74 Oldfield Road, Hampton

Energy Statement

Ensphere Group Ltd on behalf of Shurgard UK Ltd

Ensphere Group Ltd
55A Catherine Place,
London, SW1E 6DY
+44 (0) 20 7846 9040
www.enspheregroup.com

ensphere

74 Oldfield Road, Hampton

Energy Statement

Client Name: Shurgard UK Ltd

Document Reference: 23-E093-011

Project Number: 23-E093

Quality Assurance Approval Status

This document has been prepared and checked in accordance with Ensphere Group Ltd's Quality Management System.

Issue:	Version:	Prepared by:	Reviewed by:	Date:
Final	V1	Scott Plumridge	Pete Jeavons	June 2024

ensphere

Contents

1. Executive Summary

1.1 This Energy Statement presents the energy strategy for the proposed development at 74 Oldfield Road, Hampton, TW12 2HR.

1.2 The proposal is the demolition and redevelopment of the site to provide a storage and warehouse distribution facility (Use Class B8) and business centre (Use Class E) with associated car and cycle parking, and landscaping.

1.3 Consideration has primarily been given to the planning policy context and other requirements prior to establishing a strategy based upon the energy hierarchy; with a priority given to energy reduction and efficiency. Renewable and low carbon technologies have also been considered in the context of their technical feasibility and financial viability.

1.4 The following is therefore proposed:

- High performance building fabric and energy efficient lighting, services and equipment.
- Heat pumps for space heating in the shop/reception areas.
- Roof mounted PV.

1.5 The development will satisfy the Council target for an on-site carbon saving of >35% relative to Part L 2021. Residual emissions will be offset with a Carbon Offset payment. Energy efficient measures will target a >15% reduction; with renewables accounting for >30% carbon reduction.

1.6 As the proposed system is fully electric, the development will effectively become net zero in line with the decarbonisation of the National Grid.

1.7 A copy of the GLA Carbon Emission Reporting Spreadsheet is appended to this report outlining the savings at each stage of the Energy Hierarchy.

1.8 Overall, the proposed energy strategy is considered consistent with the National Planning Policy Framework, London Plan and policies of the Council. When implemented, the scheme will provide an efficient and low carbon development.

2. Introduction

2.1 Ensphere Group Ltd was commissioned by Shurgard UK Ltd to produce an Energy Statement for the proposed development at 74 Oldfield Road, Hampton, TW12 2HR.

Site and Surroundings

2.2 The application site (the 'Site') is located on the north side of Oldfield Road, just west of Percy Road, falling under the jurisdiction of London Borough of Richmond upon Thames.

2.3 The Site is approximately 0.31 hectares and currently comprises a distribution warehouse and a hardstanding carpark / access road. Oldfield Road borders the Site to the south and a railway line marks the northern edge.

2.4 The surrounding uses are predominately residential, with some supermarkets and other amenities to the east and southeast of the proposed development.

2.5 In terms of transport, there are multiple bus stops located within a mile of the Site serving routes including the 111 and 216. The closest train station is Hampton Train Station, which is less than 300 meters from the Site, which operates the South Western Railway service, providing access to the South West of England and surrounding regions.

Development Proposals

2.6 The demolition and redevelopment of the site to provide a storage and warehouse distribution facility (Use Class B8) and business centre (Use Class E) with associated car and cycle parking, and landscaping.

Report Objective

2.7 The objective of the Energy Statement is to provide further details of how energy efficiency, low carbon and renewable technologies have been considered and implemented as part of the energy strategy.

3. Assessment Methodology

3.1 The assessment methodology follows the Energy Hierarchy, on the basis that it is preferable to firstly minimise carbon dioxide emissions through reduced energy demand; prior to considering low carbon and renewable energy supply options.

3.2 The tiers of the Energy Hierarchy are:

- Be Lean Demand Reduction
- Be Clean Use Energy More Efficiently
- Be Green Use Renewable Energy
- Be Seen Monitor, Verify & Report

3.3 Where opportunities to improve the efficiency of the design have been maximised, consideration is then given to the second principle whereby priority is given to the efficient use of energy. This is on the basis that low carbon technologies can be cost-effective and provide significant carbon savings when compared to conventional technologies.

