




22 Holmes Road, Kentish Town
London

Energy & Water Statement
for the discharge of Planning Conditions 6 and 7

November 2023

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1 Introduction

1.1 This Strategy

- 1.1.1 This Energy and Water Statement has been commissioned by Judith Leeb and David Gems in respect of the proposed development at 22 Holmes Road, London, NW5 3AB.
- 1.1.2 Specifically, this Statement addresses Planning Conditions 6 and 7 which were put in place when permission for the site was awarded (planning reference number [2019/2823/P](#)). Specifically, these Conditions states the following:

Planning Condition 6

Prior to the commencement of any part of the development, a comprehensive energy strategy for the development including:

- (a) energy efficient measures
- (b) the feasibility for appropriate renewable or low carbon sustainable energy sources with the aim of reducing the development's carbon emission by at least 20%.

Planning Condition 7

The development hereby approved shall achieve a maximum internal water use of 110 litres/person/day. The dwellings shall not be occupied until the Building Regulation optional requirement has been complied with.

- 1.1.3 Since the permission was granted and the condition provided, Building Regulations pertaining to domestic energy performance (and therefore Condition 6) have been updated. We have therefore sought to clarify the baseline against which the 20% is due to be assessed. The case officer has confirmed that the development will:

“... need to achieve 20% from renewables, and this should be a reduction on Part L 2013 to show you've met the approved standards. If you're proposing ASHPs rather than gas boilers then you should be able to achieve this easily.”

- 1.1.4 This Statement therefore demonstrates how the 20% renewable energy target will be achieved when compared to a similar development built to the previous Building Regulations standards, and provides the necessary detail to show, under Part G of the Building Regulations, how the potable water target of 110l/person/day will be met.

1.2 Site Description

- 1.2.1 The site is located at 22 Holmes Road, Kentish Town, in the London Borough of Camden. The formal description of development which accompanied the original planning application was for:

Demolition of former studio building and existing side and rear extensions to 22 Holmes Road. Erection of 2 storey (with basement), 2 bedroom dwelling between no.22 and no.24, and 2 x 2 storey (with basement) 2 bedroom dwellings to rear of site with associated private amenity space and refuse/cycle storage. Erection of new 2 storey extension to rear of no.22.

- 1.2.2 The site location is shown below:

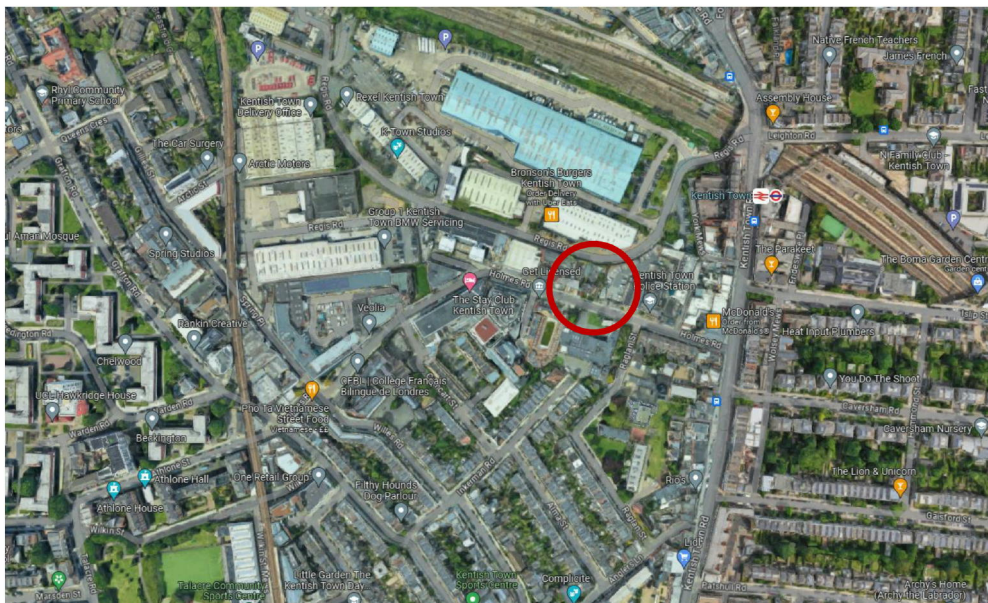


Figure 1: site location (courtesy Google Maps)



