

Energy Statement

for

Land Rear of Zayani Restaurant, 395 Sipson Road, Uxbridge,
UB7 0HU.



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Revision	Author	Checked	Date
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1 Executive Summary

1.1 Scope

This report describes the development of the climate change and energy strategy for the proposed development at ‘Land rear of Zayani restaurant, 395 Sipson Road, Uxbridge, UB7 0HU’.

The scope of the project comprises the construction of two residential units. This Energy Statement has been prepared to demonstrate compliance with Part L, Volume 1 (2021) of the Building Regulations, as well as the London Borough of Hillingdon’s local planning requirements. SAP calculations confirm that the proposed development is energy efficient and fully compliant with all relevant regulatory standards.

The following three-step energy hierarchy has been adopted:

- **Be Lean:** High specification of building fabric and energy efficient services to minimise energy demand, including mechanical ventilation to recover heat energy during winter and provide fresh air.
- **Be Clean:** The site is not currently suitable for a local CHP system or connection to a district network. Therefore, no carbon savings are possible using this measure.
- **Be Green:** The heating and hot water for all dwellings will be provided by Gas combi boiler and PV will be installed for carbon reduction.

In summary, the strategy detailed in this statement demonstrates a carbon emission reduction of **18.0 %** against SAP 10.2 baseline for the new residential dwellings.

Through a combination of these measures the design aims to meet the following planning requirements by following the energy hierarchy Be Lean, Be Clean and Be Green.

1.2 Carbon Emission Reduction

Residential Emissions	Regulated Emissions (tonnes CO ₂ /annum)	Regulated tonnes CO ₂ /annum savings per stage	Regulated (%) CO ₂ emission saving per stage
Baseline	2.0	-	
Be Lean	1.8	0.2	12.0%
Be Clean	1.8	0.0	0.0%
Be Green	1.7	0.1	6.0%
Cumulative on-site savings		0.4	18.0%

Table 1: Be Lean, Be Clean, Be Green Reductions in Carbon Emissions for 2 New Dwellings

1.3 Building Regulations Requirements

For the proposed design, compliance with the domestic Part L, Volume 1 (2021) targets for Dwelling Emission Rate (DER), Fabric Energy Efficiency (FEE), and Primary Energy Rate (PER) has been demonstrated for each dwelling. The calculated carbon emission rate for the proposed development is lower than the Part L, Volume 1 (2021) target.

Full SAP calculation results demonstrating compliance with the Target Emission Rate (TER), Target Fabric Energy Efficiency (TFEE), and Target Primary Energy Rate (TPER) are provided in Section 4.3.

2 Introduction

This energy statement has been prepared by B56 Associates Ltd on behalf of Caldecotte Group Services, MK11 1SY in support of its planning application for the proposed development.

2.1 Description of the project

The site is located at ‘Land rear of Zayani Restaurant, 395 Sipson Road, Uxbridge, UB7 OHU’

The proposed number of dwellings are 2.



Figure 1: Proposed site plan.

3 Planning Policies

This Climate change and energy statement addresses local and National planning policies which relate to sustainable design and construction mainly contained within the London Borough of Hillingdon local plan.

3.1 National Planning Policy Framework (NPPF) 2023

The National Planning Policy Framework sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission be determined in accordance with the development plan unless material considerations indicate otherwise.

The National Planning Policy Framework must be considered in preparing the development plan and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements. The purpose of the planning system is to contribute to the achievement of sustainable development. In summary the framework advises:

“Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

New development should be planned for in ways that:

- Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- Can help to reduce greenhouse gas emissions, such as through its location, orientation, and design. Any local requirements for the sustainability of buildings should reflect the government's policy for national technical standards.

To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- Provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);
- Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

- Identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers."
- "Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):
- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure
- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy

3.2 Local Planning Policy

3.2.1 Local plan of London Borough of Hillingdon.

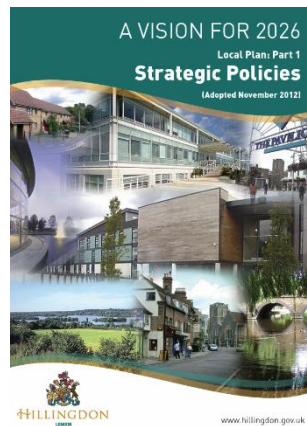


Figure 2 - Wandsworth's Local plan: part 1- document

The **Hillingdon Local Plan: Part 1- Strategic Policies** is the key strategic planning document for Hillingdon and will support the delivery of the spatial elements of the Sustainable Community Strategy. It sets out the long-term vision and objectives for the Borough, what is going to happen, where, and how this will be achieved

Tackling climate change -

To protect from, mitigate and seek to reduce the detrimental effects of noise, poor air quality and general environmental pollution through strong environmental standards. To promote the mitigation of, and adaptation to, climate change through requirements for sustainable design and construction; reduced carbon emissions; the management of flood risk; and conservation of resources.

