



Hayes Town Centre
Hayes

Energy and Sustainability
Statement

Planning Issue 1



Applicant Name: London Borough of Hillingdon

Applicant Address: Civic Centre
High Street
Uxbridge
UB8 1UW

Site Address: Austin Road Estate
Hayes Town Centre
Hayes
UB3 3PW

Project Reference: 5780

Issue: Planning Issue 1

Date: February 2026

Prepared by: AJ / BP

Checked by: BL

Validated by: AF



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Reservation

This report has been prepared solely for the use of London Borough of Hillingdon (the Applicant). Watkins Payne accept no responsibility for its use by any third parties.

The study is based on dynamic simulation modelling (DSM). All results and strategies are directly affected by the inputs listed in this document; any deviation from these is bound to output different results. It is important to note that with any modelling exercise there are assumptions and approximations that have to be made. Details of assumptions made, and approximations used, are supplied as part of the report.



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EXECUTIVE SUMMARY

This Energy and Sustainability Statement has been prepared by Watkins Payne on behalf of the London Borough of Hillingdon ('LBH') in support of a reserved matters application for Land at Austin Road, pursuant to Condition 1 of the hybrid permission for the site. A Section 73 application (application ref: 76550/APP/2025/2864) is currently pending and will be determined prior to the approval of this Reserved Matters Application. Therefore, this RMA responds to the revised wording of the planning conditions proposed within the Section 73 application.

This report details the energy strategy for achieving a low carbon design for the proposed development and provides the supporting evidence via dynamic simulation modelling. The assessment is carried out in accordance with the London Plan and Hillingdon's Local Plan.

The energy strategy follows the energy hierarchy, characterised by the Lean, Clean, Green approach, and demonstrates how the proposed development maximises on-site reductions in annual regulated CO₂ emissions through passive design measures, energy-efficient building services and the integration of on-site renewable technologies.

The projected annual CO₂ emissions and overall regulated carbon emission savings for the overall development are summarised in the tables below.

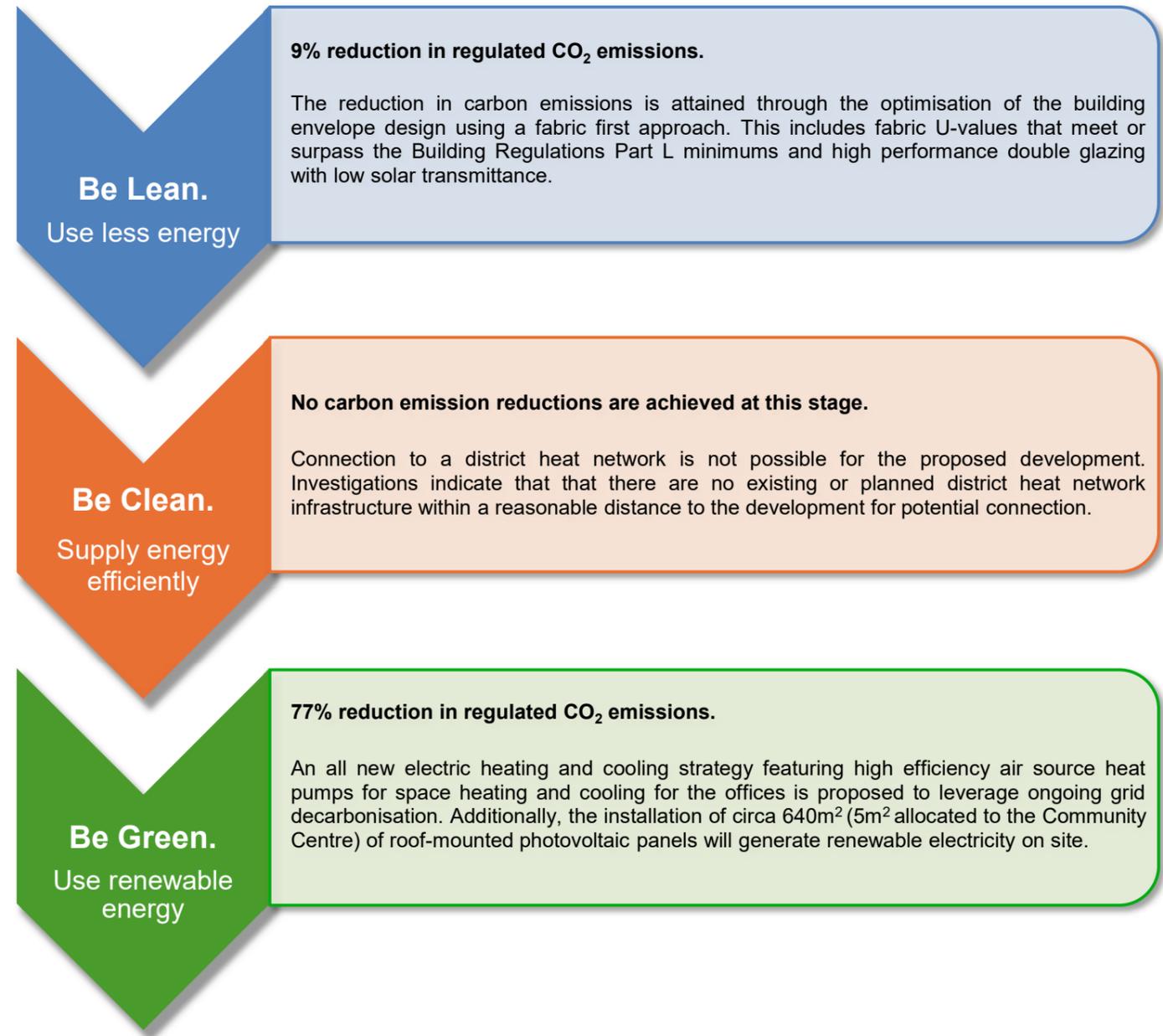
	Annual CO ₂ Emissions (TonnesCO ₂ /year)	
	Regulated	Unregulated
Baseline: Building Regulations Part L 2021 Compliant	28.6	5.49
After energy demand reduction (be lean)	26.0	5.49
After heat network connection (be clean)	26.0	5.49
After renewable energy (be green)	4.0	5.49

Table 1 | CO₂ emissions results

	Annual Regulated CO ₂ Savings	
	TonnesCO ₂ /year	% Improvement
Be lean: savings from energy demand reduction	2.6	9%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy (over lean)	21.9	77%
Total cumulative on-site savings (over baseline)	24.6	86%

Table 2 | CO₂ savings results

The development has been shown to achieve a total reduction in CO₂ emissions of **86%** compared to the Building Regulations Part L 2021 compliant baseline which is equivalent to 5.73 tonnes CO₂ per year.





In addition, this report describes how the proposed development will provide appropriate levels of sustainability within the design and construction of the development. This covers the key themes of Transport, Sustainable Urban Drainage Systems (SuDs), Water, Waste, Air Quality, Ecology, and Noise

Water

- The Energy and Sustainability Strategy report confirms that all water fixture and fittings will be specified to minimise water consumption. This will include the specification of low flow taps and dual flush toilets. The development will target a water consumption rate of 105l per person per day, in line with local council regulations.

Transport

- The site is in a highly sustainable location, with excellent public transport connections and active travel routes serving the site.
- Active travel is supported through end of journey facilities and cycle parking provision which exceeds Hillingdon Local Plan standards.
- Dedicated parking provision for disabled users and motorcyclists are provided, alongside Electric Vehicle charging points. All provision meets relevant standards.
- For the full details please refer to the Transport Statement and Framework Travel Plan prepared by Markides Associates which should be read in conjunction with this report.

Sustainable Urban Drainage Systems (SuDS)

- Environment Agency Flood Map for Planning indicates the site is entirely located within Flood Zone 1, corresponding to less than a 1 in 1000 annual probability of flooding from rivers or the sea.
- The site is considered to be at very low risk from all other sources of flooding: tidal, surface water, sewers, groundwater, reservoirs and other artificial sources.
- The surface water drainage strategy for the proposed new development comprises attenuation tanks, green roof and associated soft landscaping
- Residual flood risk from the development is concluded to be very low. The development is not considered to increase the risk of flooding to the site or to neighbouring properties.
- For the full details please refer to the Flood Risk Assessment and Sustainable Drainage Strategy prepared by Whitby Wood and Iesis Structures, respectively, which should be read in conjunction with this report.

Waste

- Materials used in the construction stage will be ordered to minimise waste and ensure that the construction stage is as efficient as possible.
- The waste strategy proposed ensures that appropriate waste streams are split to maximise the opportunity for the recycling of waste. Each core will be provided with a residential waste store at ground floor level, to deposit their segregated waste. Appropriate waste collection methods have been devised also.
- For the full details please refer to the Operational Waste Management Strategy report prepared by Velocity which should be read in conjunction with this report.

Air Quality

- There is a medium risk of effects from dust emissions on adjacent receptors as a result of the proposals. However, mitigation measures, in line with the IAQM (Institute of Air Quality Management) guidance will be implemented during the construction period to ensure emissions are kept to a minimum and to prevent any significant effects at neighbouring properties. The report confirms that if mitigation measures are put in place then no such effects will occur
- For the full details please refer to the Air Quality Assessment prepared by Ardent Consulting which should be read in conjunction with this report.

Ecology

- Greengage have outlined mitigation measures to minimise the impact on local biodiversity, as well as outlining potential enhancements which can be made to the site to promote biodiversity
- Greengage confirm the provision of a biodiverse green roof, green walls, as well as wildlife friendly landscaping and bird boxes. It also outlines a mitigation strategy to minimise damage to the local wildlife through the timing of

works, removal of roosting features by hand, and implementing replacement roosts into the fabric of the new building

- For the full details please refer to the Preliminary Ecological Appraisal prepared by Greengage which should be read in conjunction with this report.

Noise

- As this is an outline application, detailed floor plans and elevations have not yet been developed. Accordingly, calculations of noise intrusion have been carried out for representative plots using BS 8233 guidance. Once further details are known, these calculations will need to be revised using the more rigorous calculation method set out in BS 8233. The report confirms that if sufficient glazing levels are installed, then the desirable noise criteria in BS8233 can be achieved.
- For the full details please refer to the Noise Assessment prepared by Spectrum which should be read in conjunction with this report.

1.00 INTRODUCTION

1.01 Purpose of Report

This Energy and Sustainability Statement has been prepared by Watkins Payne on behalf of the London Borough of Hillingdon ('LBH') in support of a reserved matters application for Land at Austin Road, pursuant to Condition 1 of the hybrid permission for the site. A Section 73 application (application ref:



76550/APP/2025/2864) is currently pending and will be determined prior to the approval of this Reserved Matters Application. Therefore, this RMA responds to the revised wording of the planning conditions proposed within the Section 73 application.

