



**Residential Development
Blocks A3 & H
579 – 583 Uxbridge Road
Hayes**

**Energy Statement
Addendum**

April 2024

This Energy Statement Addendum has been prepared by JSA Energy on behalf of their clients to support a planning application submitted under Section 73 of the Town and Country Planning Act 1990 to increase the number of dwellings by two, from the original for 21 no. total flats across 2 no. blocks.

Antony Straszewski

JSA Energy

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www.jsaarchitects.com

1. Introduction

Planning Permission for the development of the site at 579-583 Uxbridge Road was granted on 2nd October 2019 for the demolition of the existing dwellinghouses and the construction of 21 flats within two new buildings, London Borough of Hillingdon Application Ref: 72470/APP/2016/4648. Block A3 of the proposed development was originally designed to provide 10 flats on three floors with two large three bedroom flats on the ground floor. An application, Ref: 72470/APP/2023/747, was submitted under Section 73 of the Town and Country Planning Act 1990 to increase the number of dwellings across the site from 21 to 23, specifically by increasing the number of flats on the ground floor of Block A3 from two to four. Planning permission was granted on 15th April 2024 with the following condition:

- 8 Prior to the occupation of Block A3, a revised and appropriately detailed energy assessment for the 23 the annual baseline regulated energy demand (kwhr) as per 2021 Building Regulations (or subsequent amendments) and associated carbon emissions (kgCO2 and tCO2). The assessment shall then set out the measures and technology required to achieve at least the 35% carbon reduction in the CO2 associated with the baseline regulated energy demand; these measures must be sufficiently evidenced with corresponding details and specifications including the location of low and zero carbon technology (i.e. roof plans showing the inclusion of PV panels). The updated Energy Assessment must clearly set out any shortfall (tCO2) of the zero carbon standard. The development must proceed in accordance with the approved updated Energy Assessment.

REASON

To ensure the development achieves zero carbon in accordance with Policy SI2 of the London Plan (2021).

As the London Plan and Building Regulations Part L have both been updated since the original application was granted permission, clarification was sought by JSA Architects from the planning department as to whether the condition applied to the two new flats and the original 21 flats or just to the two new flats alone. It was agreed that the best way forward was *“for an addendum to the original energy statement to be submitted which demonstrates that the two new units comply with the standards set out in the policies attached to the condition. If this is submitted via a details application, it should be sufficient to discharge the condition”*.

This addendum sets out to demonstrate that the two new flats, numbered A1 and A4 meet the condition.

2. Policy Context

The National Planning Policy Framework (NPPF, 2023) paragraph 11 sets a presumption in favour of sustainable development and states that for decision-taking this means “approving development proposals that accord with an up-to-date development plan without delay;”

National and regional planning policy is enacted and applied at the local level and in that context the main policies applicable to the appraisal of this development, are as follows:

- i. The London Plan, March 2021. Policies SI 2 – SI 4. This requires developments achieve a 35% reduction in carbon dioxide emissions relative to Building Regulations Part L 2021. For major developments the first 10% of which must come from improvements to the fabric and services alone, not renewable energy. Other reductions are to come from further fabric and

service improvements and/or the use of renewable energy. The policies also require that developments take advantage of heat networks where available and manage heat risk.

- ii. Mayor of London Energy Assessment Guidance, June 2022. This details the content and format of Energy Statements to support planning applications in accordance with the London Plan and is an update to reflect the introduction of new 2021 Part L Building Regulations.

3. Energy Statement

This addendum to the original Energy Statement specifically addresses each of the issues set out in the policies described above and is designed to address the specific planning condition.

3.1 Energy demand

The calculations of energy demand for the two new flats follow the same principles used for the other 21 flats in the original Energy Statement. However, following the update to Building Regulations Part L in 2021, SAP 10.2 was used to carry out the calculations.

3.2 Carbon dioxide emissions reduction

The calculations follow the standard hierarchical approach of Baseline, Lean Case, Clean Case and Green Case as used in the original Energy Statement.

3.3 Energy demand and efficiency (Baseline)

The total baseline energy demand has been calculated taking full account of energy demands for space heating and hot water, and electricity for pumps, fans and lights. The baseline was determined by using the orientation and make-up of building elements (walls, windows etc.) with U-values and other values consistent with achieving compliance with Approved Document Part L Volume 1: 2021. These are given in Appendix 1.

The specific energy consumption figures for the two new dwellings were then extracted from the SAP 10.2 software, Table 1. The figures were also entered into the Part L 2021 GLA Carbon Emissions Reporting Spreadsheet v2.0, the summary results from which are presented in Section 4.