Policy EM1 – Climate change adaptation and mitigation.

Policy EM8 - Land, Water, Air and Noise

Policy EM1 – Climate change adaptation and mitigation.

The Council will ensure that climate change mitigation is addressed at every stage of the development process by:

- Promoting the use of decentralized energy within large scale development whilst improving local air quality levels.
- Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimize other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions reductions.
- Encouraging the installation of renewable energy for all new development in meeting the carbon reduction targets savings set out in the London Plan. Identify opportunities for new sources of electricity generation including anaerobic digestion, hydroelectricity and a greater use of waste as a resource.
- Promoting the inclusion of passive design measures to reduce the impacts of urban heat effects.



Policy EM8 - Land, Water, Air and Noise

Water resources

The Council will require that all new development demonstrates the incorporation of water efficiency measures within new development to reduce the rising demand on potable water. All new development must incorporate water recycling and collection facilities unless it can be demonstrated it is not appropriate. For residential developments, **the Council will require applicants to demonstrate that water consumption will not surpass 105 liters per person per day.**

3.2.2 London Plan 2021

The London Plan (2021) published 2nd March 2021 sets out the Mayor’s overarching strategic spatial development strategy for greater London and underpins the planning framework from 2019 up to 2041. This document replaced the London Plan 2016.

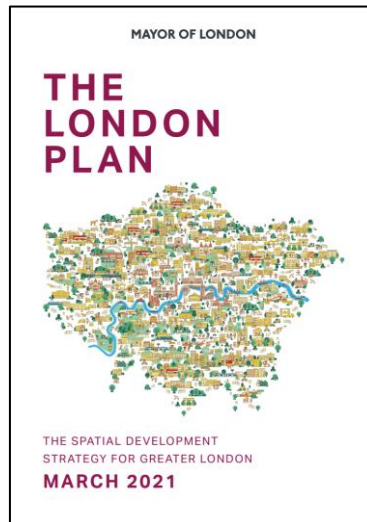


Figure 3 - London Plan 2021

The new Plan has a strong sustainability focus with many new policies addressing the concern to deliver a sustainable and zero carbon London.

Policy GG6 Increasing Efficiency and Resilience is an overarching policy references London’s target to become zero carbon by 2050 and the need to design buildings and infrastructure for a changing climate, addressing water, flood and urban heat island.

Policy SI1 Improving air quality requires development proposals to be at least air quality neutral and submit an Air Quality Assessment.

“Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor’s or boroughs’ activities to improve air quality.”

Any mitigation required to meet the Air Quality Neutral target should be done on site preferably.

Policy SI2 Minimising greenhouse gas emissions sets the requirements for all major developments to follow the energy hierarchy and achieve net-zero-carbon for both residential and non-residential schemes (via onsite carbon reductions and offset payments) and introduces new targets at Lean stage:

This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

- 1) *be lean: use less energy and manage demand during operation*
- 2) *be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly*
- 3) *be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site*
- 4) *be seen: monitor, verify and report on energy performance.*

A minimum on-site reduction of at least 35 per cent beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

- 1) *through a cash in lieu contribution to the borough's carbon offset fund, or*
- 2) *off-site provided that an alternative proposal is identified and delivery is certain.*

Policy SI 3 Energy Infrastructure requires all major developments within Heat Network Priority Areas will need to utilise a communal low-temperature heating system. Where developments are utilising CHP this policy also requires them to demonstrate that 'the emissions relating to energy generation will be equivalent or lower than those of an ultra-low NOx gas boiler'. Any combustion on site should meet the requirements of part B of Policy SI1.

Policy SI 4 Managing heat risk requires:

A Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.

B Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

- 1) *reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure*
- 2) *minimise internal heat generation through energy efficient design*
- 3) *manage the heat within the building through exposed internal thermal mass and high ceilings*
- 4) *provide passive ventilation*
- 5) *provide mechanical ventilation*
- 6) *provide active cooling systems.*

4 Part L Compliance

4.1 Part L Volume 1 2021 Criteria

As a new build dwelling block, the project will need to comply with Part L Volume 1 of the Building Regulations. This document highlights the minimum energy performance requirements for new buildings:

Criterion 1:

“Where a building is erected, it shall not exceed the target CO2 emission rate for the building that has been approved pursuant to regulation 25, applying the methodology of calculation and expression of the energy performance of buildings approved pursuant to regulation 24.”