This document presents the energy and sustainability strategy for the proposed development in line with the energy hierarchy and the local planning policies outlined in the London Borough of Hillingdon Local Plan.

The purpose of the report is to demonstrate how carbon savings are maximised at all stages of the energy hierarchy, in line with both regional and local planning requirements. It also assesses the suitability of low and zero carbon (LZC/renewable) technologies for the development, taking into account technical feasibility, space constraints, commercial viability, environmental impact as well as long term maintenance and associated costs. Furthermore, it demonstrates how the relevant sustainability-related planning policies have been addressed for the proposed scheme.

1.02 Proposed Development

The proposed development is described as follows:

Submission of Reserved Matters Application (Access, Appearance, Landscaping, Layout and Scale) pursuant to Condition 1 of Application ref: 76550/APP/2025/2864 (Outline permission (with all matters reserved) for residential floorspace (Class C3) including demolition of all existing buildings and structures; erection of new buildings; provision of a community centre (Use Class F2(b) floorspace); new pedestrian and vehicular access; associated amenity space, open space, landscaping; car and cycle parking spaces; plant, refuse storage, servicing area and other works incidental to the proposed development) for the erection of dwellings and community floorspace with associated landscaping and amenity space, parking, access and associated works.

The site falls under the jurisdiction of the London Borough of Hillingdon. The proposed scheme is for Phases 2 and 3 of the Hayes Town Centre Estate development providing 238 new homes. Phase 2 is a row of ten mews style houses, split into three groupings, with landscaping between; whilst Phase 3 is arranged across four main blocks of varying heights up to nine storeys with a row of townhouses fronting Austin Road.



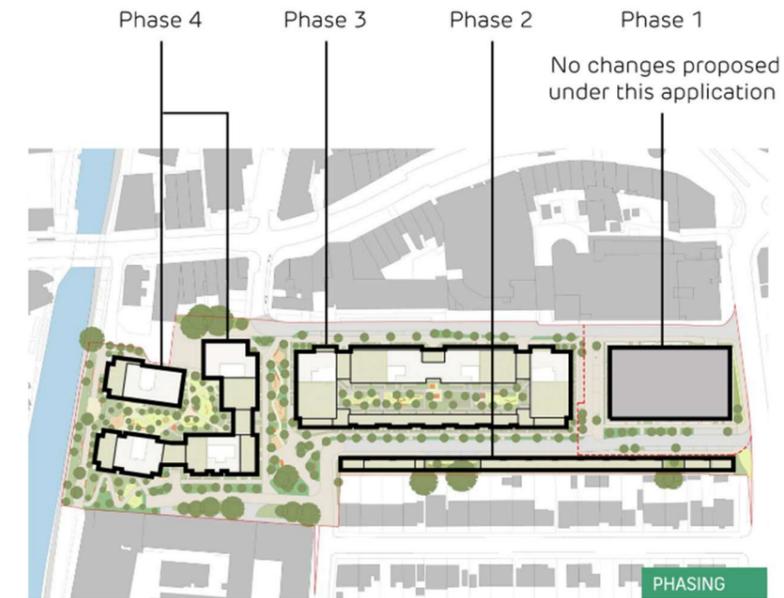
Figure 1: Site location of Hayes Town Centre

The proposed development comprises the following GIA floor areas, as per PRP Architects area schedule:

Unit		Floor Area (m ² GIA)
Hayes Town Centre	Site Area	11,420 m ²

Proposed homes	238
Proposed Floorspace	24,660 m ² (including all internal communal/shared areas)
Proposed Unit Mix	1 Beds (29%) 2 Beds (39%) 3 Beds (29%) 4 Beds (3%)

Table 3 | Floor area schedule



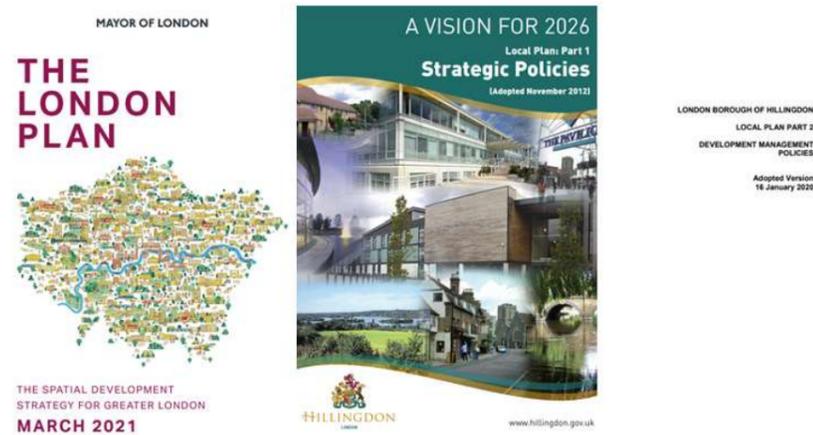
Proposed Indicative phasing plan (Credit: PRP Architects)



2.00 POLICY REVIEW AND CONTEXT

Multiple layers of energy and carbon targets apply to this scheme at national, regional and local level, these include:

- The London Plan (March 2021), which is produced by the Mayor of London and is the overall strategic plan for London
- Hillingdon Local Plan, reducing carbon dioxide (CO₂) emissions and adapting to future climate change are key issues for the borough this includes:
 - The Local Plan: Part 1 – Strategic Policies (“LPP1”) (November 2012)
 - The Local Plan: Part 2 – Development Management Policies (“LPP2”) (January 2020)
- Other considerations:
 - National Planning Policy Framework (NPPF) (2025)
 - National Planning Practice Guidance (PPG)



Policy SI 2 Minimising greenhouse gas emissions

A Major development should be net zero-carbon.¹⁵¹ 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.

Figure 2: Extract from London Plan

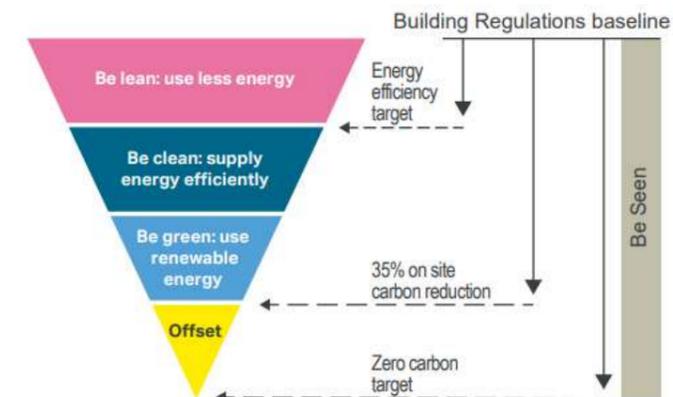


Figure 3: Energy hierarchy by importance

The local policy for Hillingdon (Hillingdon Local Plan Part 1 and Part 2) seeks to ensure that all new residential developments are built in line with the London Plan and Building Regulations to reach zero carbon by 2016.

Under London Plan 2021 Policy SI 2 ‘Minimising greenhouse gas emissions’, the London Plan requires major developments and domestic schemes to achieve zero carbon status with a minimum on-site CO₂ emissions reduction of 35% from that required for compliance with Part L of the 2013 Building Regulations. This policy states that the development proposals should make the fullest contribution to minimising greenhouse gas emissions in accordance with the following energy hierarchy:

1. Be lean: use less energy
2. Be clean: exploit local energy resources and supply energy efficiently
3. Be green: maximise renewable energy by producing, storing and using onsite
4. Be seen: monitoring of energy demand and greenhouse gas emissions

Policy SI 3 Energy Infrastructure. This states that major development proposals within Heat Network Priority areas should have a communal low-temperature heating system following the hierarchy below:

- Connection to existing or planned heat network
- Use zero emissions of local secondary heat sources (heat pumps)
- Use low emission CHP
- Use Ultra-Low NO_x gas boilers



3.00 ENERGY STRATEGY TARGETS

The energy strategy has been developed in line with the energy hierarchy, following the Lean, Clean, Green approach. In line with the Bracknell Forest Council there is no specific minimum carbon reduction target.

The targeted regulated CO₂ savings for the proposed development relative to the Building Regulations Part L Volume 2 (2021) compliant baseline development are as follows:

- **Lean scheme:** Focuses on reducing regulated energy demand and associated carbon emissions through energy efficiency measures alone. The development should also demonstrate that cooling and heating demands are lower than the baseline values.
- **Clean scheme:** While no specific carbon savings are required at this stage, developments are encouraged to connect to existing or planned low-carbon heat networks where viable, or to provide efficient communal heating systems.
- **Green scheme:** Aims to maximise on-site renewable energy generation to reduce regulated carbon emissions. While no specific minimum carbon savings are required at this stage, developments are encouraged to work towards maximising the CO₂ reduction as much as possible relative to the Part L compliant baseline development.

3.01 NOTIONAL ENERGY DEMAND

The baseline energy demands will be calculated at Detailed Design Stage so that is specific to the development. In line with the energy guidance of the London Plan for new build developments the notional dwelling and building form the be lean stage of the hierarchy.

The Target Emission Rate (TER) for the notional building will be produced by applying the current notional building /dwelling specification form Part L and applying it to a building the same size and shape as the proposed development. In line with the London Plan SAP 10 carbon emission factors have been used.

4.00 'BE LEAN' ENERGY DEMAND REPORTING

The sections below show a breakdown of the energy demand for space heating, ventilation, lighting and domestic hot water following the implementation of energy efficiency measures under the lean scheme. Details of the general servicing strategy and proposed 'be lean' measures can be found in 'Supporting Information' of this report (Appendix A).

Where possible passive design measures have been incorporated, including:

- Improvements to the U-values for all building elements when compared with the limiting values of Part L of the Building Regulations.
- Improved airtightness compared to Part L. Most fabric parameters are better than the notional specification. There is a budgetary trade-off between increasing wall versus window performance.
- Residential window area to wall percentage is approximately 35%.

Active design measures have been applied to the scheme include:

- Energy efficient lighting throughout.
- Energy efficiency mechanical ventilation systems with heat recovery above the notional specification.

Construction Element	Part L1A (2013) Minimum Performance	Part L1A (2013) Notional Performance	Proposed Building Performance
	U Value W/m ² K		U Value W/m ² K
Ground Floor	0.25	0.13	0.11
External Wall	0.30	0.18	0.15
Roof	0.20	0.13	0.11
Windows	2.0	1.4	1.20
	Infiltration (m ³ /hr.m ² at 50Pa)		Infiltration (m ³ /hr.m ² at 50Pa)
Air Tightness	10	5	3.0

Table 4 | Comparison of domestic development fabric specification versus the Building Regulations

The "Be Lean" measures include Mechanical Ventilation with Heat Recovery fitted as standard to every Apartment. An indicative layout is shown below.

