

Air Quality Neutral Assessment

Barnes Hospital

For Star Land Realty UK Ltd

Quality Management			
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1 Introduction

- 1.1 This supplementary Air Quality Neutral report quantifies the emissions of atmospheric pollutants from the development at source (i.e. from vehicles and building plant) and compares the emissions with official benchmark levels that define neutrality. This report complements RPS' air quality impact report. That air quality assessment report considered the impacts of the development on ambient air quality at the point of exposure (i.e. at sensitive receptor locations) by comparing predicted levels with Air Quality Strategy objectives.
- 1.2 The site benefits from an extant outline planning permission (ref. 18/3642/OUT) for residential use. Medical and educational uses were also permitted as part of the outline permission on the other parts of the Barnes Hospital campus that fall outside of this planning application boundary and will be brought forward separately to the east of the site.
- 1.3 This outline planning permission ('OPP') (ref. 18/3642/OUT) was granted on 14 September 2020 for:
- “Outline planning permission for the demolition and comprehensive redevelopment (phased development) of land at Barnes Hospital to provide a mixed use development comprising a health centre (Use Class D1), a Special Educational Needs (SEN) School (Use Class D1), up to 80 new build residential units (Use class C3), the conversion of two of the retained BTMs for use for up to 3no. residential units (Use Class C3), the conversion of one BTM for medical use (Use Class D1), car parking, landscaping and associated works. All matters reserved save for the full details submitted in relation to access points at the site boundaries.”*
- 1.4 The OPP granted approval for a three-part phased development of the site: (1) the residential part, (2) the SEN School and (3) the health centre. The OPP approves the development of up to 80 residential units with associated car and cycle parking within three blocks of two and three storeys.
- 1.5 The proposed development includes 109 residential units (106 in the new buildings, 3 within the retained BTMs) and 50 car parking spaces.
- 1.6 The requirement for this Air Quality Neutral report is driven by Policy SI 1 in the London Plan [1], entitled 'Improving Air Quality', which states that development proposals should “... be at least 'air quality neutral'”.

- 1.7 The 'air quality neutral' policy is designed to address the problem of multiple new developments that individually add only a small increment to pollution at the point of human exposure (i.e. to ambient concentrations), but cumulatively lead to baseline pollution levels creeping up. The policy requires developers to design their schemes so that they are at least Air Quality Neutral in terms of emissions at source.
- 1.8 The Greater London Authority (GLA) Sustainable Design and Construction Supplementary Planning Guidance (SPG), published in April 2014, provides a formal definition for the term 'air quality neutral' and allows a transparent and consistent approach to demonstrating whether a development is 'air quality neutral'. This Air Quality Neutral report determines whether the proposed development is air quality neutral using the GLA SPG calculation method that separately quantifies building emissions (from heating and power plant) and transport emissions.

2 Methodology - Air Quality Neutral Calculation

Building Emissions

- 2.1 The SPG requires a comparison of the 'Total Development Building Emissions' with the 'Total Building Emissions Benchmark' (Total BEB). The development does not have any building emissions so has not been considered further.

Transport Emissions

- 2.2 The SPG requires a comparison of the 'Total Development Transport Emissions' with the 'Total Transport Emissions Benchmark' (Total TEB).
- 2.3 For each land-use class, the number of vehicle movements generated by the operation of the development has been provided by the project's transport consultants. The average trip length (km) for each land-use class could not be provided; however, consistent with the examples provided in the Air Quality Neutral Planning Support Update [2], the average London distances driven per annum for the different development categories have been obtained. The number of vehicle movements has been multiplied by the average distances driven for each land use class to derive the vehicle.km term. The total vehicle.km for the development has then been multiplied by the NO_x and PM₁₀ emission factors (in kg/annum) provided in the SPG to determine the 'Total Development Transport Emissions'.
- 2.4 The SPG provides TEB factors for NO_x and PM₁₀ as mass emissions per dwelling per annum for residential properties and mass emissions per floor space per annum for all other land-use classes. A separate TEB for each pollutant (NO_x and PM₁₀) has been calculated for each land-use class. A 'Total TEB' has been calculated as the total of the individual TEBs for each land-use class and for each pollutant.
- 2.5 For each pollutant, the 'Total Development Transport Emissions' have been compared with the 'Total TEB'. Where the 'Total Development Transport Emissions' exceeds the 'Total TEB', the need for on or off-site mitigation has been identified.

3 Results of Air Quality Neutral Calculation

Transport Emissions

3.1 Table 3.1 and Table 3.2 set out the annual mass of NO_x and PM₁₀ emitted by the proposed development per annum, respectively.

Table 3.1: NO_x - Total Development Transport Emissions (kgNO_x/annum)

Land Use Class	Development trip rate (vehicle/day)	Average Trip Length (km)	Vehicle.km/ annum	Development Emissions (kgNO _x /annum)
Residential (consented 83 dwellings)	83	11.4	482,676	170
Residential (Additional 26 dwellings)	26	11.4	149,796	53
Total Development Transport Emissions (kgNO_x/annum)				223

Emissions factor for outer London = 0.353 g/vehicle.km

Table 3.2: PM₁₀ - Total Development Transport Emissions (kgPM₁₀/annum)

Land Use Class	Development trip rate (vehicle/day)	Average Trip Length (km)	Vehicle.km/ annum	Development Emissions (kgPM ₁₀ /annum)
Residential (consented 83 dwellings)	83	11.4	482,676	29
Residential (Additional 26 dwellings)	26	11.4	149,796	9
Total Development Transport Emissions (kgPM₁₀/annum)				38

Emissions factor for outer London = 0.0606 g/vehicle.km

3.2 Table 3.3 and Table 3.4 set out the benchmark mass emissions of NO_x and PM₁₀ against which the transport emissions from the development have been compared.