Figure 2: site location (courtesy Google Maps)

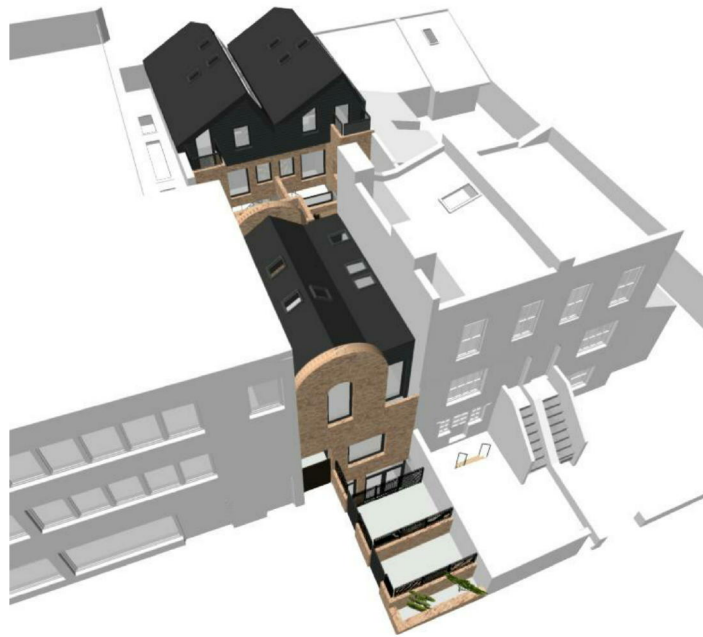


Figure 3: model image of the proposal

2 Energy Strategy

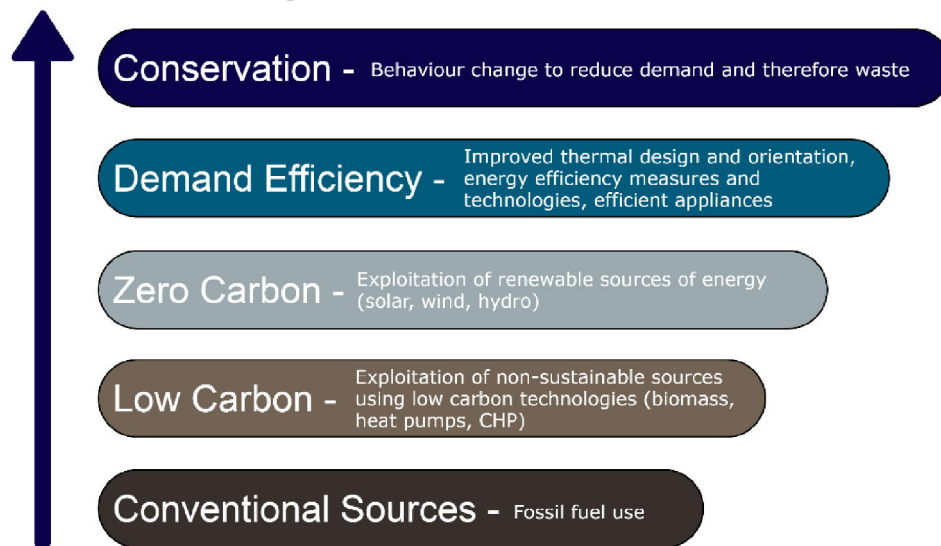
2.1.1 This section details how the proposed development will satisfy Planning Condition 6 relating to renewable energy and carbon emissions, specifically demonstrating that there will be:

- A comprehensive approach to energy efficiency and
- A minimum reduction in projected carbon emissions of 20% through the use of renewable/low carbon energy systems when compared against the Building Regulations 2013

2.2 The Energy Hierarchy

2.2.1 The Energy Hierarchy underpins the entire approach to building energy performance for these proposals, thus prioritising a reduction in the demand for energy as far as possible through thermally efficient, easily controlled, well designed and oriented buildings.