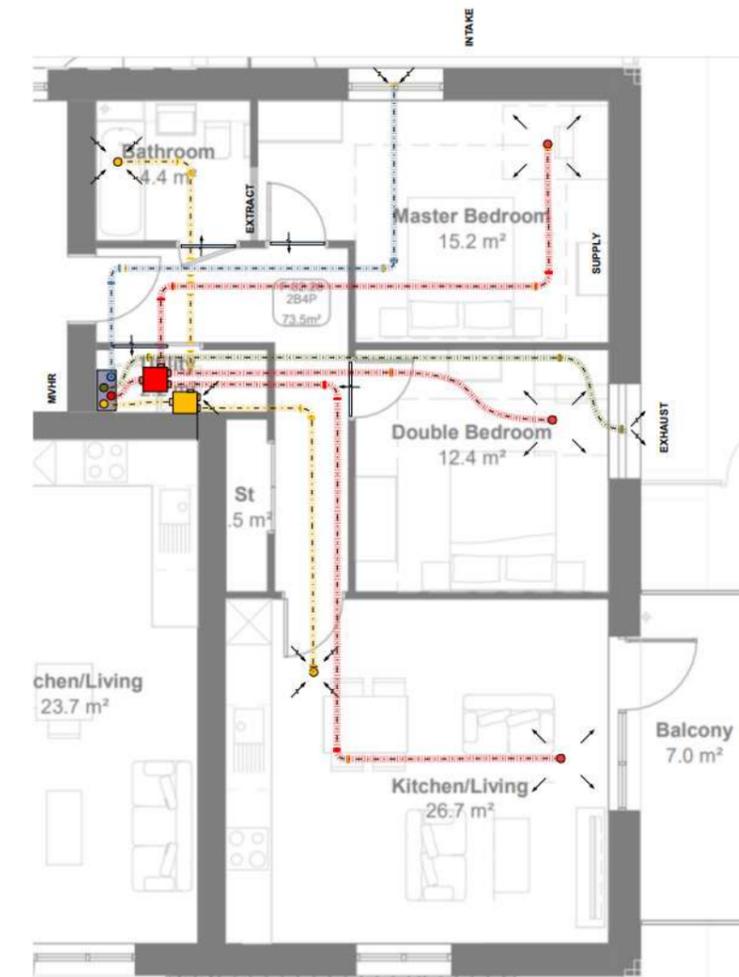


Figure 4: MVHR Layout for Typical Flat



4.01 Development

The overall reduction in regulated energy demand resulting from energy efficient measures, when compared to the Part L compliant baseline development based on notional specifications for existing buildings, is a compliant 30%.

4.02 Be Lean Results

	Carbon Dioxide Emissions (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline	28.2	5.49
After energy demand reduction (be lean)	25.5	5.49

Table 5 | Be Lean CO₂ emissions results

	Regulated residential carbon dioxide savings	
	Tonnes CO ₂ per annum	%
Be lean: savings from energy demand reduction	2.7	10%

Table 6 | Be Lean CO₂ savings results

4.03 Overheating

An overheating risk assessment has been undertaken using dynamic simulation modelling (DSM) for a representative sample of units across Phases 2 and 3 covering 63% of the total proposed dwellings. The sample selection encompasses all typologies and orientations across multiple floor levels, including those located in the most heat sensitive areas. All communal areas, including internal corridors, staircores and entrance lobbies, have also been assessed for compliance with the relevant CIBSE TM59 overheating criteria.

The Community Centre has been assessed separately in accordance with CIBSE TM52 (2013) to evaluate thermal comfort performance for the non-domestic component of the development.

The assessment has been carried out using the DSY1 (2020s high emissions, 50th percentile) weather file for London Heathrow, in accordance with the requirements of Part O, TM59 and TM52, with additional testing under DSY2 (short duration heatwave) and DSY3 (prolonged warm summer) conditions to assess future climate resilience.

Prior to commencement of superstructure works of any relevant phase of this development, the final overheating mitigation strategy will be submitted to, and approved by, the Local Planning Authority. The submission shall demonstrate how the development will minimise the risk of overheating and the reliance on active cooling systems in accordance with the London Plan (2021) 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; and
- 6) provide active cooling system.

Summary of Results

Residential Units

	TM59 Compliance Summary DSY1 – Development							Development	
	Phase 2	Phase 3	Phase 3 Block						
	Townhouse	Townhouse	C	D	E	F			
Baseline	0/10	0/10	18/36	15/27	16/30	24/38	73/151	48%	
Targeted MVHR Boost	0/10	0/10	26/36	26/27	29/30	30/38	111/151	74%	
Beneficial/ Comfort Cooling	10/10	10/10	36/36	27/27	30/30	38/38	151/151	100%	



5.00 BE CLEAN – HEATING INFRASTRUCTURE

5.01 General

The potential use of site-wide heat networks for the development has been assessed in relation to the following:

- Connection to an area wide heat network
- Communal heating system
- Individual heating system

5.02 Connection to an area wide heat network

Investigations into site-wide heat networks has established that there is no available infrastructure arrangement within a reasonable distance from the development site.

As can be seen from the London Heat Map below, the proposed development is around 240m from a proposed district heating network, but it is understood that this is unlikely to be available in the near future. LBH LPP2 Policy DMEI 3 asks that a major development needs to confirm no DEN within 500m or required to come forward within 3 years but nonetheless the proposed strategy seeks to future proof the development so is considered to be policy compliant.

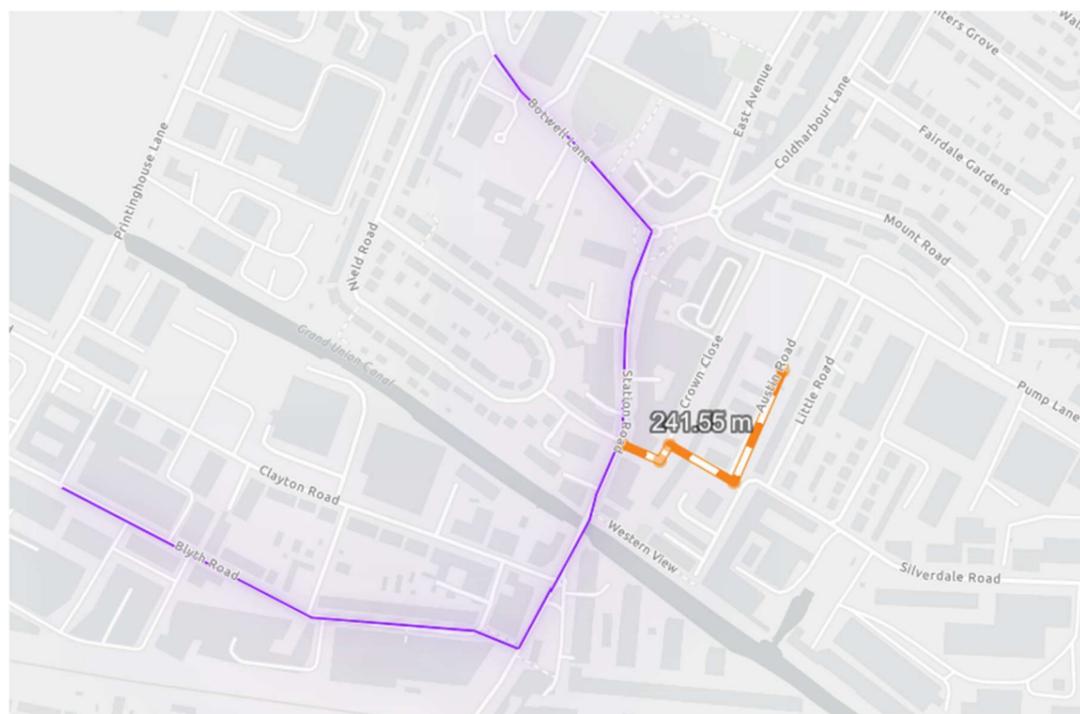


Figure 5: Heat Map for Hayes Town Centre

As the proposed heating strategy (see Be Green section) is based on central plant (central, roof-mounted heat pumps) rather than individual heating systems for each apartment, it would be very straightforward to swap the heat generating equipment for a District Heating Substation at any point in the future, should a DHN ever be installed nearby and should it be demonstrated to be feasible and viable at that point in time. To that end, the scheme allows for 2 No. 100mm diameter ducts into the plantroom – to minimise future groundworks/trenching – and sufficient space for a 75KW DHN substation in the plantroom itself.

CHP is not proposed for this development and is no longer endorsed by the GLA. In line with the requirements of the London Plan, where heat pumps are used as part of a building heating network then the carbon savings attributed to their use should be included under the Be Clean stage of the energy hierarchy.

5.03 Communal Heating System

The proposed development will be served by high efficiency air source heat pumps (ASHPs) providing heating and hot water to all aspects of the development. The ASHPs will be powered by renewably sourced electricity derived from the grid resulting in minimum carbon emissions being produced.

The ASHP systems will be of the latest type which reduces the volume of refrigerant required within the system, whilst using refrigerants of lower Global Warming Potential (GWP).

5.04 Individual Heating System

The development's heating and cooling systems proposed are in line with guidance hierarchy and therefore individual heating systems are not considered any further for this development.

5.05 Be Clean Results

	Carbon Dioxide Emissions (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline	28.2	5.49
After energy demand reduction (be lean)	25.5	5.49
After heat network connection (be clean)	25.5	5.49

Table 7 | Be Clean CO₂ emissions results

	Regulated residential carbon dioxide savings	
	Tonnes CO ₂ per annum	%
Be lean: savings from energy demand reduction	2.7	10%
Be clean: savings from heat network	0.0	0%

Table 8 | Be Clean CO₂ savings results



6.00 BE GREEN – RENEWABLE ENERGY TECHNOLOGY

In line with the London Plan 2021 requirements, a feasibility assessment of potential renewable energy technologies has been undertaken, and the results from this are presented below:

Technology	Appraisal	Included in the Development
Air Source Heat Pumps (ASHP)	This Technology is deemed appropriate to provide both space heating and hot water to the residential dwellings and the community centre.	YES
Biomass	This technology is not considered a practical solution to reducing greenhouse gas emissions. There is limited storage space for the combustible material alongside accessibility to site for regular deliveries of the materials which in itself has associated greenhouse gas emissions. Local air quality will also be adversely affected by the combustion of the biomass material.	NO
Ground Source Heat Pumps (GSHP)	This technology is deemed not appropriate as air source heat pumps has already incorporated into the scheme.	NO
Photovoltaics (PV)	As detailed below, the use of PV panel is appropriate for this scheme. PV panel installation has been maximised to achieve a realistic carbon reduction in conjunction with ASHP. Full details of the proposed PV arrays, areas, locations, and outputs are set out below.	YES
Solar Thermal Hot Water	Whilst this technology is technically feasible, this technology has been rejected on the basis that hot water produced by the Solar Hot Water Panel would compete with the ASHP system. In additional, the Solar Hot Water Panels would also compete for Roof Space with the PV panels which we have considered a more appropriate use of the roof space. Therefore, this technology is therefore rejection.	NO
Wind Turbines	This technology was rejected on the basis of its potential impact on visual amenity and relatively low efficiency from unpredictable, turbulent wind conditions in urban locations	NO

Table 9 | LZC feasibility study

6.01 Air Source Heat Pumps

An air source heat pump (ASHP) works on the same principles as a ground source heat pump (GSHP) however the medium in which heat is extracted is the external air rather than the ground. ASHP will generally have a slightly lower seasonal coefficient of performance when compared to GSHP.

