NRG CONSULTING

Land East of Mons Block St. Andrews Park Uxbridge

Air Quality Assessment

January 2025

CONTENTS

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1 Introduction

NRG Consulting have been commissioned to prepare an Air Quality Assessment to discharge Condition 20 attached to planning permission ref. 585/APP/2017/2819 which relates to the **Land East of Mons Barrack Block (LEOMB) land parcel, at St Andrew's Park, Hillingdon Road, Uxbridge.**

On 14th March 2019 outline planning permission ref. 585/APP/2017/2819 was granted or the following:

"Outline planning application with means of site access from the central access road (internal access, layout, scale, appearance and landscaping reserved for subsequent approval) for the erection of up to 90 dwellings (Use Class C3), sustainable urban drainage features and all other necessary ancillary and enabling works".

Reserved matters consent (ref. 585/APP/2022/665), pursuant to the LEOMB outline was secured on 23/02/2023.

An Air Quality Assessment was approved via Condition 4 attached to the LEOMB planning permission(ref. 585/APP/2017/2819). The approved Air Quality Assessment confirms that the that the development is not air quality neutral in terms of transport emissions, the impacts associated with transport emissions are "negligible" and sets out mitigation measures to address to excess emissions.

This Air Quality Assessment has been submitted to discharge Condition 20 and confirms the building and vehicle emissions relating to the future use of the development and, thereby, its residents. The pollutants assessed as part of an Air Quality Neutral assessment are nitrogen oxides (NOx) and particulate matter (PM10).

Figure – Site Location Plan

2 Air Quality Neutral Assessment

2.1 Building Emissions

Benchmark Emissions

The Building Emissions Benchmarks (BEBs) for the land use category applicable to residential properties are provided in Table 1. Emissions of PM_{10} have not been considered as oil and/or solid fuel are not proposed to be used at the development.

Land Use Class	Heating System Type	NO_x (gNO_x/m^2/annum)
C3	CHP + gas boiler network	7.8

Table 1: Building Emissions Benchmarks (BEBs)

Using the method described within the Air Quality Neutral London Plan Guidance (LPG), the site-specific benchmarked emissions have been calculated using the emission rate in the table above. The total building NO_x emissions have then been calculated. A comparison of the actual versus the benchmark can then be found.

These calculations follow the example in Appendix 1 of the Air Quality Neutral LPG which translates the results into kg/annum.

Land Use	GIA (m^2)	Building Emissions Benchmarks ($gNOx/m^2$/annum)	Benchmarked Emissions (kg/NOx/annum)
C3	9,913	7.8	**77.32**

Table: Calculation of Benchmark Building NO_x Emissions

Actual Emissions

In terms of Building Emissions for the scheme, this phase of the development connects to the St. Andrew's Park District Heat Network (DHN) . This energy centre associated with the St. Andrew's Park DHN is comprised of gas-fired boilers and gas-fired CHP. As per the approved Low Emissions Strategy (April 2024) the specification of these elements are:

Plant Selection

The following plant has been selected:

Item	Manufacturer	Model	Stated NO_x emissions
Gas-boilers	Hoval	UltraGas 2D 2200	41mg/kWh
CHP	2G	Aura 412 EG	65.7mg/Nm^3

Table 2 – Selected plant and associated stated NO_x emissions

With overall emissions of **65.65**mg/kWh:

Appendix A - St Andrews LEOMB

Inputs

	Parameter	Value	Units
B	Gas-boiler annual heat demand contribution (refined)	14.8%	-
C	CHP annual heat demand contribution (refined)	85.2%	-
D	Gas-boiler stated emissions (@0% O2)	41.00	mg/kWh
E	CHP stated emissions (@5% O2)	50.00	mg/Nm3
F	5% to 0%O2 correction factor	1.31	
G	Conversion factor mg/m3 to mg/kWh	0.86	
H	Gas-boiler AQA emissions (@0% O2)	41.00	mg/kWh
I	CHP AQA emissions (@0% O2)	95.00	mg/Nm3
O	Gas-boiler annual heat demand contribution (AQA)	39.0%	-
P	CHP annual heat demand contribution (AQA)	61.0%	-

