

254 Kilburn High Road, London NW6

Air Quality Addendum



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1 INTRODUCTION

1.1 Entran Limited was commissioned to undertake an air quality assessment for a proposed mixed-use development at 254 Kilburn High Road. This report forms an addendum to the original assessment for the proposed development and assesses the potential impact of the proposed combined heat and power (CHP) plant at the site on local air quality.

1.2 The proposed plant comprises a single CHP unit, which will discharge to air via a single stack at roof level. The unit will be natural-gas fired, resulting in emissions of nitrogen oxides (NO_x) and carbon monoxide (CO). Of these pollutants, NO_x (as NO₂) is of principle concern since the proposed development is within the London Borough of Camden (LBC) Air Quality Management (AQMA).

1.3 The proposed development has no allocated parking and is therefore air quality neutral with respect to traffic-related emissions. On this basis it was agreed with Amy Farthing, Air Quality Officer at LBC, that provided the proposed CHP plant is compliant with the Mayor of London's Emissions Standards and the predicted NO₂ impacts are air quality neutral, the impact of the development as a whole on local air quality would be considered negligible.



2 LEGISLATION AND POLICY

The London Plan and Mayor of London's SPG

2.1 Policy 7.14 of The London Plan¹ sets out the Mayor of London's commitment to improving air quality and public health. It states that development proposals should "*minimise increased exposure to poor air quality*" by:

- promoting sustainable transport;
- promoting sustainable design and construction; and
- being "at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas"

2.2 The Mayor of London's Sustainable Design and Construction Supplementary Planning Guidance (SPG)² was published in April 2014 and sets out the requirements for undertaking impact assessments in accordance with the policies set out in the London Plan and the Mayor of London's Air Quality Strategy³.

2.3 An additional planning support document was issued in April 2014⁴, which provides guidance on the implantation of the 'air quality neutral' policy for 'major developments' (over 10 residential dwellings or 1000m² floor space).

Mayor of London's Emission Standards for CHP Plants

2.4 Emissions standards for CHP plants are provided within Appendix 7 of the SPG. The standards apply to CHP units of greater than 50 kWth inputs and are dependent on the existing baseline air quality with respect to the national air quality objectives.

2.5 The proposed CHP plant would comprise a lean-burn reciprocating spark-ignition with a thermal output per unit of approximately 30 kWth, therefore there is no statutory requirement for compliance with the emission standards. The emission standard for larger gas-fired spark ignition engines in areas where there is an exceedence of the air quality objective (Band B) is

¹ The London Plan Spatial Development Strategy for Greater London, July 2011.

² Sustainable Design and Construction Supplementary Planning Guidance, Mayor of London, London Plan 2011 Implementation Framework, April 2014

³ Clearing the Air, The Mayor's Air Quality Strategy, December 2010.

⁴ Air Quality Neutral Planning Support Update, GLA 80371, April 2014



95 mg/Nm³. The manufacturer's specification for the proposed CHP (Loadtracker XRGI), states that a maximum NO_x emission concentration of 90 mg/Nm³ will be achieved, which is within the emission standard.

Air Quality Neutral Emission Benchmarks

Appendix 5 of the SPG defines Building Emission Benchmarks (BEBs) for various land-use classes. The BEBs are in units of g/m²/annum and represent the total annual NO_x emission per unit area of a proposed development. Where the building related emission for a proposed development is below the relevant BEB, the development may be considered 'air quality neutral' and is unlikely to result in a significant impact on local air quality.



3 ASSESSMENT OF IMPACTS

3.1 The proposed CHP unit is a Loadtracker XRGI gas-fired lean-burn reciprocating spark ignition engine, vented to air via a single vertical 150 mm flue protruding from the roof of the building at approximately 64 m AOD. The flue will be fitted with a cone to reduce the diameter to 35 mm and increase the exit velocity of the exhaust gases to 12.7 m/s. The heat release of the unit is 0.0010 MW, therefore in accordance with the SPG, a minimum exit velocity of 10 m/s is required.

3.2 The flue will be located in the centre (front to rear) of the roof and therefore would not adversely impact on air quality at the ventilation inlets or opening windows.

3.3 A summary of the stack emissions parameters is presented in Table 3.1.

Table 3.1: Stack Emission Parameters

Parameter	Unit	Value
Exhaust height	m	64
Flue Diameter (at exit)	mm	35
Emission Temperature	°C	110
Actual Flow Rate	Am ³ /s	0.012
Normalised Flow Rate	Nm ³ /s (at 5% O ₂ , 101.3mb and 273K)	0.010
Stack Discharge Velocity	m/s	12.7
NOx Emission Concentration	mg/Nm ³	90
Maximum NOx Mass Emission Rate	g/s	0.00093
Maximum NOx Mass Emission Rate	kg/annum	29

3.4 A summary of the BEB calculation for the proposed development is presented in Table 3.2. The ground floor of the development will comprise flexible B1/B8 use. For the purposes of the assessment the use has been classified as B8 (which has a lower emission benchmark), as a worst-case.



Table 3.2: Building Emission Benchmark Calculation

Land Use	GFA (m²)	Building Emissions Benchmark (g NOx/m²/annum)	Benchmarked Emissions (kg NOx/annum)
B8 Storage and Distribution	1,000	23.6	24
C3 Residential	4,656	26.2	122
Total			146

3.5 The Maximum NOx emission rate for the proposed CHP is 29 kg NOx/annum which is well within the benchmarked emissions for the development of 146 kg NOx/annum. On this basis the CHP is considered air quality neutral and is unlikely to significantly affect local air quality.



4 SUMMARY AND CONCLUSIONS

4.1 An assessment of the likely air quality impact of the proposed CHP plant at 254 Kilburn High Road has been undertaken in accordance with the Mayor of London's Sustainable Design and Construction SPG.

4.2 The proposed plant will comprise a single gas-fired unit, which is of sufficiently small thermal input that compliance with the specified emission standards is not required. Nevertheless, the manufacturer's NO_x emission limit for the proposed unit is below the recommended standard for areas where the air quality objective is exceeded. However, it is recommended that post installation emissions testing is carried out within 6 months to 1 year of commissioning to confirm compliance with the manufacturers limits.

4.3 The total annual NO_x emission from the proposed development has been used to calculate the building related emission in accordance with the Mayor's air quality neutral policy. The development has been assessed as air quality neutral, indicating that emissions reduction or off-setting measures are not required.

4.4 It is considered that the impact of the CHP plant will be insignificant and should not pose a constraint to the development of the site as proposed.