Associated pipework will be sufficiently insulated and where routed externally traced heated in order to ensure that the system runs efficiently and that's losses are minimised.

In order to ensure that the systems are operated as efficiently as possible, end users will be provided with information relating to the control and operation of the system. The performance of the system will be monitored post construction to see that the required level of efficiency is achieved.

Air source heat pumps are suitable for use in the proposed development. They will provide the heating and hot water for all dwellings and the community centre. Efficiencies used for the system can be seen within the table at the end of this section.

Heat Network	
Heat Network Type	Space and Water Separate
Heat Source 1	
Source	Heat Pump
Heating Use	Space
Efficiency	Residential 330 Community Ctr Htg 350, Cooling 440
Heating Controls	Flat rate charging, programmer and at least two room thermostats
Heat Source 2	
Source	Heat Pump
Heating Use	Water
Efficiency	Residential – 440, Community Ctr – Electric POU
Water Heating	
Hot Water System	Via heat network

Table 10 | proposed heating and hot water system

6.02 Photovoltaic Panels

It is proposed that PV Panels will be used to extensively on the roof in conjunction with green roof in order to deliver significant carbon reductions.

The use of PV does not conflict with the heat pumps or any of the technology proposed for this scheme. In periods of hot sunny weather, energy generated by the PV can be consumed by the centralised heat pump which for some of the day would be working in hot water generating /air tempering mode after the hot water buffers have been depleted by the high period of use in the morning.



In order to maximise carbon reductions on site, it will be necessary to maximise the number and PV panels in a south facing arrangement to achieve maximum roof coverage. This is shown in PRP Architect's Roof layout.



6.03 Be Green Results

	Carbon Dioxide Emissions (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline	28.2	5.49
After energy demand reduction (be lean)	25.5	5.49
After heat network connection (be clean)	25.5	5.49
After renewable energy (be green)	3.7	5.49

Table 11 | Be Green Co₂ emissions results

	Regulated residential carbon dioxide savings	
	Tonnes CO ₂ per annum	%
Be lean: savings from energy demand reduction	2.7	10%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	21.8	77%
Cumulative on-site savings	24.5	87%

Table 12 | Be Green Co₂ savings results

7.00 BE SEEN – DEMAND REDUCTION – ENERGY EFFICIENCY

Energy Performance monitoring will be provided in accordance with the London Plan (2021). Note: to facilitate the actual data collection, post-handover both the Electricity input and heat output of the Heat Pumps will be recorded. When this is combined with the readings from individual heat meter, domestic hot water meter and secondary electric heating circuit in each flat, it should make it easy to calculate useful data such as: actual SCOP in use vs MCS certificate figures, standing losses between central plant and flats, real world domestic hot water consumption, real world heating patterns of use.

The spreadsheet is for ease of reference; the data therein is separately uploaded to the GLA reporting website.

Note: the circulation spaces / cores are unheated and will have less than 5% of the development energy consumption, therefore they have been excluded on a de-minimis basis.



8.00 CARBON REDUCTION CONCLUSION

The annual CO₂ emission rates (per m² of floor area) and percentage savings in regulated CO₂ emissions under the baseline, lean and green schemes for the development are detailed below.

DEVELOPMENT	Annual CO ₂ Emissions (TonnesCO ₂ /year)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	28.6	5.49
After energy demand reduction (be lean)	26.0	5.49
After heat network connection (be clean)	26.0	5.49
After renewable energy (be green)	4.0	5.49

The annual savings in regulated CO₂ emissions (in tonnes per annum) are shown below.

DEVELOPMENT	Annual Regulated CO ₂ Savings	
	TonnesCO ₂ /year	% Improvement
Be lean: savings from energy demand reduction	2.6	9%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy (over lean)	21.9	77%
Total cumulative on-site savings (over baseline)	24.6	86%

Summary

The reduction in regulated CO₂ emissions for the overall development under each scheme is summarised below.

Be Lean	9% reduction	An overall XX% reduction in regulated carbon emissions over the Part L 2021 Building Regulations Compliant Development.
Be Clean	0% reduction	No carbon emission reductions achieved at this stage.
Be Green	77% reduction	An overall XX% reduction in regulated carbon emissions over the Part L 2021 Building Regulations Compliant Development.

The energy strategy for Hayes Town Centre development achieves an overall 86% reduction in regulated CO₂ emissions against the Part L compliant baseline.

In alignment with The London Plan and Hillingdon's Local Plan, the energy strategy has made the fullest contribution to minimising energy demand, maximising on-site carbon savings and making the fullest contribution to the efficient supply of energy through renewable technologies. The strategy has maximised all technically and economically viable energy efficiency measures, including:

- Enhanced building fabric performance (meeting or surpassing Part L standards)
- Low g-value glazing to reduce solar gains
- High-efficiency mechanical and electrical services
- Installation of circa 400No. of photovoltaic solar panels to support on-site electricity generation.

These measures collectively ensure that the development achieves the fullest possible contribution toward a low-carbon, energy-efficient refurbishment, while remaining compliant with National and Local Plan policies.



9.00 SUSTAINABILITY METHODOLOGY AND MATRIX

The sustainability appraisal will use the relevant policies pertinent to this report as a framework for demonstrating compliance.

Statement Key

Colour Coding	Planning Policy
	London Borough of Hillingdon Local Plan Part 1 – Strategic Policies (Adopted November 2012)
	London Borough of Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)

The compliance of the development is noted using the following colour coding system in the fourth column.

Colour Coding	Compliance Status
	Achieved policy requirements
	Not achieved policy requirements due to constraints
	Not compliant with policy requirements
	Policy requirements not applicable to the development



Climate Change Adaptation and Mitigation	Hillingdon Local Plan Part 1 – Strategic Policies (Adopted 2012)	Review of Proposed Development	Compliance Status
<p>The Council will ensure that climate change mitigation is addressed at every stage of the development process by:</p> <ol style="list-style-type: none"> 1. Prioritising higher density development in urban and town centres that are well served by sustainable forms of transport. 2. Promoting a modal shift away from private car use and requiring new development to include innovative initiatives to reduce car dependency. 3. Ensuring development meets the highest possible design standards whilst still retaining competitiveness within the market. 4. Working with developers of major schemes to identify the opportunities to help provide efficiency initiatives that can benefit the existing building stock. 5. Promoting the use of decentralised energy within large scale development whilst improving local air quality levels. 6. Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimise other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions reductions. 7. Encouraging sustainable techniques to land remediation to reduce the need to transport waste to landfill. In particular developers should consider bioremediation(39) as part of their proposals. 8. 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. 9. Promoting new development to contribute to the upgrading of existing housing stock where appropriate. The Borough will ensure that climate change adaptation is addressed at every stage of the development process by: 10. Locating and designing development to minimise the probability and impacts of flooding. 11. Requiring major development proposals to consider the whole water cycle impact which includes flood risk management, foul and surface water drainage and water consumption. 12. Giving preference to development of previously developed land to avoid the loss of further green areas 13. Promoting the use of living walls and roofs, alongside sustainable forms of drainage to manage surface water run-off and increase the amount of carbon sinks(40) . 14. Promoting the inclusion of passive design(41) measures to reduce the impacts of urban heat effects. 	<p>Policy EM 1</p>	<p>Markides Associates have prepared a Transport Assessment for the proposed site, which will encourage access via sustainable modes of transportation. For example, following the completion of all phases of the development, an additional 889 cycle spaces are to be installed. Moreover, The western and southern parts of the estate are located within the Hayes Town Centre boundary, which has a district-wide role as a focal point for convenience goods and services as well as public transport links, reducing car dependency for residents.</p> <p>The proposal has considered the whole water cycle impact, including flood risk management, foul and surface water drainage and water consumption through the commissioning of a flood risk assessment and a sustainable drainage strategy, prepared by Whitby Wood and Iesis Structures, respectively.</p> <p>The preliminary ecological appraisal prepared by Greengage confirms the provision of a biodiverse green roof, green walls, as well as wildlife friendly landscaping and bird boxes.</p>	

Flood Risk Management	Hillingdon Local Plan Part 1 – Strategic Policies (Adopted 2012)	Review of Proposed Development	Compliance Status
<p>The Council will require new development to be directed away from Flood Zones 2 and 3 in accordance with the principles of the National Planning Policy Framework (NPPF).</p> <p>The subsequent Hillingdon Local Plan: Part 2 -Site Specific Allocations LDD will be subjected to the Sequential Test in accordance with the NPPF. Sites will only be allocated within Flood Zones 2 or 3 where there are overriding issues that outweigh flood risk. In these instances, policy criteria will be set requiring future applicants of these sites to demonstrate that flood risk can be suitably mitigated.</p> <p>The Council will require all development across the borough to use sustainable urban drainage systems (SUDS) unless demonstrated that it is not viable. The Council will encourage SUDS to be linked to water efficiency methods. The Council may require developer contributions to guarantee the long term maintenance and performance of SUDS is to an appropriate standard</p>	<p>Policy EM 6</p>	<p>The Flood Risk Assessment prepared by Whitby Wood. Environment Agency Flood Map for Planning indicates the site is entirely located within Flood Zone 1, corresponding to less than a 1 in 1000 annual probability of flooding from rivers or the sea. The site is considered to be at very low risk from all other sources of flooding: tidal, surface water, sewers, groundwater, reservoirs and other artificial sources. A detailed drainage layout and hydraulic calculations incorporating a climate change allowance of 25% have been prepared to support this approach. A sensitivity check based on a 40% allowance has also been undertaken and indicates no off-site flooding, even under more extreme climate change scenarios.</p> <p>The FRA has been supported by the Drainage strategy prepared by Iesis Structures, which outlines the sustainable drainage proposals for the site. The report recommends green roofs, rain gardens, soft landscaping and the provision of four attention tanks are all deemed appropriate at this stage.</p>	



Biodiversity and Geological Conservation [Extract]	Hillingdon Local Plan Part 1 – Strategic Policies (Adopted 2012)	Review of Proposed Development	Compliance Status
<p>Hillingdon's biodiversity and geological conservation will be preserved and enhanced with particular attention given to:</p> <ol style="list-style-type: none"> 3. The protection and enhancement of populations of protected species as well as priority species and habitats identified within the UK, London and the Hillingdon Biodiversity Action Plans. 4. Appropriate contributions from developers to help enhance Sites of Importance for Nature Conservation in close proximity to development and to deliver/ assist in the delivery of actions within the Biodiversity Action Plan. 5. The provision of biodiversity improvements from all development, where feasible. 6. The provision of green roofs and living walls which contribute to biodiversity and help tackle climate change. 7. The use of sustainable drainage systems that promote ecological connectivity and natural habitats. 	Policy EM 7	The preliminary ecological appraisal prepared by Greengage confirms the provision of a biodiverse green roof, green walls, as well as wildlife friendly landscaping and bird boxes targeting sparrow and swift. It also outlines a mitigation strategy to minimise damage to the local wildlife through the timing of works, removal of roosting features by hand, and implementing replacement roosts into the fabric of the new building.	