3.4 The third principle of the hierarchy promotes the use of renewable technologies. Whilst these technologies can be relatively expensive to install, they do offer the potential to significantly reduce carbon emissions.

3.5 Following the application of renewable technologies, the final tier of the Hierarchy requires monitoring, verification and reporting on energy performance.

3.6 The following sections of the report review the planning policy requirements prior to establishing a baseline from which the principles of the Energy Hierarchy are applied.

4. Planning Context

4.1 Local planning policy relevant to sustainable development is considered below:

National Context

National Planning Policy Framework (2023)

4.2 The National Planning Policy Framework (NPPF) was updated in December 2023. Paragraph 7 of the revised NPPF includes reference to the following:

7. "The purpose of the planning system is to contribute to the achievement of sustainable development.

4.3 Chapter 14 of the NPPF includes consideration of climate change and the use and supply of renewable and low carbon energy. Paragraph 157 states:

"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."

Planning Practice Guidance (2016; updated 2022)

- Climate Change - Advises how planning can identify suitable mitigation and adaption measures in plan-making and the application process to address the potential for climate change.

- Renewable and Low Carbon Energy - The guidance is intended to assist local councils in developing policies for renewable energy in local plans and identifies the planning considerations for a range of renewable sources.

London Context

London Plan (2021)

4.4 The London Plan is the overall strategic plan for London, it sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The London Plan is part of the Development Plan and covers a range of planning issues. The presented policies provide a vision for how London should sustainably grow and develop in the future. Policies considered pertinent to this report are presented below:

- Policy SI 1 (*Improving air quality*) – Development proposals should not lead to further deterioration of existing poor air quality.
- Policy SI 2 (*Minimising greenhouse gas emissions*) - Major development should be net zero-carbon and minimise emissions in accordance with the following energy hierarchy: be lean, be clean, be green, be seen. A minimum on site reduction of 35% beyond Building Regulations will be required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Any short fall with the zero carbon target should be addressed through a carbon offset payment. Development referable to the GLA should also calculate whole life-cycle carbon emissions.
- Policy SI 3 (*Energy infrastructure*) - Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system.
- Policy SI 4 (*Managing heat risk*) - Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems.

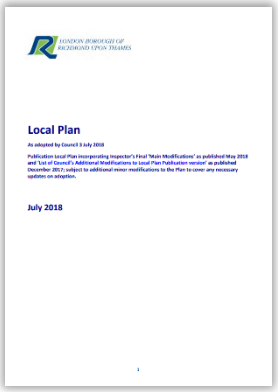
Energy Assessment Guidance (2022)

4.5 This guidance document explains how to prepare an energy assessment to accompany strategic planning applications referred to the Mayor as set out in London Plan Policy SI 2. It states that the purpose of an energy assessment is to demonstrate that the proposed climate change mitigation measures comply with London Plan energy policies, including the energy hierarchy.

4.6 Although primarily aimed at strategic planning applications, London boroughs are encouraged to apply the same structure for energy assessments related to non-referable applications and adapt it for relevant scales of development.

Local Context

Richmond upon Thames' Local Plan (2018)



4.7 The Local Plan sets out the key planning policies for the future development of the borough up to 2033 and acts as the central document in the Borough's Development Plan.

4.8 The following policies are considered pertinent to this report:

- Policy LP10 (*Local Environmental Impacts, Pollution and Land Contamination*) – seeks to ensure that local environmental impacts of all development proposals do not lead to detrimental effects on the health, safety and the amenity of existing and new users or occupiers of the development site, or the surrounding land.

- Policy LP17 (*Green Roofs and Walls*) – encourages the incorporation of a green and/or brown roof into any major developments with roof plates of 100sqm or more. It sets an aim of 70% of any potential roof plate area to be a green or brown roof.

- Policy LP 20 (*Climate Change Adaptation*) – requires energy efficient design, reduced need for cooling and encourages climate change resilience.