Table 3.3: NO_x - Total Transport Emissions Benchmark (kgNO_x/annum)

Land Use Class	Number of Dwellings	NO _x TEB (g/dwelling/annum)	Transport Emissions Benchmark (kgNO _x /annum)
Residential (consented 83 dwellings)	83	1553	129
Residential (Additional 26 dwellings)	26	1553	40
Total Benchmarked Transport Emissions (kgNO_x/annum)			169

Table 3.4: PM₁₀ - Total Transport Emissions Benchmark (kgPM₁₀/annum)

Land Use Class	Number of Dwellings	PM ₁₀ TEB (g/dwelling/annum)	Transport Emissions Benchmark (kgPM ₁₀ /annum)
Residential (consented 83 dwellings)	83	267	22
Residential (Additional 26 dwellings)	26	267	7
Total Benchmarked Transport Emissions (kgPM₁₀/annum)			29

3.3 Table 3.5 provides a comparison of the development transport emissions with the benchmark.

Table 3.5: Summary of Transport Results

	Total Development Transport Emissions	Total Transport Emissions Benchmark	Difference: Total Development – Transport Emissions Benchmark
NO _x (kg/annum)	223	169	54
PM ₁₀ (kg/annum)	38	29	9

3.4 For NO_x, the Total Development Transport Emissions exceed the Total Benchmarked Transport Emissions by 54 kgNO_x/annum. For PM₁₀, the Total Development Transport Emissions exceed the Total Benchmarked Transport Emissions by 9 kgPM₁₀/annum.

- 3.5 When considering only the additional 26 dwellings, the Total Development Transport Emissions exceed the Total Benchmarked Transport Emissions by 13 kgNO_x/annum. For PM₁₀, the Total Development Transport Emissions exceed the Total Benchmarked Transport Emissions by 2 kgPM₁₀/annum.
- 3.6 In accordance with the SPG, further action will be required either by on-site mitigation measures or by off-setting.

4 Mitigation

- 4.1 The development's transport emissions exceed the benchmarks and mitigation measures therefore may need to be applied.
- 4.2 To reduce transport emissions, the applicant should consider on-site mitigation measures to reduce the number of vehicle movements and encourage walking, cycling and the use of public transport. Examples of such mitigation options include:
- the provision of signage (such as the distance/times to key destinations) for walkers and cyclists;
 - increasing the amount of cycle storage facilities; and
 - the provision of additional signage indicating the location of bus stops and train stations.
- 4.3 The applicant may also consider mitigation measures that reduce petrol and diesel vehicle movements such as the provision of electric charge points.
- 4.4 In this case, the applicant is committed to providing cycle storage facilities and electric vehicle charging points as part of the proposed development. 197 cycle parking spaces are proposed and 22% of the 50 car parking spaces will be provided with active electric vehicle charging points while the remainder will have passive charging infrastructure. In addition, the applicant is also providing green roof coverings and filters in the ventilation system.
- 4.5 It is important to note that the Air Quality Neutral calculation method uses the number of trip movements generated by the proposed development and disregards the trip movements associated with the site's existing use. As outlined in Table 3.1 of the Air Quality Assessment report, traffic flows on the local road network are expected to decrease with the proposed development when compared with the existing use. All things being equal, the development is likely to be beneficial in air quality terms.
- 4.6 Considering the mitigation measures included in the design and the decrease in traffic flows compared to the existing use, the development is considered to be Air Quality Neutral.

5 Conclusions

- 5.1 In accordance with the Air Quality Neutral calculation method, total transport emissions associated with trips generated by the proposed development have been compared with the relevant benchmarks. The total transport emissions exceed the relevant benchmarks during the operational phase of the proposed development requiring the implementation of mitigation.
- 5.2 The applicant is committed to providing cycle storage facilities and electric vehicle charging points as part of the proposed development. 197 cycle parking spaces are proposed and 22% of the 50 car parking spaces will be provided with active electric vehicle charging points while the remainder will have passive charging infrastructure. In addition, the applicant is also providing green roof coverings and filters in the ventilation system.
- 5.3 The Air Quality Neutral calculation method disregards the trip movements associated with the site's existing use. Traffic flows on the local road network are expected to decrease with the proposed development, when compared with the existing use. All things being equal, the development is likely to be beneficial in air quality terms.
- 5.4 Considering the mitigation measures included in the design and the decrease in traffic flows compared to the existing use, the development is considered to be Air Quality Neutral.

Glossary

AQMA	Air Quality Management Area
BEB	Building Emissions Benchmark
CHP	Combined Heat and Power
GLA	Greater London Authority
Impact	The change in atmospheric pollutant concentration and/or dust deposition. A scheme can have an 'impact' on atmospheric pollutant concentration but no effect, for instance if there are no receptors to experience the impact.
MAQS	Mayor's Air Quality Strategy
SPG	Supplementary Planning Guidance
TEB	Transport Emissions Benchmark

References

- 1 GLA, March 2021, The London Plan –The Spatial Development Strategy for Greater London.
- 2 AQC, April 2014, Air Quality Neutral Planning Support Update: GLA 80371

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