Land, Water, Air and Noise	Hillingdon Local Plan Part 1 – Strategic Policies (Adopted 2012)	Review of Proposed Development	Compliance Status
<p><u>Water Quality</u> The Council will seek to safeguard and improve all water quality, both ground and surface. Principal Aquifers, and Source Protection Zones will be given priority along with the: River Colne, Grand Union Canal, River Pinn, Yeading Brook, Porter Land Brook, River Crane, Ruislip Lido</p> <p><u>Air Quality</u> All development should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.</p> <p>All major development within the Air Quality Management Area (AQMA) should demonstrate air quality neutrality (no worsening of impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increased provision for vehicles with cleaner transport fuels; deliver increased planting through soft landscaping and living walls and roofs; and provide a management plan for ensuring air quality impacts can be kept to a minimum.</p> <p>The Council seeks to reduce the levels of pollutants referred to in the Government's National Air Quality Strategy and will have regard to the Mayor's Air Quality Strategy. London Boroughs should also take account of the findings of the Air Quality Review and Assessments and Actions plans, in particular where Air Quality Management Areas have been designated.</p> <p>The Council has a network of Air Quality Monitoring stations but recognises that this can be widened to improve understanding of air quality impacts. The Council may therefore require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements</p> <p><u>Noise</u> The Council will investigate Hillingdon's target areas identified in the Defra Noise Action Plans, promote the maximum possible reduction in noise levels and will minimise the number of people potentially affected. The Council will seek to identify and protect Quiet Areas in accordance with Government Policy on sustainable development and other Local Plan policies. The Council will seek to ensure that noise sensitive development and noise generating development are only permitted if noise impacts can be adequately controlled and mitigated.</p> <p><u>Land contamination</u> The Council will expect proposals for development on contaminated land to provide mitigation strategies that reduce the impacts on surrounding land uses. Major development proposals will be expected to demonstrate a sustainable approach to remediation that includes techniques to reduce the need to landfill.</p> <p><u>Water Resources</u> 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 litres per person per day.</p>	Policy EM 8	<p><u>Noise</u> Spectrum has been commissioned to undertake Outline Noise Assessment for the development. The report for Phases 2-4, carried out to accompany the s.73 application, indicates that acceptable noise levels can be achieved at the site both internally and in external amenity spaces. The mitigation scheme set out within this report should be confirmed once further details of the scheme are available. The results indicate that for most of the site sufficient glazing will likely be sufficient to achieve desirable internal ambient noise levels. Moreover, the scheme should ensure that the mechanical solution to mitigate overheating does not affect internal ambient noise level for residents</p> <p><u>Air</u> Ardent Consulting have prepared an air quality assessment for the development. The qualitative construction dust risk assessment shows that the works would be up to High Risk for adverse impacts during construction, in the absence of mitigation. To effectively reduce the risk of impacts to Negligible, appropriate mitigation measures would be adopted. The IAQM's highly recommended mitigation measures for High Risk sites are provided at Section 6 of the report. Implementing these measures, such as Dust Management Plan (DMP) through appropriate planning conditions, should effectively reduce the risk of impacts to Negligible during the construction phase</p>	



Sustainable Waste Management	Hillingdon Local Plan Part 1 – Strategic Policies (Adopted 2012)	Review of Proposed Development	Compliance Status
<p>The Council will aim to reduce the amount of waste produced in the Borough and work in conjunction with its partners in West London, to identify and allocate suitable new sites for waste management facilities within the West London Waste Plan to provide sufficient capacity to meet the apportionment requirements of the London Plan which is 382 thousand tonnes per annum for Hillingdon by 2026.</p> <p>The Council will require all new development to address waste management at all stages of a development's life from design and construction through to the end use and activity on site, ensuring that all waste is managed towards the upper end of the waste hierarchy.</p> <p>The Council will follow the waste hierarchy by promoting the reduction of waste generation through measures such as bioremediation of soils and best practice in building construction. The Council will promote using waste as a resource and encouraging the re-use of materials and recycling. The Council will also support opportunities for energy recovery from waste and composting where appropriate. The Council will safeguard existing waste sites unless compensatory provision can be made.</p> <p>The Council will seek to maximise the use of existing waste management sites through intensification or co-location of facilities.</p>	Policy EM 11	Velocity have prepared an operational waste management strategy report which considers the potential impacts that may arise from waste generated during the operational phase of the Proposed Development, with the overall aim of developing a strategy for legislative compliance and good practice in the separation, storage and collection of waste arising. This strategy has taken into account the need to lessen the overall impact of waste generation through the recycling of materials from the operational phase of the Proposed Development. The proposals set out in this strategy meet the requirements of relevant waste policy and follow applicable guidance. The waste strategy proposed ensures that appropriate waste streams are split to maximise the opportunity for the recycling of waste. Each core will be provided with a residential waste store at ground floor level, to deposit their segregated waste.	
Accessible local destinations	Hillingdon Local Plan Part 1 – Strategic Policies (Adopted 2012)	Review of Proposed Development	Compliance Status
<p>The Council will steer development to the most appropriate locations in order to reduce their impact on the transport network. All development should encourage access by sustainable modes and include good cycling and walking provision.</p> <p>The Council will ensure access to local destinations which provide services and amenities.</p> <p>The Council will promote active travel through improvements to Hillingdon's public rights of way.</p>	Policy T1	Markides Associates have prepared a transport assessment for the proposed site, which will encourage access via sustainable modes of transportation. The TA described the site location and accessibility, undertook an Active Travel Zone (ATZ) assessment, described the development proposals in detail in relation to access, servicing car parking and cycle parking strategies and quantified the anticipated trip generation associated with the proposals. The TA concluded that the proposals would not have a material impact on the operation of the local highway network and complied with relevant transport related planning policies. The report confirms that the site is in a very accessible area with a range of established public transport services available which will reduce the impact on Hillingdon's transport network. The TA also confirms that there are a number of local amenities that can be accessed on foot.	



Living Walls and Roofs and on-site Vegetation	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>All development proposals are required to comply with the following:</p> <ul style="list-style-type: none"> i) All major development should incorporate living roofs and/or walls into the development. Suitable justification should be provided where living walls and roofs cannot be provided; and ii) Major development in Air Quality Management Areas must provide onsite provision of living roofs and/or walls. A suitable offsite contribution may be required where onsite provision is not appropriate. 	Policy DMEI 1	The preliminary ecological appraisal prepared by Greengage confirms the provision of a biodiverse green roof, green walls, as well as wildlife friendly landscaping and bird boxes.	
Reducing Carbon Emissions	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>A) All developments are required to make the fullest contribution to minimising carbon dioxide emissions in accordance with London Plan targets. B) All major development proposals must be accompanied by an energy assessment showing how these reductions will be achieved. C) Proposals that fail to take reasonable steps to achieve the required savings will be resisted. However, where it is clearly demonstrated that the targets for carbon emissions cannot be met onsite, the Council may approve the application and seek an off-site contribution to make up for the shortfall.</p>	Policy DMEI 2	Markides Associates have prepared a transport assessment for the proposed site, which will encourage access via sustainable modes of transportation. For example, a total of 489 cycle parking spaces will be provided for residents once all phases of the development are complete	
Decentralised Energy	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>A) All major developments are required to be designed to be able to connect to a Decentralised Energy Network (DEN). B) Major developments located within 500 metres of an existing DEN, and minor new-build developments located within 100 metres, will be required to connect to that network, including provision of the means to connect to that network and a reasonable financial contribution to the connection charge, unless a feasibility assessment demonstrates that connection is not reasonably possible. C) Major developments located within 500 metres of a planned future DEN, which is considered by the Council likely to be operational within 3 years of a grant of planning permission, will be required to provide a means to connect to that network and developers shall provide a reasonable financial contribution for the future cost of connection and a commitment to connect via a legal agreement or contract, unless a feasibility assessment demonstrates that connection is not reasonably possible. D) The Council will support the development of DENs and energy centres in principle, subject to meeting the wider policy requirements of this plan and in particular on design and air quality.</p>	Policy DMEI 3	The energy strategy report prepared by Watkins Payne confirms that there is currently no district heating network that the development can connect to. However, the proposed heating strategy is based on central plan rather than individual heating systems for each apartment, making it straightforward to swap the heat generating equipment for a District Heating Substation at any point in the future, should a decentralised heating network be installed nearby.	