- Policy LP 22 (*Sustainable Design and Construction*) – development of 1 dwelling or more or 100sqm or more of non-residential will be required to complete the Sustainable Construction Checklist. Includes carbon reduction targets and requires consideration of the Energy Hierarchy. New non-residential buildings over 100sqm will be required to meet BREEAM 'Excellent' standard.

Richmond upon Thames' Sustainable Construction Checklist Guidance Document – (June 2020)

4.9 The Sustainable Construction Checklist SPD forms part of the assessment for planning applications for new build, conversion and retrofit properties within the London Borough of Richmond upon Thames.

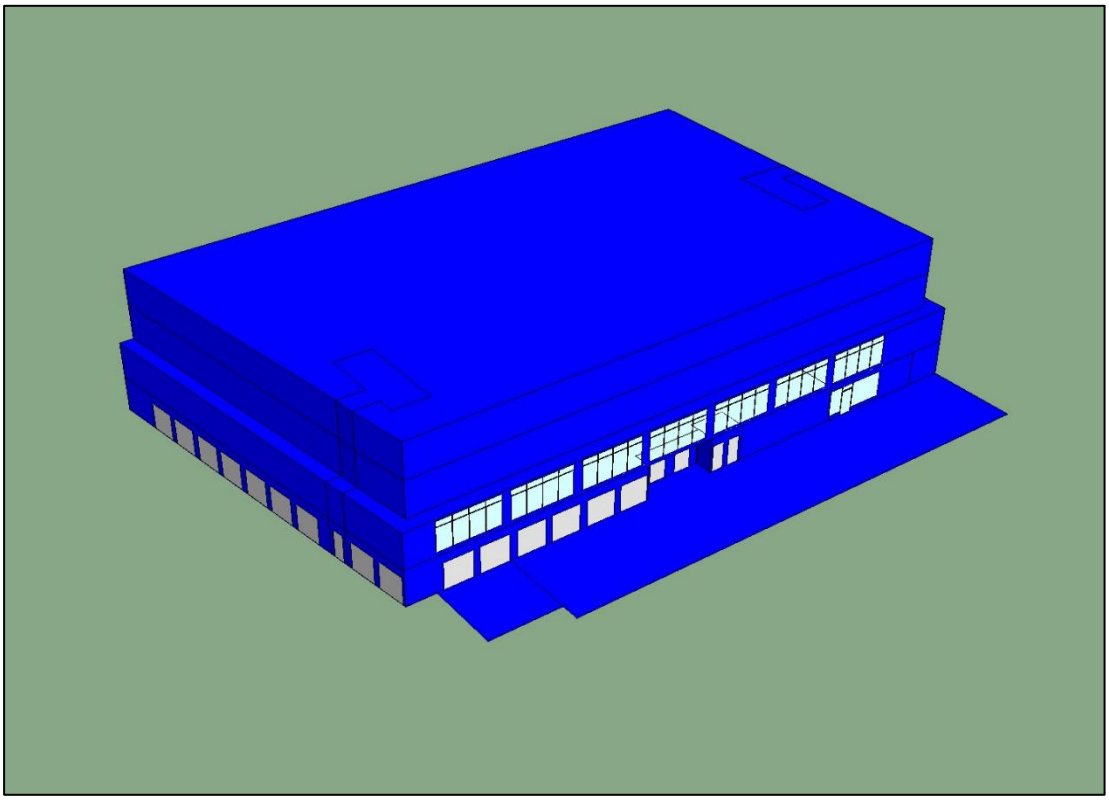
4.10 Checklist issues include Minimum Compliance (energy assessment, BREEAM, water usage); Energy Use & Pollution; Transport; Biodiversity; Flooding & Drainage; Improving Resource Efficiency; Accessibility.

4.11 The Checklist allows for performance against these issues to be scored; with an overall score indicating the level of sustainability of the development.