Most Preferred Option



Least Preferred Option

Figure 4: The Energy Hierarchy

2.3 Energy Efficient Building Envelope

Thermal Elements

- 2.3.1 A 'fabric first' approach to building specification will be established, ensuring that the envelope of the dwellings will be highly energy efficient to minimise energy demand and increase comfort.
- 2.3.2 To facilitate this, the individual elements (wall, roof and floor) will be thermally efficient and there will be a focus on ensuring air tightness through high quality construction. Thermal bridges will be minimised through the application of design details and products that provide continuous insulation, such as insulated lintels.
- 2.3.3 The proposed u-values for different thermal elements are given in Table 1 below.

Air Tightness, Ventilation and Overheating

- 2.3.4 The air tightness of a building is important in reducing heat loss and in the prevention of draughts. The target for the development will be to ensure that the dwellings are built with an air permeability level of $5\text{m}^3/\text{m}^2@50\text{Pa}$. This will help reduce the size of the required heating system thus reducing energy use and carbon emissions. Other benefits include a reduction in the risk of interstitial condensation, improving the building's lifespan and reducing sound transmission through the structures.
- 2.3.5 The drive for air tightness will need to be matched by correctly designed and controlled ventilation, as described by the new Approved Document F of the Building Regulations.
- 2.3.6 The preferred ventilation strategy for any development is to provide natural / cross ventilation via openable windows. Overheating risk modelling using *CIBSE Guide TM59 Design Methodology for the Assessment of Overheating Risk in Homes* (CIBSE, June 2017) will be undertaken for the three new homes as construction drawings and the final mechanical and electrical design of the buildings are completed.

2.4 Lighting, Fixtures and Fittings

- 2.4.1 Further energy savings will be made by maximising the efficiency of appliances, lighting, fixtures and fittings. All electric lighting will be energy efficient, and any spot lighting (for example within kitchens and bathrooms) will be provided using dedicated LED fittings.
- 2.4.2 All appliances where installed will be high efficiency, further minimising the use of both electricity and hot water. Moreover, where these are not installed, they will be provided to incoming residents within the list of optional extras.
- 2.4.3 Taps and shower fixtures and fittings that reduce hot water consumption with low and/or aerated flows will be specified – further detail on these elements is provided in Section 3, below.

2.5 Performance of Building Elements

- 2.5.1 The modelled performance of different construction details for the development is provided in Table 2 below. This performance specification has been used within the detailed energy calculations undertaken to inform the energy supply approach, provided further on in this section.

Element Type	Limiting U-Values for New Fabric Elements and Air Permeability in New Dwellings		Target U-Value for Proposed Development (W/m ² K)
	Building Regulations 2013 Maximum (W/m ² K)	Building Regulations 2022 Maximum (W/m ² K)	
Roof / Sloped Roof	0.20	0.16	0.11
External walls	0.30	0.26	0.18
Party walls	-	0.20	0.00
Ground floor	0.25	0.18	0.11
Glazing / doors	2.00	1.6	1.2
Factor			Detail
Thermal bridging	Y-value < 0.15	Y-value < 0.20 (default)	Bespoke construction details individually calculated
Air permeability	10m ³ /m ² /hour@50Pa	8.0m ³ /m ² /hour@50Pa	5m ³ /m ² /hour@50Pa
Heating controls	Programmer, TRVs and room stats	Time and temperature zone control + TRVs	Time and temperature zone controls