Management of Flood Risk	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>A) Development proposals in Flood Zones 2 and 3a will be required to demonstrate that there are no suitable sites available in areas of lower flood risk. Where no appropriate sites are available, development should be located on the areas of lowest flood risk within the site. Flood defences should provide protection for the lifetime of the development. Finished floor levels should reflect the Environment Agency's latest guidance on climate change.</p> <p>B) Development proposals in these areas will be required to submit an appropriate level Flood Risk Assessment (FRA) to demonstrate that the development is resilient to all sources of flooding.</p> <p>C) Development in Flood Zone 3b will be refused in principle unless identified as an appropriate development in Flood Risk Planning Policy Guidance. Development for appropriate uses in Flood Zone 3b will only be approved if accompanied by an appropriate FRA that demonstrates the development will be resistant and resilient to flooding and suitable warning and evacuation methods are in place.</p> <p>D) Developments may be required to make contributions (through legal agreements) to previously identified flood improvement works that will benefit the development site.</p> <p>E) Proposals that fail to make appropriate provision for flood risk mitigation, or which would increase the risk or consequences of flooding, will be refused.</p>	<p>Policy DMEI 9</p>	<p>The Flood Risk Assessment prepared by Whitby Wood. Environment Agency Flood Map for Planning indicates the site is entirely located within Flood Zone 1, corresponding to less than a 1 in 1000 annual probability of flooding from rivers or the sea. The site is considered to be at very low risk from all other sources of flooding: tidal, surface water, sewers, groundwater, reservoirs and other artificial sources. A detailed drainage layout and hydraulic calculations incorporating a climate change allowance of 25% have been prepared to support this approach. A sensitivity check based on a 40% allowance has also been undertaken and indicates no off-site flooding.</p> <p>The FRA has been supported by the Drainage strategy prepared by Iesis Structures, which outlines the sustainable drainage proposals for the site. The surface water drainage strategy proposes attenuation tanks, green roofs, and landscaping to minimise flood risk to the property</p>	<p style="background-color: #92d050;"> </p>



Water Management, Efficiency, and Quality	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>A) Applications for all new build developments (not conversions, change of use, or refurbishment) are required to include a drainage assessment demonstrating that appropriate sustainable drainage systems (SuDS) have been incorporated in accordance with the London Plan Hierarchy (Policy 5.13: Sustainable drainage).</p> <p>B) All major new build developments, as well as minor developments in Critical Drainage Areas or an area identified at risk from surface water flooding must be designed to reduce surface water run-off rates to no higher than the pre-development greenfield run-off rate in a 1:100 year storm scenario, plus an appropriate allowance for climate change for the worst storm duration. The assessment is required regardless of the changes in impermeable areas and the fact that a site has an existing high run-off rate will not constitute justification.</p> <p>C) Rain Gardens and non householder development should be designed to reduce surface water run-off rates to Greenfield run-off rates.</p> <p>D) Schemes for the use of SuDS must be accompanied by adequate arrangements for the management and maintenance of the measures used, with appropriate contributions made to the Council where necessary.</p> <p>E) Proposals that would fail to make adequate provision for the control and reduction of surface water run-off rates will be refused.</p> <p>F) Developments should be drained by a SuDS system and must include appropriate methods to avoid pollution of the water environment. Preference should be given to utilising the drainage options in the SuDS hierarchy which remove the key pollutants that hinder improving water quality in Hillingdon. Major development should adopt a 'treatment train' approach where water flows through different SuDS to ensure resilience in the system. Water Efficiency</p> <p>G) All new development proposals (including refurbishments and conversions) will be required to include water efficiency measures, including the collection and reuse of rain water and grey water.</p> <p>H) All new residential development should demonstrate water usage rates of no more than 105 litres/person/day.</p> <p>I) It is expected that major development proposals will provide an integrated approach to surface water run-off attenuation, water collection, recycling and reuse. Water and Wastewater Infrastructure</p> <p>J) All new development proposals will be required to demonstrate that there is sufficient capacity in the water and wastewater infrastructure network to support the proposed development. Where there is a capacity constraint the local planning authority will require the developer to provide a detailed water and/or drainage strategy to inform what infrastructure is required, where, when and how it will be delivered.</p>	Policy DMEI 10	<p>The Flood Risk Assessment prepared by Whitby Wood. Environment Agency Flood Map for Planning indicates the site is entirely located within Flood Zone 1, corresponding to less than a 1 in 1000 annual probability of flooding from rivers or the sea. The site is considered to be at very low risk from all other sources of flooding: tidal, surface water, sewers, groundwater, reservoirs and other artificial sources. A detailed drainage layout and hydraulic calculations incorporating a climate change allowance of 25% have been prepared to support this approach. A sensitivity check based on a 40% allowance has also been undertaken and indicates no off-site flooding.</p> <p>The FRA has been supported by the Drainage strategy prepared by Iesis Structures, which outlines the sustainable drainage proposals for the site. Green roofs, rain gardens, soft landscaping and below ground attenuation tanks are all deemed appropriate at this stage.</p>	
Air Quality	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>A) Development proposals should demonstrate appropriate reductions in emissions to sustain compliance with and contribute towards meeting EU limit values and national air quality objectives for pollutants.</p> <p>B) Development proposals should, as a minimum:</p> <ul style="list-style-type: none"> i) be at least "air quality neutral"; ii) include sufficient mitigation to ensure there is no unacceptable risk from air pollution to sensitive receptors, both existing and new; and iii) actively contribute towards the improvement of air quality, especially within the Air Quality Management Area. 	Policy DMEI 14	<p>Air quality assessment undertaken by Ardent Consulting outlines mitigation measures which will ensure that there is no unacceptable risk from air pollution. IAQM guidance provides in the report outlines the potential mitigation measures to reduce impacts because of fugitive dust emissions during the construction phase. These measures have been adapted for the Site. The AQA determined that following the implementation of appropriate mitigation, the overall residual effects of the Proposed Development would be 'Negligible' and not significant.</p>	
Re-use and Recycling of Aggregates	Hillingdon Local Plan Part 2 – Development Management Policies (Adopted 2020)	Review of Proposed Development	Compliance Status
<p>A) The Council will promote the recycling of construction, demolition and excavation waste.</p> <p>B) All developments will be encouraged to:</p> <ul style="list-style-type: none"> i) recycle and re-use construction, demolition and excavation waste as aggregates; ii) process and re-use the recyclable material on-site, and where this is not possible, the material should be re-used at another site or for land restoration; and iii) use substitute or recycled materials in new development in place of primary minerals. <p>B) Planning permission for aggregates recycling on active minerals extraction and landfill sites will be supported, subject to local amenity and other policies within the Local Plan. Applications for aggregates recycling sites in other areas such as Strategic Industrial Locations will be required to satisfy other relevant policies in the Local Plan including the West London Waste Plan.</p>	Policy DMIN 4	<p>Velocity have prepared an operational waste management strategy report which considers the potential impacts that may arise from waste generated during the operational phase of the Proposed Development, with the overall aim of developing a strategy for legislative compliance and good practice in the separation, storage and collection of waste arising. This strategy has taken into account the need to lessen the overall impact of waste generation through the recycling of materials from the operational phase of the Proposed Development. The proposals set out in this strategy meet the requirements of relevant waste policy and follow applicable guidance.</p>	



Appendices



Appendix A – SAP Worksheets for Typical Dwellings

Block Compliance



Block Reference	Be Lean	Issued on Date	08/02/2026
Block Name			
Calculation Type	New Build (As Designed)	SAP Version	10.2
Assessor Details	Mr. Andrew Jones	Assessor ID	N955-0001
Client			

Block Compliance Report - DER				
Block Reference: Be Lean	Block Name:			
Property-Assessment Reference	Floor area (m ²)	DER (kgCO ₂ /m ²)	TER (kgCO ₂ /m ²)	% DER/TER
Plot 01 - 4B7P	128.40	14.10	11.06	-27.49 %
Plot 02 - 3B5P	87.80	12.54	12.04	-4.15 %
Plot 03 - 4B6P D	86.90	13.24	12.48	-6.09 %
Plot 04 - 3B5P H	102.90	2.24	11.72	80.89 %
Plot 05 - 1B2P W	60.70	11.87	11.10	-6.94 %
Plot 06 - 4B8P D	140.20	10.31	9.41	-9.56 %
Plot 07 - 3B4P W	93.60	11.64	10.94	-6.40 %
Plot 08 - 2B4P D	80.60	11.27	11.46	1.66 %
Plot 09 - 3B5P H	102.90	14.45	12.09	-19.52 %
Plot 10 - 2B4P	73.60	10.33	10.81	4.44 %
Plot 11 - 2B4P	70.10	10.03	10.34	3.00 %
Plot 12 - 3B5P	86.60	10.45	10.55	0.95 %
Plot 13 - 3B5P	86.60	9.87	9.68	-1.96 %
Plot 14 - 1B2P	50.20	11.29	11.72	3.67 %
Plot 15 - 2B4P	70.80	10.37	10.55	1.71 %
Plot 16 - 2B4P W	83.50	9.58	9.36	-2.35 %
Plot 17 - 2B4P	70.10	11.13	11.49	3.13 %
Plot 18 - 3B5P	87.20	9.93	10.12	1.88 %
Plot 19 - 3B5P	87.80	10.28	10.56	2.65 %
Plot 20 - 2B4P	70.00	9.84	9.95	1.11 %
Plot 21 - 2B4P W	83.50	12.03	11.67	-3.08 %
Plot 22 - 2B3P W	74.50	10.85	11.77	7.82 %

Block Compliance



Plot 23 - 3B5P	87.80	10.51	10.75	2.23 %
Plot 24 - 3B5P	86.60	10.99	11.52	4.60 %
Plot 25 - 3B5P	86.60	10.64	10.94	2.74 %
Plot 26 - 3B5P	87.20	11.05	11.65	5.15 %
Plot 27 - 3B6P FL	97.70	11.38	10.23	-11.24 %
Plot 28 - 3B5P	86.80	12.88	12.02	-7.15 %
Plot 29 - 1B2P W	61.20	14.05	13.04	-7.75 %
Plot 30 - 2B4P W	70.10	13.12	13.50	2.81 %
Totals:	2542.50	332.26	334.52	
Average DER = 11.05 kgCO ₂ /m ²	% DER/TER	PASS		
Average TER = 11.09 kgCO ₂ /m ²	0.39 %			

Block Compliance Report - DFEE

Block Reference: Be Lean	Block Name:			
Property-Assessment Reference	Floor area (m ²)	DFEE (kWh/m ² /yr)	TFEE (kWh/m ² /yr)	% DFEE/TFEE
Plot 01 - 4B7P	128.40	43.58	43.93	0.80 %
Plot 02 - 3B5P	87.80	29.42	29.11	-1.05 %
Plot 03 - 4B6P D	86.90	32.20	31.65	-1.75 %
Plot 04 - 3B5P H	102.90	41.82	44.99	7.03 %
Plot 05 - 1B2P W	60.70	21.59	19.70	-9.57 %
Plot 06 - 4B8P D	140.20	28.03	27.68	-1.28 %
Plot 07 - 3B4P W	93.60	27.85	27.75	-0.37 %
Plot 08 - 2B4P D	80.60	22.37	24.15	7.36 %
Plot 09 - 3B5P H	102.90	41.91	45.03	6.95 %
Plot 10 - 2B4P	73.60	16.71	19.07	12.34 %
Plot 11 - 2B4P	70.10	14.28	15.59	8.39 %
Plot 12 - 3B5P	86.60	20.41	22.11	7.68 %
Plot 13 - 3B5P	86.60	17.73	18.04	1.71 %