5. Baseline Emissions

5.1 This section establishes the baseline position from which carbon savings are to be achieved. For the purposes of this assessment, and in line with GLA and local authority policies and guidance, the baseline position equates to regulated carbon dioxide emissions, assuming compliance with Part L 2021 of the Building Regulations, as calculated using approved compliance software.

Figure 5.1 Energy Model



5.2 When determining this baseline, a notional specification based on Part L 2021 and the 'National Calculation Methodology (NCM) modelling guide' (2021) has been assumed to facilitate a consistent baseline and distinguish the reductions in carbon dioxide emissions that exceed Building Regulation requirements. This is to ensure consistency with the GLA guidance.

5.3 Regulated emissions are emissions which are covered by the Building Regulations and include the energy consumed in the operation of the space heating / cooling and hot-water systems, ventilation and internal lighting.

5.4 Unregulated emissions (i.e. those associated with cooking and all electrical appliances and other small power) have been separately calculated.

5.5 All emissions have been assessed using the SAP10.2 carbon factors. Non-domestic unregulated emissions have been taken from the unregulated emissions values generated by the SBEM model.

6. Demand Reduction (Be Lean)

6.1 This section considers features of the proposed design (including indicative performance levels) relevant to passive design and energy efficiencies.

Passive Design

6.2 Passive design seeks to maximise the use of natural sources of heating, cooling and ventilation to maintain thermal comfort levels within the building.

Building Massing & Orientation

6.3 The site size and proximity of neighbouring properties limits the orientation options, and the building is positioned to maximise the efficient use of the site. Nevertheless, the multi-storey design will help reduce the ratio of external surfaces to mass, meaning that heat will be better retained.

Fabric Efficiency

6.4 Fabric efficiency concerns the thermal properties associated with the building fabric and construction.

Insulation

6.5 Heat Transfer Coefficients, otherwise referred to as U-Values, are a measure of the rate of heat transfer through a building element over a given area, under standardised conditions (i.e. the rate at which heat is lost or gained through a fabric).

6.6 It is intended that the performance of the building fabric will incorporate relatively low U-Values to reduce the rate at which the buildings lose heat, preserving the heat within the space and reducing the requirement for mechanical heating.

Table 6.1 Proposed Building Fabric U-Values (Non-Domestic)

Fabric Element	Part L2 (W/m^{2}K)	Proposed (W/m^{2}K)
External Wall	0.26	~0.20
Roof	0.18	~0.12
Ground Floor	0.18	~0.12
Windows	1.60	~1.40

Air Tightness

6.7 A high level of air tightness is proposed and a level in the order $3m^3/h/m^2$ is targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating demand further reduced.

Thermal Bridging

6.8 Thermal bridging is the penetration of the insulation layer by a highly conductive non-insulating material allowing rapid heat transfer from an interior to exterior environment (and vice versa). In well insulated buildings, as much as 30% of heat loss can occur through thermal bridges.

6.9 The building fabric shall be constructed so that there are no reasonably avoidable thermal bridges in the insulation layers caused by gaps within the various elements. This includes providing continuous insulation and cladding panels where possible, with insulated sheathing to avoid moisture build up if required.

System Efficiencies

Heating Systems

6.10 The Amendment Regulations and accompanying Approved Documents L: Volumes 1 and 2 have been published by the Ministry of Housing, Communities & Local Government. These contain revised carbon conversion factors to address the carbon intensity projections from the National Grid, with consideration given to the rapidly reducing emission rates associated with electricity in the context of the energy strategy. The newly adopted factors (SAP10.2) are presented below in relation to the previous SAP2012 and SAP10 factors, demonstrating the continued trend of electricity decarbonisation.

Table 5.1 Carbon Factors SAP2012, SAP10 and SAP10.2

	SAP2012	SAP10	SAP10.2
Gas	0.216kgCO_2/kWh	0.210kgCO_2/kWh	0.210 kgCO2/kWh
Electricity	0.519kgCO_2/kWh	0.233kgCO_2/kWh	0.136kgCO2/kWh

6.11 The choice of heating systems is therefore mindful of the need for flexibility in consideration of the decarbonisation of the national grid.

