Appendix D – Air Quality

Replacement Environmental Statement

Volume III

Air Quality Neutral Assessment

1. INTRODUCTION

The London Plan[1] includes a policy relating to 'air quality neutral development' and aims to bring forward developments that are air quality neutral or better and that do not degrade air quality in areas where EU limit values (or air quality objectives) are not currently achieved.

The Air Quality Neutral Planning Support[2] was published in April 2014 to accompany the 2014 publication of the Greater London Authorities (GLA) Sustainable Design and Construction SPG[3]. It provides specialist consultants with a methodology to undertake an 'air quality neutral' assessment, as well as emission benchmarks for buildings and transport, against which the predicted values for the proposed development can be compared.

With regards to emissions from road traffic and energy plants, the current assessment approach most widely adopted for developments in London is to calculate the change in pollutant concentrations, for the pollutants nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$). Through the application of physical mitigation (stacks, catalysts, particle traps or ventilation systems) the concentration of pollutants that receptors are exposed to can be controlled so that the effect is not significant. However, the emitted pollutants contribute to the background pollutant concentration in London as a whole and in combination are helping to maintain pollutant concentrations higher than legislation requires. To address this issue, the air quality neutral approach compares the amount of pollutant(s) emitted against a benchmark value, with the aim of minimising the total amount of pollutant emitted, instead of targeting the ambient concentration of the pollutant.

Using the GLA's Sustainable Design and Construction SPG[3], an air quality neutral assessment has been undertaken using the latest information about the Proposed Development. The methodology and emission factors are taken from the Air Quality Neutral Planning Support document[2].

2. OPERATIONAL ROAD TRAFFIC EMISSIONS

The air quality neutral assessment for the road traffic associated with the Proposed Development compares the road traffic related emissions against calculated benchmark values which are based upon land use, the number of anticipated trips per year, and the average distance travelled per trip, in accordance with the Air Quality Neutral Planning Support[2].

The Total Benchmarked Transport Emissions for the Proposed Development are calculated using default NO_x and PM_{10} emission factors per square metre or dwelling, which have been determined for the different land use classes, and for each of the three areas within London, as defined in the guidance.

[1] Mayor of London (2011), The London Plan (Consolidations with alterations since 2004): The Mayor of London's Spatial Development Strategy, Greater London Authority.
[2] Air Quality Consultants and Environ (2014), Air Quality Neutral Planning Support Update: GLA 80371.
[3] Mayor of London (2014), Sustainable Design and Construction – Supplementary Planning Guidance, Greater London Authority.

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The emission factors are multiplied by the Gross Floor Area (GFA) or the number of dwellings for the Proposed Development in order to obtain the Transport Emissions Benchmarks for NO_x and PM_{10}, as presented in Table 1.

TABLE 1: CALCULATION OF BENCHMARKED TRANSPORT EMISSIONS

Land Use	Quantity	NO_x Transport Emission Benchmark	Total NO_x Transport Emissions Benchmark
A1 and A3	5, 039 m^2 GFA	219 g/m^2/annum	1,103.5 kg/annum
B1	37,164 m^2 GFA	11.4 g/m2/annum	423.67 kg/annum
C3	40 dwellings	558 g/dwelling/annum	22.3 kg/annum
Total NO_x Benchmarked Transport Emissions			**1,733.0 kg/annum**
Land Use	**Quantity**	**PM_{10} Transport Emission Benchmark**	**Total PM_{10} Transport Emissions Benchmark**
A1 and A3	5,039m^2 GFA	42.9 g/m^2/annum	198.0 kg/annum
B1	37,164m^2 GFA	11.8 g/m^2/annum	76.2 kg/annum
C3	40 dwellings	267 g/dwelling/annum	4.0 kg/annum
Total PM_{10} Benchmarked Transport Emissions			**kg/annum**

The Total Transport Emissions of NO_x and PM_{10} are then calculated for the Proposed Development. The predicted number of vehicle trips per year is multiplied by the average distance travelled per trip to obtain the total average distance travelled per year for the Proposed Development, as shown in Table 2.

TABLE 2: CALCULATION OF TOTAL AVERAGE DISTANCE TRAVELLED PER YEAR FOR EACH LAND-USE CATEGORY

Land Use	Quantity	Number of vehicle trips per year	Average distance travelled per trip (km/trip)	Average distance travelled per year (km/year)
A1 and A3	5, 039m^2 GFA	2	5.9	44,595
B1	37,164m^2 GFA	4	7.7	1144,651
C3	40 dwellings	117	3.7	17,360
Total Average Distance travelled per year (km/year)				**1.206,607**

Emission factors for NO_x and PM_{10} for three areas of London (the Central Area Zone (CAZ), Inner and Outer London) are presented in the SPG document[3]. Emission factors for Inner London have been selected in this assessment.

Emission factors sourced from the guidance for NO_x and PM_{10} are multiplied by the total average distance travelled per year to obtain the Total Transport Emissions, as set out in Table 3.

TABLE 3: CALCULATION OF TOTAL TRANSPORT EMISSIONS			
Land Use	**Total Average Distance travelled per year (km/annum)**	**NO_x Transport Emission Factor (gNO_x/vehicle-km)**	**Total NO_x Transport Emissions (kg)**
A1, A3, B1 & C3	1206,607	0.3700	446.4
Total NO_x Transport Emissions			**446.4**
Land Use	**Total Average Distance travelled per year (km/annum)**	**PM_{10} Transport Emission Factor (gPM_{10}/vehicle-km)**	**Total PM_{10} Transport Emissions (kg)**
A1, A3, B1 & C3	1206,607	0.665	80.2
Total PM_{10} Transport Emissions			**80.2**

The Total Benchmarked Transport Emissions are then subtracted from the Total Transport Emissions, as presented in Table 4, to assess whether the Total Transport Emissions for the Proposed Development are within the benchmark.

TABLE 4: COMPARISON BETWEEN TOTAL TRANSPORT EMISSIONS AND BENCHMARED TRANSPORT EMISSIONS	
NO_x	
Total Transport Emissions (kg/annum)	446.4
Total Benchmarked Transport Emissions (Assessment Criteria) (kg/annum)	1,550.0
Difference (kg/annum)	**-110.4**
PM_{10}	
Total Transport Emissions (kg/annum)	80.2
Total Benchmarked Transport Emissions (Assessment Criteria) (kg/annum)	278.0
Difference (kg/annum)	**-198.0**

As the total Benchmarked Transport Emissions (1,550.0 kg NOx / annum and 278.0 kg PM_{10} / annum) are greater than the Total Transport Emissions (446.4 kg NOx / annum and 80.2kg PM_{10} / annum), the development transport emissions are within the benchmarks, so no further mitigation needs to be considered to off-set excessive emissions of NO_x and PM_{10} for this source of emissions when considered in isolation.

3. OPERATIONAL BUILDING RELATED EMISSIONS

The Proposed Development does not include an energy centre and so does not have on-site emissions of NO_x and PM_{10} associated with the building use. In light of the mechanism of off-setting provision required by the GLA's Sustainable Design and Construction SPG[3], the Proposed Development can be considered air quality neutral because of the emissions not being generated through the use of an on-site energy centre.

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4. SUMMARY

The Proposed Development's transport emissions are within 'air quality neutral' emissions benchmarks for transport.

The Proposed Development does not have on-site emissions of NO_x and PM_{10} associated with the building use and can therefore be considered air quality neutral because of the emissions not being generated through the use of an on-site energy centre.