Block Compliance



Plot 14 - 1B2P	50.20	12.79	13.61	5.99 %
Plot 15 - 2B4P	70.80	16.60	17.58	5.54 %
Plot 16 - 2B4P W	83.50	17.29	18.82	8.11 %
Plot 17 - 2B4P	70.10	19.94	21.69	8.05 %
Plot 18 - 3B5P	87.20	17.91	20.06	10.73 %
Plot 19 - 3B5P	87.80	19.83	22.54	12.05 %
Plot 20 - 2B4P	70.00	13.15	14.04	6.33 %
Plot 21 - 2B4P W	83.50	27.28	29.22	6.64 %
Plot 22 - 2B3P W	74.50	20.65	26.69	22.64 %
Plot 23 - 3B5P	87.80	20.74	23.54	11.90 %
Plot 24 - 3B5P	86.60	22.64	26.45	14.39 %
Plot 25 - 3B5P	86.60	21.17	23.94	11.58 %
Plot 26 - 3B5P	87.20	22.98	27.17	15.43 %
Plot 27 - 3B6P FL	97.70	25.87	23.05	-12.23 %
Plot 28 - 3B5P	86.80	30.37	28.51	-6.53 %
Plot 29 - 1B2P W	61.20	30.65	28.96	-5.86 %
Plot 30 - 2B4P W	70.10	29.56	34.19	13.55 %
Totals:	2542.50	727.33	768.84	
Average DFEE = 25.25 kWh/m ² /yr		% DFEE/TFEE	PASS	
Average TFEE = 26.61 kWh/m ² /yr		5.10 %		

Block Compliance Report - DPER

Block Reference: Be Lean	Block Name:			
Property-Assessment Reference	Floor area (m ²)	DPER (kWh/m ² /yr)	TPER (kWh/m ² /yr)	% DPER/TPER
Plot 01 - 4B7P	128.40	81.76	57.84	-41.36 %
Plot 02 - 3B5P	87.80	75.38	64.80	-16.33 %
Plot 03 - 4B6P D	86.90	79.14	67.09	-17.96 %

Block Compliance



Plot 04 - 3B5P H	102.90	22.64	61.55	63.22 %
Plot 05 - 1B2P W	60.70	74.46	60.10	-23.89 %
Plot 06 - 4B8P D	140.20	60.94	50.21	-21.37 %
Plot 07 - 3B4P W	93.60	70.24	58.85	-19.35 %
Plot 08 - 2B4P D	80.60	69.19	61.76	-12.03 %
Plot 09 - 3B5P H	102.90	84.69	63.27	-33.85 %
Plot 10 - 2B4P	73.60	64.63	58.38	-10.71 %
Plot 11 - 2B4P	70.10	63.41	55.92	-13.39 %
Plot 12 - 3B5P	86.60	64.17	56.73	-13.11 %
Plot 13 - 3B5P	86.60	61.06	52.08	-17.24 %
Plot 14 - 1B2P	50.20	73.28	63.68	-15.08 %
Plot 15 - 2B4P	70.80	65.12	56.93	-14.39 %
Plot 16 - 2B4P W	83.50	59.77	50.40	-18.59 %
Plot 17 - 2B4P	70.10	69.26	62.00	-11.71 %
Plot 18 - 3B5P	87.20	61.35	54.43	-12.71 %
Plot 19 - 3B5P	87.80	63.15	56.78	-11.22 %
Plot 20 - 2B4P	70.00	62.39	53.75	-16.07 %
Plot 21 - 2B4P W	83.50	72.92	62.81	-16.10 %
Plot 22 - 2B3P W	74.50	67.45	63.57	-6.10 %
Plot 23 - 3B5P	87.80	64.37	57.79	-11.39 %
Plot 24 - 3B5P	86.60	67.08	61.95	-8.28 %
Plot 25 - 3B5P	86.60	65.22	58.87	-10.79 %
Plot 26 - 3B5P	87.20	67.39	62.68	-7.51 %
Plot 27 - 3B6P FL	97.70	68.53	54.99	-24.62 %
Plot 28 - 3B5P	86.80	77.28	64.73	-19.39 %
Plot 29 - 1B2P W	61.20	86.36	70.52	-22.46 %
Plot 30 - 2B4P W	70.10	80.15	72.79	-10.11 %
Totals:	2542.50	2042.78	1797.25	

Block Compliance



Average DPER = 67.69 kWh/m ² /yr	% DPER/TPER	FAIL
Average TPER = 59.50 kWh/m ² /yr	-13.77 %	

Block Compliance



Block Reference	MO 251218	Issued on Date	08/02/2026
Block Name			
Calculation Type	New Build (As Designed)	SAP Version	10.2
Assessor Details	Mr. Andrew Jones	Assessor ID	N955-0001
Client			

Block Compliance Report - DER				
Block Reference: MO 251218	Block Name:			
Property-Assessment Reference	Floor area (m ²)	DER (kgCO ₂ /m ²)	TER (kgCO ₂ /m ²)	% DER/TER
Plot 10 - 2B4P	73.60	1.02	10.14	89.94 %
Plot 11 - 2B4P	70.10	0.91	9.64	90.56 %
Plot 15 - 2B4P	70.80	0.99	9.84	89.94 %
Plot 17 - 2B4P	70.10	1.13	10.82	89.56 %
Plot 20 - 2B4P	70.00	0.86	9.21	90.66 %
Plot 16 - 2B4P W	83.50	1.02	8.79	88.40 %
Plot 21 - 2B4P W	83.50	1.53	11.15	86.28 %
Plot 30 - 2B4P W	70.10	1.61	12.89	87.51 %
Plot 08 - 2B4P D	80.60	1.33	10.86	87.75 %
Plot 07 - 3B4P W	93.60	1.58	10.44	84.87 %
Plot 12 - 3B5P	86.60	1.20	10.03	88.04 %
Plot 13 - 3B5P	86.60	1.08	9.15	88.20 %
Plot 18 - 3B5P	87.20	1.10	9.58	88.52 %
Plot 19 - 3B5P	87.80	1.18	10.05	88.26 %
Plot 24 - 3B5P	86.60	1.32	11.02	88.02 %
Plot 23 - 3B5P	87.80	1.23	10.26	88.01 %
Plot 25 - 3B5P	86.60	1.26	10.45	87.94 %
Plot 26 - 3B5P	87.20	1.34	11.15	87.98 %
Plot 28 - 3B5P	86.80	1.73	11.53	85.00 %
Plot 04 - 3B5P H	102.90	2.24	11.72	80.89 %
Plot 09 - 3B5P H	102.90	2.25	11.73	80.82 %
Plot 27 - 3B6P FL	97.70	1.53	9.79	84.37 %

Block Compliance



Plot 02 - 3B5P	87.80	1.67	11.55	85.54 %
Plot 03 - 4B6P D	86.90	1.81	11.99	84.90 %
Plot 06 - 4B8P D	140.20	1.59	9.14	82.60 %
Plot 01 - 4B7P	128.40	2.35	10.79	78.22 %
Plot 14 - 1B2P	50.20	0.82	10.75	92.37 %
Plot 05 - 1B2P W	60.70	1.18	10.30	88.54 %
Plot 29 - 1B2P W	61.20	1.69	12.31	86.27 %
Plot 22 - 2B3P W	74.50	1.18	11.14	89.41 %
Totals:	2542.50	41.73	318.21	
Average DER = 1.44 kgCO ₂ /m ²	% DER/TER	PASS		
Average TER = 10.58 kgCO ₂ /m ²	86.36 %			

Block Compliance Report - DFEE				
Block Reference: MO 251218	Block Name:			
Property-Assessment Reference	Floor area (m ²)	DFEE (kWh/m ² /yr)	TFEE (kWh/m ² /yr)	% DFEE/TFEE
Plot 10 - 2B4P	73.60	16.71	19.07	12.34 %
Plot 11 - 2B4P	70.10	14.28	15.59	8.39 %
Plot 15 - 2B4P	70.80	16.60	17.58	5.54 %
Plot 17 - 2B4P	70.10	19.94	21.69	8.05 %
Plot 20 - 2B4P	70.00	13.15	14.04	6.33 %
Plot 16 - 2B4P W	83.50	17.29	18.82	8.11 %
Plot 21 - 2B4P W	83.50	27.28	29.22	6.64 %
Plot 30 - 2B4P W	70.10	29.56	34.19	13.55 %
Plot 08 - 2B4P D	80.60	22.37	24.15	7.36 %
Plot 07 - 3B4P W	93.60	27.85	27.75	-0.37 %
Plot 12 - 3B5P	86.60	20.41	22.11	7.68 %
Plot 13 - 3B5P	86.60	17.73	18.04	1.71 %
Plot 18 - 3B5P	87.20	17.91	20.06	10.73 %

Block Compliance



Plot 19 - 3B5P	87.80	19.83	22.54	12.05 %
Plot 24 - 3B5P	86.60	22.64	26.45	14.39 %
Plot 23 - 3B5P	87.80	20.74	23.54	11.90 %
Plot 25 - 3B5P	86.60	21.17	23.94	11.58 %
Plot 26 - 3B5P	87.20	22.98	27.17	15.43 %
Plot 28 - 3B5P	86.80	30.37	28.51	-6.53 %
Plot 04 - 3B5P H	102.90	41.82	44.99	7.03 %
Plot 09 - 3B5P H	102.90	41.91	45.03	6.95 %
Plot 27 - 3B6P FL	97.70	25.87	23.05	-12.23 %
Plot 02 - 3B5P	87.80	29.42	29.11	-1.05 %
Plot 03 - 4B6P D	86.90	32.20	31.65	-1.75 %
Plot 06 - 4B8P D	140.20	28.03	27.68	-1.28 %
Plot 01 - 4B7P	128.40	43.58	43.93	0.80 %
Plot 14 - 1B2P	50.20	12.79	13.61	5.99 %
Plot 05 - 1B2P W	60.70	21.59	19.70	-9.57 %
Plot 29 - 1B2P W	61.20	30.65	28.96	-5.86 %
Plot 22 - 2B3P W	74.50	20.65	26.69	22.64 %
Totals:	2542.50	727.33	768.84	
Average DFEE = 25.25 kWh/m ² /yr		% DFEE/TFEE	PASS	
Average TFEE = 26.61 kWh/m ² /yr		5.10 %		

Block Compliance Report - DPER

Block Reference: MO 251218	Block Name:			
Property-Assessment Reference	Floor area (m ²)	DPER (kWh/m ² /yr)	TPER (kWh/m ² /yr)	% DPER/TPER
Plot 10 - 2B4P	73.60	10.16	55.22	81.60 %
Plot 11 - 2B4P	70.10	9.03	52.58	82.83 %