Ventilation / Cooling Systems for Thermal Comfort

6.12 The issue of overheating is being separately assessed as part of the BREEAM; on the basis that, as buildings become progressively better sealed and insulated, the potential for overheating increases. Consequently, a TM52 Overheating Analysis has been undertaken in line with policy requirements of SI 4 (Managing Heat Risk) of the London Plan. The cooling hierarchy has been thoroughly investigated as follows:

- The site size and proximity of neighbouring properties limit the orientation options, and the building is positioned to maximise the efficient use of the site. Nevertheless, the multi-storey design will help reduce the ratio of external surfaces to mass, reducing external heat gain.
- Energy-efficient lighting and equipment have been specified to minimise internal heat generation within the occupied spaces.
- The architectural design prioritises reducing heat entry into the building by utilising materials with relatively low U-values, ensuring high insulation performance to minimise heat gain. Moreover, proposals include achieving a high level of air tightness and minimising thermal bridges where possible, thereby enhancing control over air infiltration between the internal and external environments.
- As passive ventilation through openable windows will not be possible due to security reasons of the storage facility, mechanical ventilation was tested. This was found to be insufficient to maintain thermal comfort levels in accordance with TM52 requirements.
- Therefore, to ensure compliance with TM52 and maintain thermal comfort, a localised comfort cooling system has been proposed for occupied spaces.

Extract Fans

6.13 It is anticipated that extract fans will be employed in WC and kitchen areas. The specific fan power (SFP) for these systems will be efficient and target a power consumption rate of 0.3W/l/s.

Controls

6.14 Time and temperature controls by suitable arrangement will be installed, in order to maximise the efficiency of the heating system.

Lighting Efficiency

6.15 Lighting design is intended to be highly efficient and in excess of Building Standards requirements. In the warehouse components it is intended that lighting efficacy shall be in excess of 120 lumens/circuit Watt, with 110 lumens/circuit Watt elsewhere in staff and shop areas. It is anticipated that presence detectors, daylight dimming and a timeclock will be installed to control internal lighting levels.

6.16 External lighting shall be highly efficient and employ controls to avoid energy wastage from unnecessary operation during daytime.

Appliances

6.17 Appliances, such as fridges, may be included in the kitchen areas. It is proposed that the EU energy label of these appliances shall be of a high rating.

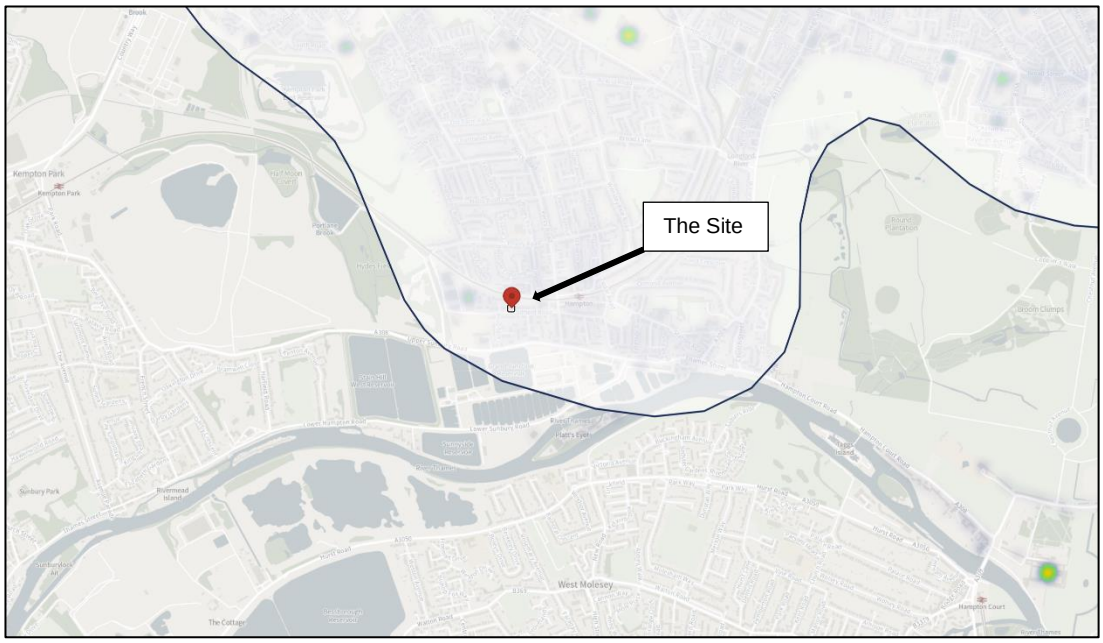
7. Heating Infrastructure (Be Clean)