Table 1: Summary of Proposed U-Values and Specifications

- 2.5.1 As shown in the table, the indicative specification for the proposed development exceeds the minimum performance standards of the latest Part L Building Regulations which were introduced in June 2022. Building Regulations allow for flexibility in how standards are achieved, and it may be that this specification evolves as the design progresses, but the overall energy supply strategy and choice of technology on each property will remain the same.
- 2.5.2 In terms of the extension to the existing building proposed within the development, the new build aspects (u-values for walls, glazing, roof etc) will also meet the same performance standards. A separate EPC will need to be undertaken for this property – which is only possible once an EPC assessor is on site and a full survey of that property, combined with the new build information can be undertaken.
- 2.5.3 It should be noted, however, that the Building Control inspector will expect the existing building's energy efficiency to be improved wherever feasible from a technical and financial perspective as part of this process. This will further reduce energy demands and emissions accordingly.

2.6 Energy Supply and Renewables

Air Source Heat Pumps

- 2.6.1 Individual air source heat pumps (ASHP) will be installed on each of the new build properties to provide space and water heating. This option will significantly reduce carbon emissions when compared to gas or direct electric baselines and enable the homes to meet the 20% target required by condition.
- 2.6.2 ASHPs are classed as low carbon / renewable technologies – for every 1kW of electrical input the heat pump uses, around 3kW of useful heat is generated for use within the property. To that end when installed and designed properly, they are around 300% efficient. By comparison, a gas boiler is around 90% efficient, and obviously uses fossil fuels.
- 2.6.3 Using heat pumps will also help set the development on a trajectory to net zero emissions over time: the rapid expansion in renewable and low carbon energy supply within the Grid in recent years means that Grid electricity is considerably cleaner per unit than natural gas, and will continue to decarbonise into the future:

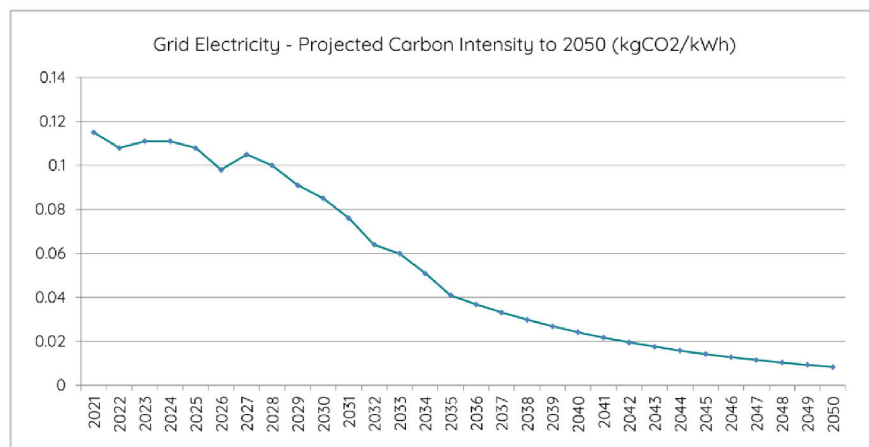


Figure 5: Projected Grid Decarbonisation (using HM Treasury Green Book Guidance figures)

- 2.6.4 For the purposes of the energy calculations exercise, we have Mitsubishi Ecodan air source heating systems, although other manufacturer options with similar levels of performance are available, including Vaillant and Daikin.

2.7 Energy Calculations

Methodology

2.7.1 The Building Regulations changed in 2022 – but the planning condition pertains to reducing emissions by 20% using renewables when compared to the previous regulations. To put this into perspective, the graph below shows what this means in practice:

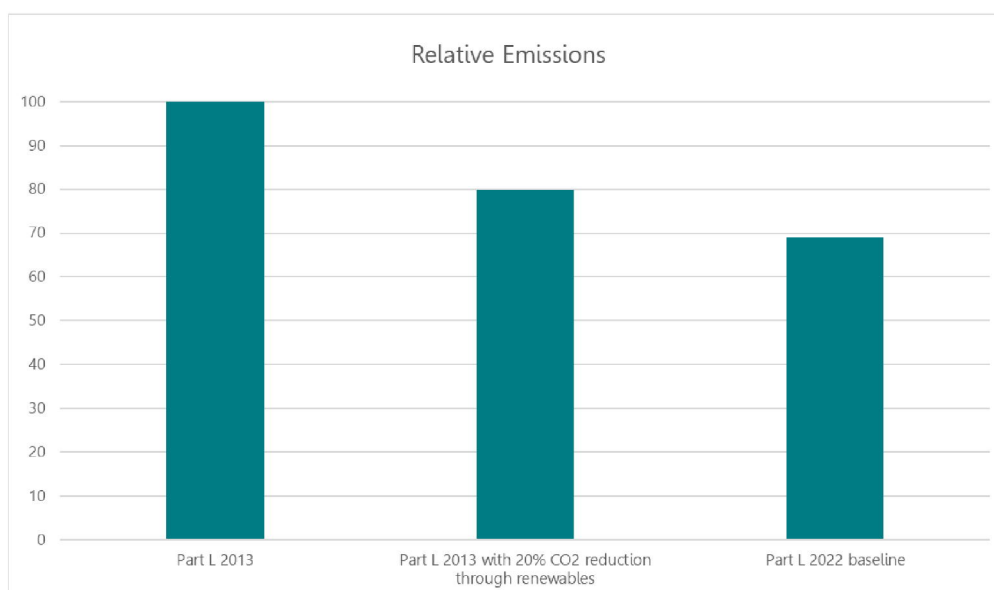


Figure 6: relative emissions

2.7.2 The middle column is effectively the planning target. However, buildings are now required to achieve emissions equal to, or lower than, the right hand column anyway. The right hand column represents a 31% improvement on previous regulations, which is the government's own assessment of last year's changes as an average across the full range of new build house types.

2.7.3 Nevertheless, we appreciate the numbers need to be demonstrated based on detailed calculations. Therefore, to calculate energy demands, design stage (SAP10.2) calculations have been completed for each of the three new homes, using the specifications described above. This establishes the regulated energy demands for space heating, domestic hot water and electricity – and from that the Target Emission Rate (TER) and the Dwelling Emission Rate (DER). The DER must not be higher than the TER.

Assumptions and Limitations

2.7.4 Several assumptions related to construction have been used to inform these calculations, which will be firmed up once construction stage drawings are developed. A co-ordinated approach to design and energy performance, alongside overheating analysis, will be necessary. The results provided use the most accurate and detailed information available at the time of writing.

2.7.5 Any deviation from the current assumptions will require the SAP calculations to be updated, and as such the results here are provisional and are subject to change. Until final construction drawings and final building specifications are resolved, and an 'on construction' version of the calculations are completed for each plot, the results remain provisional.

2.7.6 The above notwithstanding, the results are as representative of the proposed development as they can be, given the stage of the project and information available, and are sufficient to enable Planning Condition 6 to be discharged.

Results

2.7.7 Extracts from the outputs of the SAP calculations can be found in the Appendix. What these demonstrate, in terms of the improvement of the DER against the TER, is that the proposed new homes at 22 Holmes Road, by introducing ASHPs as the renewable/low carbon technology, have emissions far lower than the Part L 2013 equivalent, and well in excess of the 20% required.

Property	TER	DER	% Saving
HO1	15.24	5.44	64%
HO2	13.68	4.02	71%
HO3	13.81	4.06	71%