Block Compliance



Plot 15 - 2B4P	70.80	9.82	53.61	81.68 %
Plot 17 - 2B4P	70.10	11.33	58.86	80.75 %
Plot 20 - 2B4P	70.00	8.58	50.27	82.93 %
Plot 16 - 2B4P W	83.50	10.15	47.71	78.73 %
Plot 21 - 2B4P W	83.50	15.42	60.43	74.48 %
Plot 30 - 2B4P W	70.10	16.19	69.99	76.87 %
Plot 08 - 2B4P D	80.60	13.39	58.99	77.30 %
Plot 07 - 3B4P W	93.60	15.92	56.53	71.84 %
Plot 12 - 3B5P	86.60	12.08	54.32	77.76 %
Plot 13 - 3B5P	86.60	10.86	49.62	78.11 %
Plot 18 - 3B5P	87.20	11.06	51.92	78.70 %
Plot 19 - 3B5P	87.80	11.85	54.44	78.23 %
Plot 24 - 3B5P	86.60	13.25	59.67	77.79 %
Plot 23 - 3B5P	87.80	12.36	55.55	77.75 %
Plot 25 - 3B5P	86.60	12.67	56.62	77.62 %
Plot 26 - 3B5P	87.20	13.50	60.37	77.64 %
Plot 28 - 3B5P	86.80	17.48	62.45	72.01 %
Plot 04 - 3B5P H	102.90	22.64	61.55	63.22 %
Plot 09 - 3B5P H	102.90	22.68	61.62	63.19 %
Plot 27 - 3B6P FL	97.70	15.43	52.94	70.85 %
Plot 02 - 3B5P	87.80	16.86	62.51	73.03 %
Plot 03 - 4B6P D	86.90	18.25	64.85	71.86 %
Plot 06 - 4B8P D	140.20	16.10	48.99	67.14 %
Plot 01 - 4B7P	128.40	23.77	56.64	58.03 %
Plot 14 - 1B2P	50.20	8.03	59.12	86.42 %
Plot 05 - 1B2P W	60.70	11.73	56.35	79.18 %
Plot 29 - 1B2P W	61.20	16.89	67.14	74.84 %
Plot 22 - 2B3P W	74.50	11.83	60.61	80.48 %

Block Compliance



Totals:	2542.50	419.31	1721.47	
Average DPER = 14.51 kWh/m ² /yr	% DPER/TPER	PASS		
Average TPER = 57.12 kWh/m ² /yr	74.59 %			



Appendix B – Lean & Green BRUKL Reports

Project name

Community Centre Be Lean

As designed

Date: Sun Feb 08 18:06:16 2026

Administrative information

Building Details

Address: Hayes Town Centre,

Certifier details

Name: Andrew Jones

Telephone number: 01932 781641

Address: 51 Staines Rd, Sunbury-on-Thames, TW16 7AH

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.7"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.7

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 125.72The CO₂ emission and primary energy rates of the building must not exceed the targets

The building does not comply with England Building Regulations Part L 2021

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.71
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	3.83
Target primary energy rate (TPER), kWh _{PE} /m ² annum	28.83
Building primary energy rate (BPER), kWh _{PE} /m ² annum	41.33
Do the building's emission and primary energy rates exceed the targets?	BER > TER BPER > TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.15	0.15	External Wall
Floors	0.18	0.11	0.11	Exposed Floor/Internal Ceiling 0.45m (L00)
Pitched roofs	0.16	-	-	No pitched roofs in project
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	1.2	1.2	Community Centre - GF Glz1a
Rooflights***	2.2	-	-	No rooflights in project
Personnel doors [^]	1.6	1.59	1.59	Internal Community Centre Door
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project

U_a-Limit = Limiting area-weighted average U-values [W/(m²K)]
U_a-Calc = Calculated area-weighted average U-values [W/(m²K)]
U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.
[^] For fire doors, limiting U-value is 1.8 W/m²K
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- VRF Mech Vent (3 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	4.4	-	-	0.8
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

2- Extract Elec Htg (4 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

1- New HWS Circuit

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	ID of system type	SFP [W/(l/s)]									HR efficiency	
		A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
00-CC-MainRm		-	-	-	1.2	-	-	-	-	-	-	N/A
00-CC-Office		-	-	-	1.2	-	-	-	-	-	-	N/A
00-CC-WC1		0.3	-	-	-	-	-	-	-	-	-	N/A
01-CC-OfficeMeetingRm		-	-	-	1.2	-	-	-	-	-	-	N/A
01-CC-Kitchen		0.3	-	-	-	-	-	-	-	-	-	N/A
00-CC-WC2		0.3	-	-	-	-	-	-	-	-	-	N/A
00-CC-WC3		0.3	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
00-CC-MainRm		110	-	-
00-CC-Lobby		110	-	-
00-CC-Store1		110	-	-
00-CC-Office		110	-	-
00-CC-WC1		110	-	-
01-CC-OfficeMeetingRm		110	-	-
01-CC-Kitchen		110	-	-
00-CC-WC2		110	-	-
00-CC-WC3		110	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00-CC-MainRm	YES (+193%)	NO
00-CC-Office	NO (-54%)	NO
01-CC-OfficeMeetingRm	N/A	N/A
01-CC-Kitchen	N/A	N/A

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	155	155
External area [m ²]	357	357
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	138	106
Average U-value [W/m ² K]	0.39	0.3
Alpha value* [%]	29.04	14.04

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces

100 Non-residential Institutions: Community/Day Centre

Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	8.52	6.14
Cooling	5.06	1.9
Auxiliary	2.47	3.46
Lighting	9.42	9.06
Hot water	2.41	2.41
Equipment*	20.98	20.98
TOTAL**	27.88	22.97

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	3.62
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>3.62</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	154.22	82.55
Primary energy [kWh _{PE} /m ²]	41.33	28.83
Total emissions [kg/m ²]	3.83	2.71

HVAC Systems Performance

System Type	Heat dem MJ/m ²	Cool dem MJ/m ²	Heat con kWh/m ²	Cool con kWh/m ²	Aux con kWh/m ²	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	----	----	----
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	92.9	129.7	9.8	8.2	1.6	2.64	4.4	2.64	4.4
	Notional	61.2	48.8	6.4	3.1	2.4	2.64	4.4	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	58.8	0	16.3	0	9.8	1	0	1	0
	Notional	68.8	0	14.3	0	13.1	1.34	0	----	----

Key to terms

Heat dem [MJ/m ²]	= Heating energy demand
Cool dem [MJ/m ²]	= Cooling energy demand
Heat con [kWh/m ²]	= Heating energy consumption
Cool con [kWh/m ²]	= Cooling energy consumption
Aux con [kWh/m ²]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

Project name

Community Centre Be Green

As designed

Date: Sun Feb 08 18:12:48 2026

Administrative information

Building Details

Address: Hayes Town Centre,

Certifier details

Name: Andrew Jones

Telephone number: 01932 781641

Address: 51 Staines Rd, Sunbury-on-Thames, TW16 7AH

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.7"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.7

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 125.72The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.71
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	2.45
Target primary energy rate (TPER), kWh _{PE} /m ² annum	28.83
Building primary energy rate (BPER), kWh _{PE} /m ² annum	25.97
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.15	0.15	External Wall
Floors	0.18	0.11	0.11	Exposed Floor/Internal Ceiling 0.45m (L00)
Pitched roofs	0.16	-	-	No pitched roofs in project
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	1.2	1.2	Community Centre - GF Glz1a
Rooflights***	2.2	-	-	No rooflights in project
Personnel doors [^]	1.6	1.59	1.59	Internal Community Centre Door
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]
U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]
U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.
[^] For fire doors, limiting U-value is 1.8 W/m²K
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- VRF Mech Vent (3 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.5	4.4	-	-	0.8
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

2- Extract Elec Htg (4 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

1- New HWS Circuit

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0
Standard value	2*	N/A

* Standard shown is for all types except absorption and gas engine heat pumps.

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	ID of system type	SFP [W/(l/s)]									HR efficiency	
		A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
00-CC-MainRm		-	-	-	1.2	-	-	-	-	-	-	N/A
00-CC-Office		-	-	-	1.2	-	-	-	-	-	-	N/A
00-CC-WC1		0.3	-	-	-	-	-	-	-	-	-	N/A
01-CC-OfficeMeetingRm		-	-	-	1.2	-	-	-	-	-	-	N/A
01-CC-Kitchen		0.3	-	-	-	-	-	-	-	-	-	N/A
00-CC-WC2		0.3	-	-	-	-	-	-	-	-	-	N/A
00-CC-WC3		0.3	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
00-CC-MainRm		110	-	-
00-CC-Lobby		110	-	-
00-CC-Store1		110	-	-
00-CC-Office		110	-	-
00-CC-WC1		110	-	-
01-CC-OfficeMeetingRm		110	-	-
01-CC-Kitchen		110	-	-
00-CC-WC2		110	-	-
00-CC-WC3		110	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00-CC-MainRm	YES (+193%)	NO
00-CC-Office	NO (-54%)	NO
01-CC-OfficeMeetingRm	N/A	N/A
01-CC-Kitchen	N/A	N/A

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	155	155
External area [m ²]	357	357
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	138	106
Average U-value [W/m ² K]	0.39	0.3
Alpha value* [%]	29.04	14.04

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces

100 Non-residential Institutions: Community/Day Centre

Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	7.04	6.14
Cooling	5.06	1.9
Auxiliary	2.47	3.46
Lighting	5.71	9.06
Hot water	2.41	2.41
Equipment*	20.98	20.98
TOTAL**	22.69	22.97

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	5.22	3.62
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>5.22</i>	<i>3.62</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	154.22	82.55
Primary energy [kWh _{PE} /m ²]	25.97	28.83
Total emissions [kg/m ²]	2.45	2.71

HVAC Systems Performance

System Type	Heat dem MJ/m ²	Cool dem MJ/m ²	Heat con kWh/m ²	Cool con kWh/m ²	Aux con kWh/m ²	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	----	----	----
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	92.9	129.7	7.4	8.2	1.6	3.5	4.4	3.5	4.4
	Notional	61.2	48.8	6.4	3.1	2.4	2.64	4.4	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	58.8	0	16.3	0	9.8	1	0	1	0
	Notional	68.8	0	14.3	0	13.1	1.34	0	----	----

Key to terms

Heat dem [MJ/m ²]	= Heating energy demand
Cool dem [MJ/m ²]	= Cooling energy demand
Heat con [kWh/m ²]	= Heating energy consumption
Cool con [kWh/m ²]	= Cooling energy consumption
Aux con [kWh/m ²]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type