Table 1. Baseline carbon dioxide emissions

Energy use	CO ₂ emission (kg/yr)		
	A1	A4	Total
Primary space heating	232.5	225.9	458.4
Secondary space heating	0.0	0.0	0.0
Water heating	534.1	484.2	1,018.3
Pumps, fans etc.	11.9	11.9	23.8
Lighting	20.2	16.2	36.4
Total	798.7	738.2	1,536.9

3.4 Energy efficiency measures (Lean)

Since the 2021 update to AD Part L, the efficiency of fabric elements in terms of U-values, airtightness and thermal bridging have improved significantly compared with the 2013 edition. This means that just achieving the values to comply with Part L is challenging; this is particularly the case in relation to the two additional flats when the majority of the fabric elements have already been completed. As a consequence, some fabric elements will be improved or replaced from that originally constructed, to not only achieve compliance with part L but also contribute to the reduction in carbon emissions as part of the Lean Stage. The Lean Case values employed are given in Appendix 1 and the outcome of the Lean case improvements detailed in Table 2.

Table 2. Baseline & Lean Case carbon dioxide emissions

Energy use	CO ₂ emission (kg/yr)		
	Baseline	Lean Case	CO ₂ emissions reduction (%)
Primary space heating	458.4	410.0	
Water heating	1,018.3	928.6	
Pumps, fans etc.	23.8	23.8	
Lighting	36.4	36.4	
Site Total	1,536.9	1,398.8	9.0

In terms of compliance with applicable policy, The London Plan, March 2021, Policies SI 2 – SI 4, require developments achieve at least a 35% reduction in carbon dioxide emissions relative to Building Regulations Part L 2021. This is reiterated by the planning condition and is addressed in the following sections.

3.5 Decentralised Energy (Clean)

The feasibility of Combined Heat and Power / Combined Cooling, Heating, and Power systems was considered in the Energy Statement for the original 21 dwellings. Such a system was not considered suitable at that time and the addition of two additional flats has not changed the situation. Consideration was also given to the feasibility of connecting to an existing or planned district heating network but as none existed this was also dismissed. Finally, installation of a community space heating and hot water network in the development site itself was considered. Calculations showed the carbon dioxide savings would be minimal and would therefore still necessitate a substantial contribution from renewables to achieve the 35% carbon dioxide reduction required.

3.6 Renewable Energy (Green)

The original Energy Statement identified photovoltaic (PV) panels as the most effective renewable energy solution to reducing the carbon emissions across the site. The overall scheme has been implemented with a total of 8.8 kWp installed on Block A3 and 11.2 kWp installed on Block H.

The PV system on Block A3 consists of 4no. 320W panels mounted on the south facing sloped roof and 20no. 320W panels mounted on the flat crown roof. In relation to the two new flats, the output of the PV system on Block A3 is allocated in the SAP calculations to all the flats in proportion to their floor area. A summary of the impact of the PV system on the carbon emissions of the two new flats is provided in Table 3.

Table 3. Impact of photovoltaic system

Flat	Reduction in CO ₂ emissions (kg/yr)	CO ₂ emissions reduction (%)
A1	68.4	9.4
A4	53.7	8.0
Total	122.1	8.7

To achieve full compliance with the London Plan policy and in turn, the planning condition, the gas boilers will be replaced by Air Source Heat Pumps (ASHPs) to provide space heating and hot water. The combined impact of the PV system and installation of heat pumps is detailed in Table 4.

Table 4. Impact of renewable technology (Green case)

Stage	CO ₂ emission (kg/yr)	CO ₂ emissions reduction (%)
Baseline	1,536.9	
Lean Case	1,398.8	
Clean Case	1,398.8	
Green Case (PV only)	1,276.7	
Green Case (PV & ASHP)	789.6	48.6

In accordance with The London Plan zero carbon target for residential units, the remaining carbon dioxide emissions will need to be off-set.

3.7 Carbon off-set

Combined with the Lean Case improvement, the PV system and ASHPs will help satisfy the requirement for at least 35% of the carbon dioxide savings to be met on site, Table 5. This leaves 0.8t of carbon dioxide per annum, for which an off-set payment is required, totalling £2,251 (0.8t at £95/t for 30 years), Table 5.

Table 5. Carbon dioxide reduction at each stage of the energy hierarchy

	Regulated carbon dioxide savings		
	kg CO ₂ / yr	% at each stage	% cumulative
Savings from energy demand reduction (Lean)	138.1	9.0	9.0
Savings from heat network / CHP (Clean)	0.0	0.0	9.0
Savings from renewable energy (Green)	609.2	39.6	48.6
Cumulative on site savings	747.3		48.6
Annual savings from off-set payment	789.6	51.4	100
Total	1,536.9	100	100

4. Summary & Conclusion

The foregoing results show that this development proposal meets the applicable planning policies and planning condition that relate to the energy efficiency and the reduction of carbon dioxide emissions. This is as a result of a combination of fabric improvements but especially the use of renewable technology. The baseline carbon dioxide emissions for the two extra flats is 1,537 kg/yr. Improvements to the fabric of the flats provided a 138 k/yr, 9% reduction in carbon dioxide emissions. The installation of low carbon and renewable technology in the form of PV panels and air source heat pumps to provide space and water heating, significantly reduced the carbon dioxide emissions further. Output from the Part L 2021 GLA Carbon Emissions Reporting Spreadsheet is shown in Table 6 and Figure 1. It should be noted that the GLA spreadsheet tends to round figures far more than has been used elsewhere in the report, so some minor differences may be seen.