Criterion 2:

“Where a dwelling is erected, it shall not exceed the target fabric energy efficiency rate for the dwelling that has been approved pursuant to regulation 25, applying the methodology of calculation and expression of the energy performance of buildings approved pursuant to regulation 24”

Criterion 3:

“Where a building is erected, it must not exceed the target primary energy rate for the building which has been approved pursuant to regulation 25(c), applying the methodology of calculation and expression of the energy performance of buildings approved pursuant to regulation 24.”

4.2 Part L Compliance Results

The full results summary can be found as below in:

- SAP Input (**Appendix 1**)
- Regulation Compliance Report (**Appendix 3**)

Results show that the percentage improvement in carbon emissions achieved through the proposed passive and active measures. The below results are taken from the Block Compliance for each building.

Block Compliance (2 dwellings)

Fabric Energy Efficiency (kWh/m2.annum)			Carbon emissions (kgCO2/m2.annum)			Primary Energy (kWh PE/m2.annum)		
TFEE	DFEE	Improvement	TER	DER	Improvement	TPER	DPER	Improvement
38.74	38.27	1.22%	11.60	9.46	18.41%	60.53	50.61	16.39%

Table 2: Block Compliance

5 Energy Strategy

The following hierarchy has been followed with regards to optimising energy use:

- Be Lean – Use Less Energy
- Be Clean – Efficient Energy Supply
- Be Green – Renewable Energy

Following the energy hierarchy, the approach focuses on managing the energy demand of the development through a 'fabric first' method. This is the most effective way to reduce energy consumption and CO₂ emissions. Additional energy reductions will be achieved by specifying high efficiency building services to minimise energy losses in supply, storage, and distribution.

After reducing demand, further CO₂ emission reductions will be attained by utilising clean energy sources where possible and integrating appropriate renewable and low-carbon technologies. The feasibility of these renewable and low-carbon technologies is discussed in the following section.

5.1 Baseline

The baseline CO₂ emissions are calculated from the 'notional' building using the Part L software tools. The 'notional' building consists of standard set of fabric and services parameters which deliver the Target Emissions Rate. This is then used as the Baseline emissions from which savings from 'Be Lean, Be Clean, Be Green' measures are calculated.

Table 3 below shows the regulated and unregulated baseline figures.

	Carbon Dioxide Emissions (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline	2.0	-

Table 3: Baseline Carbon Emissions for the 2 new dwellings

6 Demand Reduction (Be Lean)

6.1 Passive Measures

In this section, several passive measures are proposed prior to the implementation of LZC technologies. In general, the “fabric first” approach is being followed to lower the energy demand as much as possible, followed the proposal of efficient systems and finally the application of low-carbon and renewable energy systems.

6.1.1 New Build Fabric

A key component for Part L Volume 1 2021 is the Fabric Energy Efficiency Standard (FEES), which sets a target figure in kWh/m² for energy demand in new dwellings. FEES is assessed using Dwelling Fabric Energy Efficiency (DFEE) and Target Fabric Energy Efficiency (TFEE) values and can only be improved through the building fabric.

Table 4 shows how the U-values and airtightness of the development has been improved from the notional standards set out in Part L.

Element	Targeted value	Part L Notional value	Improvement over Notional value
Exposed Wall U-value (W/m ² .K)	0.17	0.26	41.86%
Ground Floor/ Exposed Floor U-value (W/m ² .K)	0.12	0.18	40%
Roof U-value (W/m ² .K)	0.11	0.16	37.03%
Glazing U-value (W/m ² .K)	1.20	1.60	28.57%
Air Permeability (m ³ /m ² .h) at 50 Pa	3.00	5.00	66%

Table 4: Targeted values compared with Part L Notional values

6.1.2 Thermal Bridging

Part L Volume 1 (2021) places an increased importance on addressing thermal bridging. Thermal bridging can be minimised through careful detailing or the use of Recognised Construction Details (RCDs) or suppliers calculated value.

6.1.3 Natural Ventilation

Although natural ventilation will not be the sole method of ventilating the development, it has been taken into account so as to minimise the use of the mechanical ventilation and therefore reduce the energy usage.