Outputs

	Parameter	Value	Units
J=E*F	CHP stated emissions (@0% O2)	65.72	mg/Nm3
K=J*G	CHP stated emissions (@0% O2)	56.32	mg/kWh
L=B*D+C*K	**Average weighted emissions(plant)**	**54.06**	mg/kWh
M=G*I	CHP stated emissions (@0% O2)	81.42	mg/kWh
N=O*D+P*M	**Average weighted emissions(AQA)**	**65.65**	mg/kWh
		11.60	

In terms of the estimated gas-usage, the total scheme has CO_2 emissions of 48.3 tonnes per annum as per the SAP calculations:

	m^2	DER	Total kCO_2 per unit	No. of units	Total tCO_2 per annum
2B Mid Terrace - Mid Floor	62.9	7.64	480.6	45	21.6
2B Mid Terrace - Ground Floor	62.9	8.47	532.8	21	11.2
3A - Mid Floor	104	7.27	756.1	1	0.8
3B - Top Floor	104	7.98	829.9	1	0.8
TOTAL – Regulated CO_2 Emissions					**48.3**

Based on this being 75% of gas for space heating and hot water (the remaining 25% being for electricity for lighting and pumps and fans) then then the gas usage would be:

Land Use	GIA (m^2)	Carbon Emissions (t)	Carbon Factor for Gas (Part L 2021)	Estimated Gas Usage (kWh/annum)
C3	9,913	36.22	0.210	172,000

Table: Calculation of gas usage

Land Use	Estimated Gas Usage (kWh/annum)	NO_x Emission Rate (mg /kWh)	Total Building Emissions (kg/annum)
C3	172,000	65.65	11.29

Table: Calculation of Total Building NO_x Emissions

Total Benchmarked NO_x Emissions (kg/annum)	Total predicted NOx building emissions (kg/annum)	Difference (kg)
77.32	**11.29**	**-66.03**

Table: Comparison of Total Building NO_x Emissions and Building Emissions Benchmarks

The building emissions associated with the development do not exceed the required benchmark.

2.2 Transport Emissions

The Transport Emissions Benchmarks (TEBs) are calculated by multiplying the relevant emission benchmarks by the number of properties for residential use.

The traffic data here was taken from traffic surveys undertaken within the Technical Traffic Note which formed the latest transport data approved under the LEOMB Outline consent. This is the note that is referred to in relation to trip generation in the note that was approved under the Reserved Matters consent. This data is also consistent with the data set out in the approved Air Quality Assessment (Condition 4).

The table below sets out the benchmark emissions, development emissions and total emissions. The proposed trip rate is consistent with the approved Air Quality Assessment.

Benchmark Emissions						
			Emissions		Total Emissions	
Land Use	Benchmark Trip Rate	Average Distance per trip	NOx	PM2.5	NOx	PM2.5
C3	40,230	10.8	0.35	0.028	152.1	12.2
Development Emissions						
Land Use	Proposed Trip Rate	Average Distance per trip	NOx	PM2.5	NOx	PM2.5
C3	49,275	10.8	0.35	0.028	186.3	14.9
Total Emissions						
	Benchmarks	Total Emissions (Tonnes per Annum)	Excess Emissions			
Nox Emissions	0.152	0.186	0.034			
PM2.5 Emissions	0.012	0.015	0.003			

The above demonstrates that there would be excess transport emissions generated by the development. The excess emissions are predicted to have a negligible effect in accord with the conclusions of the Air Quality Assessment approved under the LEOMB planning permission. A comprehensive set of mitigation measures to address the excess emissions have been agreed with the London Borough of Hillingdon. The agreed mitigation measures comprise:

- The provision of active and passive EV charging in accordance with the details approved in relation to Condition 7 (ref. 585/APP/2024/1329); 20% active EV charging spaces and 80% passive EV charging spaces.
- The delivery of residential cycle stores in accordance with the approved plans associated with the LEOMB planning permission.
- Provision of a Travel Plan in accordance with the S106 Agreement attached to Outline Consent ref. 585/APP/2017/2819. The Travel Plan must set out a commitment to provide a £50 sustainable travel voucher for each unit in the scheme and promote sustainable travel modes (including a car-sharing scheme to residents.
- The provision of a Car Club within St. Andrew's Park. This is currently operational from Churchill Road, adjacent to the LEOMB land parcel.

3 Conclusion

This Air Quality Assessment aligns with the conclusions of the approved Air Quality Assessment as per Condition 4. It demonstrates that the development is air quality neutral in terms of building emissions and there is a negligible effect in terms of transport emissions, which is appropriately addressed via the mitigation measures agreed with LB Hillingdon.