTS OF CONCERN**3.1 DESCRIPTION**

3.1.1 Oxides of nitrogen (NO_x) are emitted by combustion processes, mostly in the form of the less harmful nitrogen oxide (NO). This is converted in the atmosphere to the Air Quality Strategy pollutant nitrogen dioxide (NO₂). The amount of NO₂ produced depends on a number of factors, including the presence of other pollutants (particularly ozone) and meteorological conditions. It therefore varies considerably over time and geographical area. However, the relative contribution of various sources to the resulting ambient concentrations of NO₂ can generally be assumed to be in proportion to their emissions of NO_x.

3.1.2 PM₁₀ comprises the proportion of airborne particulate matter that is less than 10 µm in diameter. This includes fine particles of less than 2.5 µm diameter (PM_{2.5}), which can penetrate deeper into the lungs than coarser particles and are becoming increasingly associated with the health effects of particulate pollution. Fine particles are emitted by combustion processes, non-exhaust traffic-related emissions (tyre and brake wear) and also include secondary particles, which are formed in the atmosphere by chemical reactions between other pollutants. The sources of secondary particles can be very distant and include areas outside the UK. The coarser fraction of PM₁₀ originates primarily from non-combustion sources.

3.2 AIR QUALITY STANDARDS

3.2.1 The Environment Act 1995 requires Local Authorities to review and document air quality within their area with the aim of meeting specified Air Quality Objectives (AQO) by target years, as defined in the Air Quality (England) Regulations 2000 and Air Quality (England) (Amendment) Regulations 2002 and set out in the UK National Air Quality Strategy 2007. The AQO are designed to be protective of human health and where they are unlikely to be achieved by the target year the Local Authority is required to designate an AQMA. The authority is then obliged to plan for future compliance with the objectives. Guidance is provided in the UK Air Quality Strategy 2007 and the Local Air Quality Management Technical Guidance (LAQM.TG(16)) published in April 2016 and later updated in February 2018.

3.2.2 The relevant AQO for NO₂ are an annual mean concentration of 40 µg.m⁻³ and an hourly concentration of 200 µg.m⁻³ not to be exceeded more than 18 times per year. For PM₁₀ the AQO are an annual mean concentration of 40 µg.m⁻³ and a 24-hour mean of 50 µg.m⁻³ not to be exceeded more than 35 times per year. The objectives for NO₂ and PM₁₀ were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter.

3.2.3 The 2008 European Directive on ambient air quality and cleaner air for Europe (2008/50/EC) was published in May 2008. The Directive sets limit values for NO₂, PM₁₀ and PM_{2.5}. Achievement of these values is a national obligation rather than a local one. The EU limit values are transposed into UK legislation within the Air Quality

Standards Regulations 2010. The limit values for NO₂ and PM₁₀ are the same as the national AQO but applied from 2010 and 2005 respectively.

- 3.2.4 The focus of legislation for PM_{2.5} is on limiting long-term exposure through the use of annual standards, coupled with a reduction in PM_{2.5} background concentrations (15 %) in urban areas across the UK between 2010 and 2020. The annual mean limit value of 25 µg.m⁻³ for PM_{2.5} is to be achieved by 2015 whereas the national objective is to be achieved by 2020.

SECTION 4 BASELINE AIR QUALITY

4.1 INTRODUCTION

- 4.1.1 The site is located within the Air Quality Management Area (AQMA) declared by the Greater Manchester Combined Authority (GMCA) in 2016 in respect of annual mean NO₂ concentrations.
- 4.1.2 Although situated in Manchester city centre, Fountain Street is a one-way street experiencing relatively low volumes of traffic. Baseline concentrations of air pollutants at the site are therefore expected to be similar to urban centre levels.

4.2 LOCAL AUTHORITY MONITORING DATA

- 4.2.1 Reference has been made to the following information sources:
- i. The GMCA's Air Quality Annual Status Report for 2019 (published June 2020);
 - ii. UK-AIR website¹
- 4.2.2 The closest continuous monitoring station (CMS) is located at Piccadilly Gardens approximately 150 m to the east. This is classed as an urban centre monitoring station and records real-time concentrations of NO₂, PM₁₀ and PM_{2.5}. With reference to LAQM.TG(16), urban centre monitoring locations are representative of typical population exposure in towns or city centres, for example pedestrian precincts and shopping areas.
- 4.2.3 The table below summarises recent annual mean air pollutant concentrations at the Piccadilly Gardens CMS.