6.1.4 Summary of passive measures

- High levels of insulation- keep heat in
- Low energy glazing- keep heat in
- Airtight construction- keep warm air inside.
- Good daylight- reduce artificial lighting.
- Low flow taps- reduce hot water use.

6.2 Active Measures

The following active measures have been used:

6.2.1 Space Heating

Heating for the new dwellings will be provided by high efficiency Natural Gas boiler to each dwelling.

6.2.2 Domestic Hot Water

Domestic hot water for new dwellings will be provided via Combi boiler via main heating system . All primary pipework will be insulated and the fuel type will be gas.

6.2.3 Ventilation

The MVHR units proposed for the 2 new dwellings for better indoor air quality and thermal comfort.

6.2.4 Lighting

The following measures will be considered in the detailed lighting design:

- Use of energy efficient light fittings to achieve improved lumens per circuit watt beyond the minimum requirements of the Building Regulations Part L 2021.
- Photocells to automatically turn off lighting in appropriate areas, such as external lighting, where daylight levels are sufficient.

6.2.5 Summary of active measures

- Natural ventilation through openable windows to reduce energy use
- LED lighting and controls
- High efficiency Communal air source heat pump system
- Time and temperature zone control

6.3 Be Lean Carbon Reduction

Table 5 shows the resulting carbon emissions of the development before and after applying the “Be Lean” measures outlined above.

As shown, the carbon emissions are predicted to be lower than the base case. This is due to the high performance of building fabric and services. Through the “Be Lean” measures, an improvement of **12.0 %** can be achieved.

	Regulated Carbon Dioxide Emissions	
	Tonnes CO ₂ per annum	Savings (%)
Baseline	2.0	-
Be Lean	0.2	12%

Table 5: Be Lean Reduction in Carbon Emissions for 2 New Dwellings

7 System Efficiency (Be Clean)

7.1 Local Site CHP

Residential sites typically provide only small electrical baseloads making this technology unsuitable and economically unfeasible to operate. In order for the use of CHP to be viable it is essential that the demand for heat and electricity is simultaneous. This is often a problem in the summer months as the need for heating is reduced, whilst the electricity demand remains fairly constant. Additionally, the installation of a CHP requires large up-front capital investment.

7.2 Connection to District Heating Network

The map below shows the existing district heat networks in Sipson. The site is not in proximity to any existing heat network. However, by using a community heating system in the development, a future connection would not be compromised.