Table 6. Carbon dioxide reduction at each stage of the energy hierarchy

Residential

Table 1: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for residential buildings

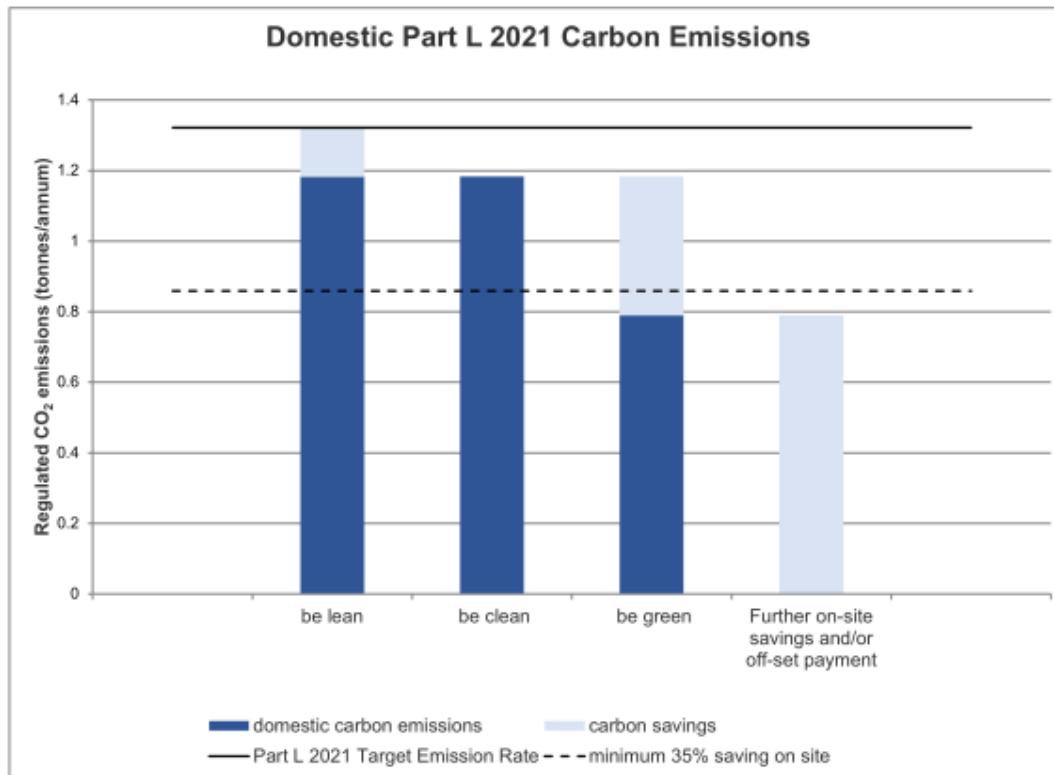
	Carbon Dioxide Emissions for residential buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	1.3	
After energy demand reduction (be lean)	1.2	
After heat network connection (be clean)	1.2	
After renewable energy (be green)	0.8	

Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for residential buildings

	Regulated residential carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Be lean: savings from energy demand reduction	0.1	10%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	0.4	30%
Cumulative on site savings	0.5	40%
Annual savings from off-set payment	0.8	-
(Tonnes CO ₂)		
Cumulative savings for off-set payment	24	-
Cash in-lieu contribution (£)	2,251	

*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab

Figure 1. Carbon dioxide emissions at each stage of the energy hierarchy



In summary, condition 8 of the planning permission granted on 15th April 2024 has been fully satisfied.

5. References

The Building Regulations 2010. Approved Document L Conservation of fuel and power. Volume 1: Dwellings. 2021 edition.

Mayor of London. Energy Assessment Guidance. Greater London Authority guidance on preparing energy assessments as part of planning applications (June 2022).

Mayor of London. The London Plan. The Spatial Development Strategy for Greater London, March 2021

National Planning Policy Framework, December 2023. Department for Levelling Up, Housing & Communities.

The Government's Standard Assessment Procedure for Energy Rating of Dwellings. Version 10.2 (03-02-2022).

Appendices

Appendix 1. SAP values for establishment of baseline and lean cases

Element or system	Baseline	Lean
Windows	U = 1.4 W/m ² K (double glazed)	0.80 W/m²K (triple glazed)
External walls	U = 0.18 W/m ² K	0.10 W/m²K
Ground Floor	U = 0.13 W/m ² K	0.09 W/m²K
Roof	n/a	n/a
Thermal bridging (W/mK)	Accredited Construction Details (ACD) 11.30	Accredited Construction Details (ACD) 24.24
Air permeability	5.0 m ³ /(h.m ²) at 50Pa	3.5 m³/(h.m²) at 50Pa

Differences highlighted in bold.

Appendix 2. Carbon emissions by fuel type:

Energy Source	Emissions factor kg CO ₂ /kWh
Mains gas	0.210
Electricity	0.136*
Electricity (displaced from grid)	0.136*

*CO₂ factors for grid electricity vary by month. The average figure given in the table are therefore not used directly. Instead the monthly factors given in SAP Table 12d are used in the SAP calculations.