Table 1: Annual mean air pollutant concentrations at Piccadilly Gardens CMS

Pollutant	Annual Mean Concentration (µg.m ⁻³)						AQO
	2014	2015	2016	2017	2018	2019	
NO ₂	40	39	40	36	35	36	40
PM ₁₀	-	20	20	20	21	20	

¹ <https://uk-air.defra.gov.uk/data> (accessed 22-03-21)

Pollutant	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)						
	2014	2015	2016	2017	2018	2019	AQO
PM _{2.5}	12	10	10*	8	11	12	25

Bold values exceed the AQO

*Data capture is below 90%.

- 4.2.4 With reference to Table 1, annual mean concentrations of NO₂ have been relatively static in recent years and have consistently been below the AQO of 40 $\mu\text{g.m}^{-3}$ since 2016. Annual mean concentrations of PM₁₀ and PM_{2.5} have also been consistently well below the AQO and no exceedance of the short-term objectives for NO₂ or PM₁₀ have been recorded in any of the years reviewed.

4.3 DEFRA BACKGROUND MAPS

- 4.3.1 Reference has also been made to the DEFRA background air pollutant concentration maps available on the UK-AIR website. The background maps are presented in 1 km x 1 km grid squares across England, Wales, Scotland and Northern Ireland. The current version of the background maps (reference year 2018) contains estimates for NO_x, NO₂, PM₁₀ and PM_{2.5} for the period 2018 through to 2030.

- 4.3.2 The 2018 reference year background maps are based on monitoring and meteorological data for 2018. Predicted background concentrations for the reference year (2018) and current year (2021) are summarised in the table below.

Table 2: Predicted annual mean background map concentrations for grid square centred at ³84500, ³98500.

Pollutant	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)		
	2018	2021	AQO
NO ₂	30.42	27.14	40
PM ₁₀	13.92	13.16	40
PM _{2.5}	9.00	8.47	25

- 4.3.3 Predicted background concentrations for the grid square in which the proposed development site is situated are well below the respective annual mean AQOs for all key air pollutants.

4.4 INDUSTRIAL INSTALLATIONS

- 4.4.1 With reference to the Environment Agency (EA) online public register an Environmental Permit is registered to Manchester Heat Network Tradeco Ltd, 800 m to the southwest, for the energy centre which provides heat and power to the Manchester Civic Quarter.
- 4.4.2 No Part A2 or B industrial installations with the potential to significantly impact upon baseline air quality are registered within 500 m of the site.

4.5 SUMMARY

- 4.5.1 The proposed development site is located in Manchester city centre, however, roads in close proximity to the site are not expected to experience significant volumes of traffic. It is therefore anticipated that concentrations of air pollutants will be similar to urban centre levels.
- 4.5.2 Continuous monitoring undertaken at the nearby Piccadilly Gardens CMS is considered to be representative of baseline concentrations at the subject site and indicates that urban centre concentrations of NO₂, PM₁₀ and PM_{2.5} are below the relevant AQO.

SECTION 5 POTENTIAL IMPACT OF THE SCHEME ON LOCAL AIR QUALITY

5.1 INTRODUCTION

- 5.1.1 Developments can introduce new receptors into an area of poor air quality. They can also increase emissions of air pollutants during their construction and operational phases and exacerbate existing air pollution issues by inhibiting dispersion.

5.2 SITE SUITABILITY

- 5.2.1 The site is located within the AQMA declared by the GMCA in respect of annual mean NO₂ concentrations.
- 5.2.2 The site is not located adjacent to any significant emissions sources (e.g. major roads). Fountain Street is a one-way street which is not expected to experience significant levels of traffic. Baseline concentrations of air pollution are therefore anticipated to be close to urban centre levels. The monitoring undertaken at the nearby Piccadilly Gardens CMS (an urban centre monitoring site) is therefore considered to be representative of likely concentrations experienced at the subject site.
- 5.2.3 The proposals are for a boutique hotel and bar at ground level. Such receptors are considered to be of relatively low sensitivity to air pollution due to the relatively short duration of exposure. With reference to LAQM.TG(16), the annual mean AQO should not generally apply to hotels (unless people live there as their permanent residence).
- 5.2.4 The planning condition specifically states that *'as the application site is within Manchester's Air Quality Management Area and future residents / occupants may be exposed to air pollution, a clean air intake is therefore required'*. This statement does not appear to acknowledge that representative monitoring in close proximity indicates that concentration of air pollutants are below the annual mean AQO. In addition, the annual mean AQO is considered to be highly conservative in the context of the proposed development as discussed above.
- 5.2.5 Notwithstanding this, the proposed development will incorporate a mechanical ventilation system with clean air drawn from the rear of the building at first floor level.