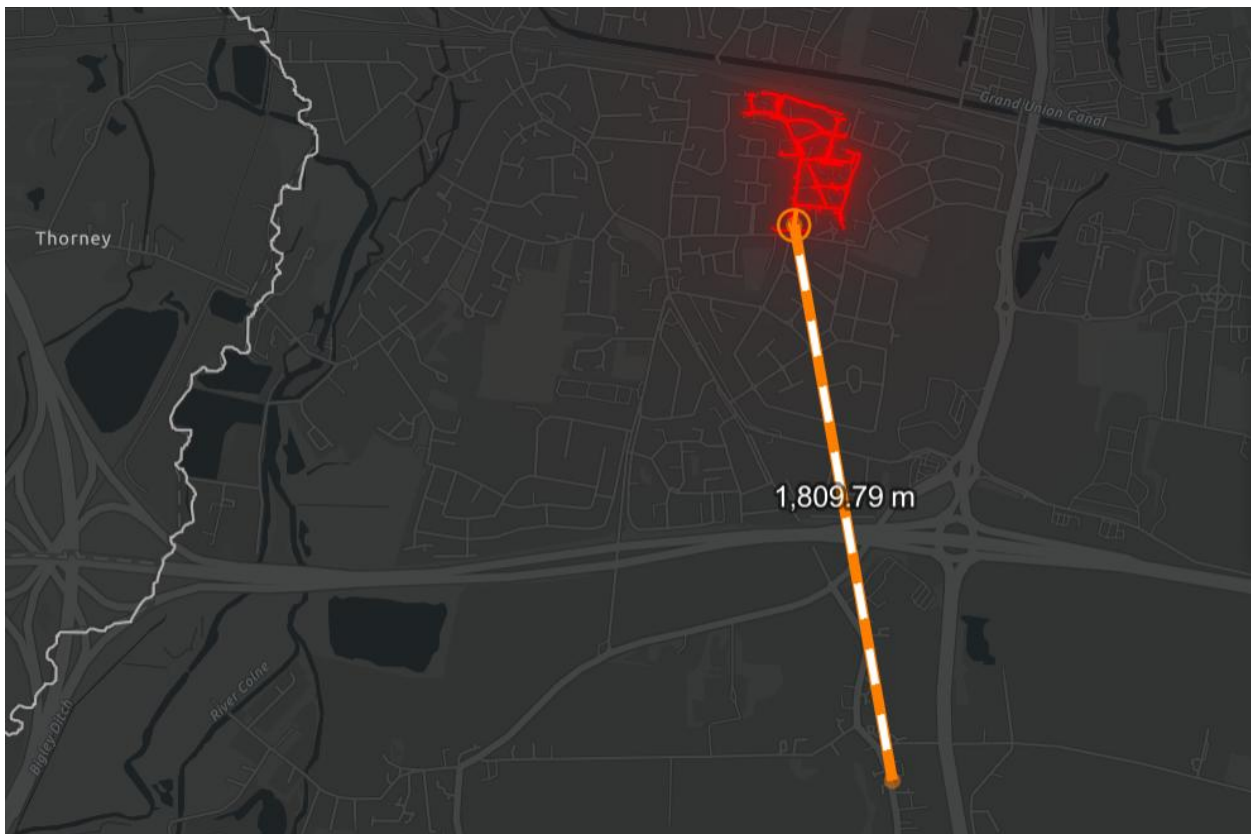


Figure 3: Heat Map London

7.3 Be Clean Carbon Reduction

Since a district heating connection, or on-site CHP is unviable, no carbon emissions reductions are available using these measures.

8 Renewable Energy (Be Green)

An initial review was conducted to eliminate any technologies which from the outset have been identified as unviable. This can be found in **Appendix 2: Preliminary Appraisal of Renewable Energy Options**.

From this study, Solar PV has been identified as the most effective technology for the development.

8.1 Solar Photovoltaic

Solar photovoltaic panels provide renewable electricity to a building. To maximise efficiency, panels should be South-East oriented on Roof but in this case it is east facing to achieve maximum output. There must be minimal shading of the panels as shading will reduce performance.

The panels require little maintenance although the inverters (which convert the generated DC power to AC for use in the building) are likely to require replacement every 10-15 years.

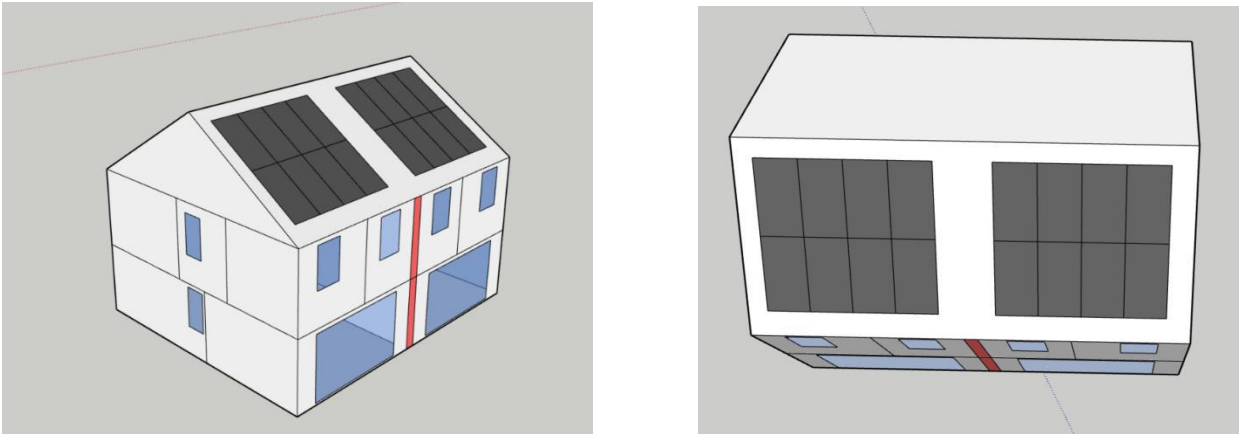


Figure 4: Proposed PV Lay-out

8.2 Be Green Carbon Reduction

Following the energy hierarchy, reductions in regulated energy requirements and associated CO₂ emissions have been made at each stage as demonstrated in Table 6. The strategy detailed in Be Green stage demonstrates a further carbon emission reduction of **6 %** against SAP 10 baseline for the new built dwellings. In total, the new built dwelling houses achieves **18 %** CO₂ emission reduction against SAP 10 baseline.