Table 2: Part L calculation results

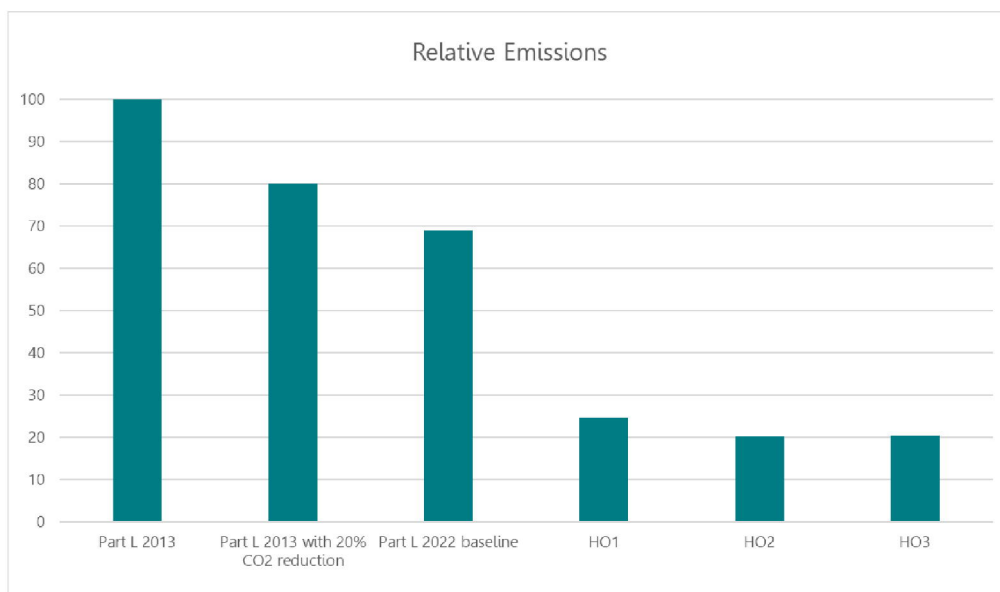


Figure 7: Emissions performance

3 Water Efficiency

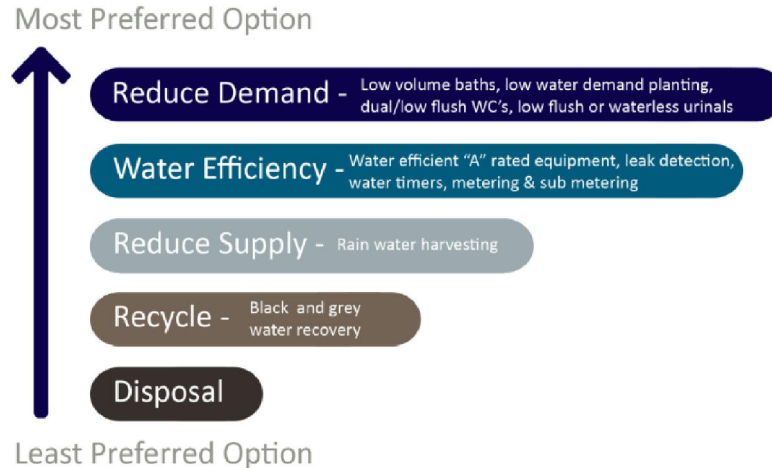
3.1 The Water Hierarchy

- 3.1.1 Water efficiency becomes increasingly important in a changing climate with diminishing water resources. Indeed, the wider area is classified as being in an area of water stress and its water zone is vulnerable to climate change. Planning Condition 7 requires that this development achieves a water efficiency equivalent of 110 litres per person per day (l/p/d). The national average for water consumption is around 143 l/p/d.

Planning Condition 7

The development hereby approved shall achieve a maximum internal water use of 110 litres/person/day. The dwellings shall not be occupied until the Building Regulation optional requirement has been complied with.