This is considered to be beneficial in air quality terms as it increases the distance between the intake and street level traffic emissions.

5.3 CONSTRUCTION PHASE

5.3.1 The proposals are for a change of use from office space to a boutique hotel with bar at ground level.

5.3.2 No significant external construction works are associated the project and the potential for dust impacts on surrounding receptors is considered to be low.

5.4 OPERATIONAL PHASE

5.4.1 With reference to the servicing strategy which accompanied the planning application, the proposed development will generate the following vehicles trips:

- i.* Beer – two deliveries per week via palletised delivery to kerb, from 7 tonne vehicle via tail lift;
- ii.* Linen –four deliveries per week via a transit-type van; and,
- iii.* House-keeping / consumables (e.g. toilet paper, cleaning supplies etc) – one delivery per week via transit-type van.

5.4.2 The proposed development does not incorporate any vehicular parking and the increase in vehicular traffic associated with the proposed development is expected to be negligible.

5.4.3 The proposed heating scheme is fully electric and incorporates heat pumps connected to Variable Refrigerant Flow (VRF) systems. No point sources of emissions will therefore be introduced on site.

SECTION 6 MITIGATION MEASURES

6.1 CONSTRUCTION PHASE

6.1.1 Due to the limited extent of external works, the potential for dust impacts on nearby sensitive receptors during the redevelopment is low.

6.1.2 Standard mitigation measures as required by legislation should be employed during any potentially dust-generating activities.

6.2 OPERATIONAL PHASE

6.2.1 Guidance on mitigating against air quality impacts is provided in a document produced jointly by the IAQM and Environmental Protection UK (EPUK)². The guidance emphasises that all developments should adopt good design principles to

² Moorcroft and Barrowcliffe et al, (2015) 'Land-Use Planning & Development Control: Planning for Air Quality', IAQM

reduce emissions and minimise cumulative impacts regardless of the outcome of individual air quality assessments.

Minimising exposure to poor air quality

6.2.2 Monitoring undertaken by MCC at a nearby representative site indicates that baseline concentrations of all air pollutants at the site are below the relevant AQO.

6.2.3 Notwithstanding this, air for the ventilation system will be drawn from the rear of the building at first floor level. This is considered to be beneficial in air quality terms as it increases the distance between the intake and street level traffic emissions.

Traffic

6.2.4 The site benefits from a high level of accessibility due to its city centre location and is therefore designed to be 'car free'. No parking facility for guests will be provided and deliveries are minimal as detailed in Section 5.4 above.

6.2.5 The application is supported by a Travel plan (TP) to promote more sustainable transport choices for staff, customers and visitors. Cycle parking and a staff changing area are to be provided within the building.

Heating scheme

6.2.6 The proposed heating scheme is fully electric therefore no point sources of emissions will be introduced on site and no additional mitigation is required.

SECTION 7 SUMMARY

7.1 The site is situated within an AQMA which has been declared in respect of annual mean NO₂ concentrations. Despite the location within an AQMA, annual mean concentrations of air pollutants at the site are expected to be below the AQO based on nearby, representative monitoring data.

7.2 The proposed development involves a change of use from vacant office space to an 18-bedroom boutique hotel and bar with roof terrace.

7.3 The sensitivity of future users to air pollution is relatively low due to the limited duration of exposure, particularly at ground floor level where concentrations of traffic-related pollutants are typically highest. The positioning of the air intake at the rear of the building at first floor level is considered to be appropriate in the context of local air quality monitoring data.

7.4 The proposed development involves a change of use and it is not anticipated that any significant dust-generating activities will occur on site. Standard mitigation as required by legislation is considered to be sufficient.

- 7.5 The proposed development will result in negligible vehicular trips. Notwithstanding this, a TP has been produced to encourage the use of sustainable modes of transport and cycle parking/ staff changing rooms are provided within the building.
- 7.6 The proposed development will be served by a fully electric heating system therefore no point sources of emissions will be introduced on site.
- 7.7 Notwithstanding this, all reasonable means to minimise emissions from the scheme should be adopted in line with policy guidance.

APPENDIX 1 ▪ Drawings



Legend

Site boundary

Issue Details			Dwn	Chd	App'd
Client					
Brewdog Retail Ltd					
Project					
18-20 Fountain Street, Manchester					
Dwg Title					
Site Location Plan					
Drawing No.		Revision			
22284-001-001		-			
Scale	Date	Frame dimension mm			
1:4650	APRIL/2021	(A3) 392 x 277			
Drawn	Checked	Approved			
ECW	KRJ	KRJ			

BASEENERGY

Building Assessments for a Sustainable Environment