	Regulated Carbon Dioxide Emissions	
	Tonnes CO ₂ per annum	Savings (%)
Baseline	2.0	-
Be Lean	0.2	12%
Be Clean	0.0	0%
Be Green	0.1	6%
Total Savings	0.4	18%

Table 6: Be Lean, Be Clean, Be Green Reductions in Carbon Emissions for 2 New Dwellings

Note –

The proposed development has been designed in accordance with the London Plan energy hierarchy. Due to existing site constraints and potential noise sensitivity, the installation of air source heat pumps is not recommended, as this could lead to an increase in noise pollution. Alternative energy efficiency measures have therefore been prioritised to ensure compliance with relevant policy and Building Regulations.

9 Appendix 1: Key Modelling Inputs – New Build Dwellings

9.1 Related Documents

Architectural drawings were used to create the SAP 10 model of the dwelling.

The following drawings were used as a basis for the SAP calculations:

- Floor plans in AutoCAD format.
- Elevation and Sections in AutoCAD format.

9.2 SAP Specification

The following input were used in creating the Elmhurst Design SAP 10 model:

Construction details		
Floor	Ground floor U-value (W/m ² .k)	0.12
Wall	Wall U-value (W/m ² .k)	0.17
Roof	Roof U-value (W/m ² .k)	0.11
Doors & Glazing	Glazed Door U-value (W/m ² .k)	1.20
	Window U-value (W/m ² .k)	1.20
	Glazing g-value	0.50
	Glazing frame factor	0.7
Thermal Mass Capacity		Calculated
Thermal Bridging		Y value 0.056
Ventilation		
Ventilation type		Mechanical Ventilation Heat Recovery
Air permeability (m ³ /h.m ²)		3
Number of chimneys (secondary heating)		None
Primary heating details		
Heating system		Gas Combi Boiler
Heating emitter		Radiator
Heating fuel		Gas
Heating Model		Ideal EXCLUSIVE 2
Heat Pump annual seasonal efficiency		-
Heating controls		Programmer and Appliance thermostat & TRV
Water Heating		
Hot water system		Gas Combi boiler (From main heating)
Heat Pump Model		-
Cylinder volume (litre)		-
Cylinder heat loss factor (kWh/day)		-
Primary pipework insulated		Yes
Water heating timed separately		Yes
Lighting		
Percentage of low energy lights		100% (100lm/W)
PV Panel Parameters		
Collector Power (kWp)		3.60 kWp for Each House
Tilt of Panel (0)		30 degree
Panel Orientation (0)		East
PV Size (power per panel)		450 watts
No. of panels		16 Panels (8 per house)
PV Connection		Connected to dwelling electricity meter.

10 Appendix 2: Preliminary Appraisal of Renewable Energy Options

This appendix summarises the preliminary analysis of renewable energy options, and identifies which should be assessed in further detail, and which should be discounted because of clear technical reasons or other obstacles.

LZC Technology	Basic Technical Information	Technical, Environmental & Economic implications / Considerations	Suited Application	Site Specific Comment	Detailed Analysis?
Solar thermal	Solar collectors (flat plate or tube) transfer energy into transfer liquid to a closed loop twin coil hot water cylinder	+ Government grants available (RHIs) +/- Can meet a significant proportion of the DHW demand. - Efficiency effected by site factors – shading, orientation and roof/ground space -Requires considerable hot water demand all year round to be finically beneficial	Domestic and commercial applications with high annual hot water load; leisure centres, canteens, washrooms	The site does not have a large enough hot water demand to propose solar thermal	No
Wind turbine	Turbine/generator converts wind energy to electrical power.	+ Government grants available (FITs) + Allows on site generation of renewable electricity. - Can create structural, vibrations and noise implications - Not suited for urban environments - Costs can be high in relation to the actual amount of electricity generated - Potential for additional planning issues	Large sized turbines in non-urban or offshore locations will be more effective	Significant planning uses for free standing turbine. Roof mounted turbines generally ineffective. Detailed study of site wind conditions would be required.	No
Solar Photo-voltaic	Converts sunlight to DC electrical power which then using an inverter to convert to DC.	+ Government grants available (FITs) + Allows on site generation of renewable electricity + Generally payback between 7-12 years + Low maintenance requirements. - Efficiency effected by site factors – shading, orientation, and roof/ground space	Wide range of building types of particularly buildings with limited solar shading and south facing roof	This technology is appropriate for residential schemes on the basis that there is a demand for electricity. Maintenance requirements are very low. No complex plant to accommodate.	Yes
Air source heat pump	Air Source Heat Pumps (ASHP) capture heat from the outside air and transfer the heat directly to the air inside the building or transferring the heat to a liquid medium that can be pumped around the building	+Lower installation cost that ground source heat pump + Can provide heating and cooling + Government grants available (RHIs) -COP is not as good during the heating season when the outside air temperature is often less than the ground temperature -Can restrict distribution strategies -Carbon saving are less clear cut	Wide range of building types particularly building designed to have low temperature heat emitters.	Due to noise issue on site , it will increase noise pollution. For minor development, the capital cost of installing ASHPs and associated mitigation measures is high relative to the scale of the scheme, this results in an extended payback period, reducing overall cost effectiveness when compared with alternative energy efficiency improvements	No
Ground Source Heat Pump	Ground Source Heat Pumps (GSHP) capture heat from the ground and transfer the heat to a liquid medium that can be pumped around the building	+ COP is much better than air source heat pumps + Government grants available (RHIs) -Requires area for ground collector or borehole -High initial capital cost - Can restrict distribution strategies -Carbon saving are less clear cut	Suits building designed to have low temperature heat emitters with sufficient space for necessary ground works	There is limited ground space available to install this system and the capital cost is not suitable for the scheme. Therefore not considered appropriate for the house.	No
Biomass	Uses biomass as a fuel source for space heating and hot water	+ Government grants available (RHIs) + Renewable source of heating - Requires large fuel storage capacity - Generally a large capital cost	Building/site with sufficient access and storage facilities and a capable maintenance team	There is insufficient storage space and very limited access for regular deliveries to warrant further investigation.	No