- 3.1.2 Water efficiency targets are also driven by the higher standards described within Approved Document G of the Building Regulations which pertain to sanitation, hot water safety and water efficiency. In order to achieve this target, the management of water at the property will follow the principles of the Water Hierarchy:



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Figure 8: The Water Hierarchy

3.2 Water Reduction Measures

3.2.1 A large proportion of the potable water consumed in a domestic setting is used for washing (personal and clothes) and WC flushing:

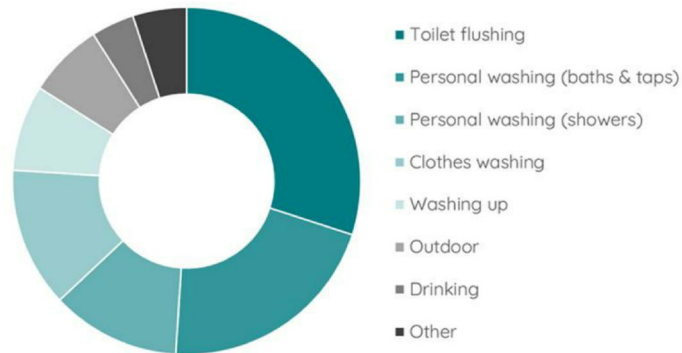


Figure 9: Domestic Water Consumption by End Use

3.2.2 Considerable savings can therefore be made by specifying water efficient fixtures, fittings and appliances complemented by rainwater recycling (water butts) so that daily water use will not exceed the 110 l/p/d target. The following table is the proposed specification of water fixtures and fittings which will achieve this standard:

	Measure	Unit	Performance / Specification
1	Showers	Litres per minute	10
2	Aerated taps	Litres per minute	3
3	Kitchen sink taps	Litres per minute	4
4	Bath	Litre capacity to overflow	140
5	WC	Litres per flush	4 / 2.6 (dual flush)
6	Washing machine	Litres per kg dry load	7
7	Dishwasher	Litres per place setting	1.08

Table 3: Proposed Water Specifications

3.3 Water Calculations

3.3.1 To demonstrate performance and enable the discharge of Condition 7, we have completed the full Part G calculation based on the specification above, and provided the details below. The total water demand per person is calculated to be 104.8 litres per day, less than the requirement set by the planning condition:

Installation Type	Unit of Measure	Capacity/Flow rate (1)	Use Factor (2)	Fixed use (litres/person/day) (3)	Litres/person/day = [(1)x(2)] + (3) (4)
WC (single flush)	Flush Volume (litres)		4.42	0.00	0
WC (dual flush)	Full flush Volume (litres)	4	1.46	0.00	5.84
	Part flush Volume (litres)	2.6	2.96	0.00	7.70
WC (multiple fittings)	Average effective flushing Volume (litres)		4.42	0.00	0
Taps (excluding kitchen/utility room taps)	Flow rate (litres/min)	3.00	1.58	1.58	6.32
Bath (where shower also present)	Capacity to overflow(litres)	140.00	0.11	0.00	15.40
Shower (where bath also present)	Flow Rate(litres / minute)	10.00	4.37	0.00	43.70
Bath Only	Capacity to overflow(litres)		0.50	0.00	0
Shower Only	Flow Rate (litres/minute)		5.60	0.00	0
Kitchen/Utility room sink taps	Flow rate (litres/minute)	4.00	0.44	10.36	12.12
Washing Machine	(Litres/kg dry load)	7.00	2.1	0.00	14.70
Dishwasher	(Litres/place setting)	1.08	3.6	0.00	3.89
Waste disposal unit	(Litres/use)	<input type="checkbox"/> Present	3.08	0.00	0
Water Softener	(Litres/person/day)		1.00	0.00	0
	(5)	Total Calculated use (litres/person/day) = SUM(column 4)			109.67
	(6)	Contribution from greywater (litres/person/day)			0
	(7)	Contribution from rainwater (litres/person/day)			0
	(8)	Normalisation factor			0.91
	(9)	Total internal water consumption = [(5)-(6)-(7)]x(8) (litres/person/day)			99.80
	(10)	External water use			5.0
	(11)	Total water consumption (Building Regulation 17.K) = (9)+(10)(litres/person/day)			104.8