Appendix 3: Block Compliance report

Block Reference		Issued on Date	
02 Gas Boiler + MVHR+PV		13/01/2026	
Block Name			
Calculation Type		SAP Version	
New Build (As Designed)		10.2	
Assessor Details		Assessor ID	
Mr. Zahid Ashraf		Q076-0001	
Client			

Block Compliance Report - DER				
Block Reference: 02 Gas Boiler + MVHR+PV		Block Name:		
Property-Assessment Reference	Floor area (m ²)	DER (kgCO ₂ /m ²)	TER (kgCO ₂ /m ²)	% DER/TER
Unit A - 00001	87.34	9.55	11.70	18.38 %
Unit B - 00001	87.34	9.37	11.49	18.45 %
Totals:	174.68	18.92	23.19	
Average DER = 9.46 kgCO ₂ /m ²		% DER/TER		
Average TER = 11.60 kgCO ₂ /m ²		18.41 %		
PASS				

Block Compliance Report - DFEE				
Block Reference: 02 Gas Boiler + MVHR+PV		Block Name:		
Property-Assessment Reference	Floor area (m ²)	DFEE (kWh/m ² /yr)	TFEE (kWh/m ² /yr)	% DFEE/TFEE
Unit A - 00001	87.34	38.67	39.21	1.38 %
Unit B - 00001	87.34	37.87	38.27	1.05 %
Totals:	174.68	76.53	77.48	
Average DFEE = 38.27 kWh/m ² /yr		% DFEE/TFEE		
Average TFEE = 38.74 kWh/m ² /yr		1.22 %		
PASS				

Block Compliance Report - DPER				
Block Reference: 02 Gas Boiler + MVHR+PV		Block Name:		
Property-Assessment Reference	Floor area (m ²)	DPER (kWh/m ² /yr)	TPER (kWh/m ² /yr)	% DPER/TPER
Unit A - 00001	87.34	51.09	61.10	16.38 %
Unit B - 00001	87.34	50.12	59.95	16.40 %
Totals:	174.68	101.21	121.05	
Average DPER = 50.61 kWh/m ² /yr		% DPER/TPER		
Average TPER = 60.53 kWh/m ² /yr		16.39 %		
PASS				

Appendix 4: Water efficiency report

Part G Water Efficiency Calculator

Project Description:	Zayani, 395 Sipson road, Sipson, UB7 0HU. Flat A & B
Project Number:	25229

Prep By	DB	16.01.26
Chkd By	ZA	16.01.26



Number of Bedrooms:	3
Occupancy for Calculation Purposes:	4

Appliance/Usage Details

Taps (Excluding Kitchen Taps)

Tap Fitting Type	Flow Rate (l/min)	Quantity	Total per Fitting Type
Basin tap with restrictor	4	3	12
			0
			0
			0
			0
			0
Total No. of Fittings (No.)	3.0		
Total Flow (l/s)	12.0		
Maximum Flow (l/s)	4.0		
Average Flow (l/s)	4.0		
Weighted Average Flow (l/s)	2.8		
Flow for Calculation (l/s)	4.0		

Showers

Shower fitting Type	Flow Rate (l/min)	Quantity	Total per Fitting Type
Bathroom	10	2	20
			0
			0
			0
			0
			0
Total No. of Fittings (No.)	2.0		
Total Flow (l/s)	20.0		
Maximum Flow (l/s)	10.0		
Average Flow (l/s)	10.0		
Weighted Average Flow (l/s)	7.0		
Flow for Calculation (l/s)	10.0		

Baths

Bath Type	Capacity to Overflow (l)	Quantity	Total per Fitting type
Main Bathroom	130	1	130
			0
			0
			0
Total Number of Fittings	1		
Total Capacity (l)	130		
Maximum Capacity (l)	130		
Average Capacity (l)	130		
Weighted Average Capacity (l)	91		
Capacity for Calculation (l)	130		

WCs

WC Type	Full Flush Volume	Part Flush Volume	Quantity (No)
Standard Dual	4.5	3	3
Total Number of Fittings	3.0		
Average Effective Flush Volume (l)	3.5		

Dishwashers

Dishwasher Type	L per Place Setting	Quantity	Total per Fitting type
No Dishwasher	0.75	1	0.75
			0
Total No. of Fittings (No.)	1		
Total Consumption (l)	0.75		
Maximum Consumption (l)	0.75		
Average Consumption (l/s)	0.75		
Weighted Average Consumption (l)	0.525		
Consumption for Calculation (l/s)	0.75		

Washing Machines

Washing Machine	L per Kg Dry Load	Quantity	Total per Fitting type
No Washing Machine	5.5	1	5.5
			0
Total No. of Fittings (No.)	1		
Total Consumption (l)	5.5		
Maximum Consumption (l)	5.5		
Average Consumption (l/s)	5.5		
Weighted Average Cons. (l)	3.85		
Consumption for Calculation (l/s)	5.5		

Kitchen Taps

Tap Fitting Type	Flow Rate (l/min)	Quantity	Total per Fitting Type
Main Sink Cold	8	1	8
			0
			0
Total No. of Fittings (No.)	1		
Total Flow (l/s)	8		
Maximum Flow (l/s)	8		
Average Flow (l/s)	8		
Weighted Average Flow (l/s)	5.6		

Other Fittings

Water softner Consumption beyond 4% (l/p/d)	0
Waste Disposal Y/N	N

Grey Water & Harvested Rainwater

Total Grey water from WHB taps (l)	0
Total Available Grey Water Supply	232
Possible Demand (l)	108
Grey/Rain Installed Capacity (l)	0

Part G Water Efficiency Calculator

Project Description:	Zayani, 395 Sipson road, Sipson, UB7 0HU. Flat A & B
Project Number:	25229

Prep By	DB	16.01.26
Chkd By	ZA	16.01.26



Number of Bedrooms:	3
Occupancy for Calculation Purposes:	4

Flow for Calculation (l/s)	8
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Figure for Calculation l/person/day	0
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Assessment Summary

Installation Type	Capacity/ Flow Rate	Use Factor	Fixed use (l/p/day)	Total Use (l/p/day)
WC Single Flush Volume (l)	0.0	4.4	0.0	0.0
WC Dual Flush - Full Flush Volume (l)	0.0	1.5	0.0	0.0
WC Dual Flush - Part Flush Volume (l)	0.0	3.0	0.0	0.0
WC's (Multiple) Volume (l)	3.5	4.4	0.0	15.4
Taps Exc. Kitchen Flow Rate (l/s)	4.0	1.6	1.6	7.9
Bath (shower present) (l/s)	130.0	0.1	0.0	14.3
Shower (bath present) (l/s)	10.0	4.4	0.0	43.7
Bath Only (l)	0.0	0.5	0.0	0.0
Shower Only (l/s)	0.0	5.6	0.0	0.0
Kitchen Taps (l/s)	8.0	0.4	10.4	13.9
Washing Machines (l/kg _{day})	5.5	2.1	0.0	11.6
Dishwashers (l/place)	0.8	3.6	0.0	2.7
Waste Disposal (l/s)	0.0	3.1	0.0	0.0
Water Softner (l/s)	0.0	1.0	0.0	0.0

Total Calculated Water Use (l/p/day)	109.5
Grey/RainWater Reused (l)	0.0
Normalisation Factor	0.91
Total Consumption CSH (l/p/day)	99.6
External Water Use Allowance (l)	5.0
Total Consumption Part G (l/p/day)	104.6

Assesment Result	Pass
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