Table 4: Part G water calculation

4 Summary

- 4.1.1 This Sustainability & Energy Statement has been commissioned by Eastern and Lothian Limited to detail how the two planning conditions pertaining to emissions and the use of renewables, and water efficiency, are being addressed, in order that those conditions can now be discharged. Throughout the document we have sought to respond concisely to these conditions, providing the required level of detail and whilst demonstrating the Applicant's commitment to these issues.
- 4.1.2 To that end we have described in detail:
- The approach to energy efficiency and the proposed building specification, showing how the new homes will outperform the latest energy and emissions requirements
 - The use of air source heat pumps as the choice of renewable / low carbon technology on the site, further reducing emissions well beyond the requirements of the planning condition and the 20% target
 - How water efficiency is central to the proposals and how fixtures and fittings within the homes will be specified and installed to achieve a calculated water demand target of just under 105litres per person per day, below the Condition requirement of 110l.
- 4.1.3 On the basis of the information provided, it is requested that the planning authority, the London Borough of Camden, now formally notifies the Applicant that these conditions are discharged, in order that the development can progress in line with the details contained herein.

5 Appendix – SAP Calculation Outputs

5.1 Dwelling HO1

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Array SAP 10 program, Array

Date: Wed 01 Nov 2023 15:24:44

Project Information			
Assessed By	Thomas Owen	Building Type	House, End-terrace
OCDEA Registration	EES/021896	Assessment Date	2023-11-01

Dwelling Details			
Assessment Type	As designed	Total Floor Area	78 m ²
Site Reference	HO1 - Holmes Road	Plot Reference	001
Address			

Client Details			
Name			
Company			
Address			

This report covers items included within the SAP calculations. It is not a complete report of regulations compliance.

1a Target emission rate and dwelling emission rate			
Fuel for main heating system	Electricity		
Target carbon dioxide emission rate	15.24 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	5.44 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	80.29 kWh _{PE} /m ²		
Dwelling primary energy	56.79 kWh _{PE} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	50.0 kWh/m ²		
Dwelling fabric energy efficiency	49.7 kWh/m ²		OK

5.2 Dwelling HO2

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Array SAP 10 program, Array

Date: Wed 01 Nov 2023 15:24:44

Project Information			
Assessed By	Thomas Owen	Building Type	House, End-terrace
OCDEA Registration	EES/021896	Assessment Date	2023-11-01

Dwelling Details			
Assessment Type	As designed	Total Floor Area	88 m ²
Site Reference	HO2 - Holmes Road	Plot Reference	001
Address			

Client Details			
Name			
Company			
Address			

This report covers items included within the SAP calculations. It is not a complete report of regulations compliance.

1a Target emission rate and dwelling emission rate			
Fuel for main heating system	Electricity		
Target carbon dioxide emission rate	13.68 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	4.02 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	72.52 kWh _{PE} /m ²		
Dwelling primary energy	41.36 kWh _{PE} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	41.6 kWh/m ²		
Dwelling fabric energy efficiency	41.3 kWh/m ²		OK

5.3 Dwelling HO3

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Array SAP 10 program, Array

Date: Wed 01 Nov 2023 15:24:44

Project Information			
Assessed By	Thomas Owen	Building Type	House, End-terrace
OCDEA Registration	EES/021896	Assessment Date	2023-11-01

Dwelling Details			
Assessment Type	As designed	Total Floor Area	87 m ²
Site Reference	HO3 - Holmes Road	Plot Reference	001
Address			

Client Details			
Name			
Company			
Address			

This report covers items included within the SAP calculations. It is not a complete report of regulations compliance.

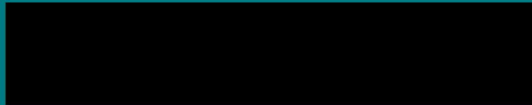
1a Target emission rate and dwelling emission rate			
Fuel for main heating system	Electricity		
Target carbon dioxide emission rate	13.81 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	4.06 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	73.16 kWh _{EP} /m ²		
Dwelling primary energy	41.73 kWh _{EP} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	41.9 kWh/m ²		
Dwelling fabric energy efficiency	41.6 kWh/m ²		OK

Completed on behalf of:



By:

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