District Energy Networks (DEN)

7.1 The term “district energy” applies to the energy distribution network, rather than the origins of the energy and the extent of any carbon savings will be largely determined by the energy source and heat losses on the network.

7.2 The London Heat Map is a tool provided by the Mayor of London to identify opportunities for decentralised energy projects in London and it builds on the 2005 London Community Heating Development Study.

Figure 7.1 Extract from the London Heat Map



7.3 The above extract from The London Heat Map shows the site located in an area of low heat density. The Site is located in a ‘Heat Network Priority Area’ but there are no existing District Energy Networks (DEN) in close proximity.

District Energy Appraisal

7.4 In the absence of an existing DEN in close proximity to the Site and that the source of the heat is likely higher carbon than alternatives, it is not proposed to accommodate DEN as part of the energy strategy.

Combined Heat & Power (CHP)

7.5 Combined Heat & Power (CHP) systems generate electrical energy and provide the waste heat from the process to be used on site. They are typically gas-fired but can be run off alternative fuel sources.

7.6 This technology has historically been considered “low carbon” on the basis of the offsetting of Grid electricity and associated carbon. With a significantly reduced quantum of offset carbon anticipated going forward, the technology will likely prove more carbon intensive than a conventional gas-fired boiler on the basis that (a) carbon savings will be negligible or non-existent; and (b) the overall efficiency of CHP is generally lower than conventional boilers.

CHP Appraisal

7.7 The Site has a very small heating demand (as most of the space is unheated). At this scale, it is generally not economic to install CHP as smaller CHPs tend to have lower electrical efficiencies and therefore higher carbon emissions. CHP also tends to emit higher levels of NO_x than other heating systems; potentially adversely impacting local air quality.

7.8 A centralised CHP plant would create complex managerial arrangements and the administrative burden of managing CHP electricity sales to grid when the power is not required on site; combined with the relatively low unit price for small volumes of exported CHP electricity can create incentives for the CHP to be installed but not operated. CHP is therefore not proposed.

8. Renewable Technology Review (Be Green)

8.1 This section considers the potential application of low carbon and renewable technology options.

Biomass Systems

8.2 Biomass systems are heating systems that use agricultural, forest, urban and industrial residues and waste to produce heat and (depending on the system) electricity. At the building scale, biomass boilers using wood pellets or woodchips are the norm. Biomass should be sourced locally to limit "embodied carbon" associated with transport and ideally be derived from waste wood products to limit the take-up of agricultural land for fuel crops.

Biomass Appraisal

8.3 Whilst technically feasible, heat demands are low and the absence of a readily available and diverse local fuel source creates risk associated with security of fuel supply. This has implications for operational viability.

8.4 Carbon emissions associated with cultivation, processing and transport of biomass are not normally considered in the context of planning or Building Regulations meaning that total carbon emissions are likely to be significantly higher than estimated. Biomass is also likely to cause other air quality impacts (e.g. particulates), which have implications for local air quality. Biomass is therefore not proposed.

Heat Pumps

8.5 Heat pumps draw thermal energy from the air, water or ground ("source") and upgrade it to be used as useful heat at another location ("sink"). Heat pumps require electricity to operate (or gas in the case of Gas Absorption Heat Pumps) as mechanical input is required to convert harvested energy to useful heat and complete its transport to the "sink".

8.6 Heat pumps are generally considered as renewable (despite an electrical or gas requirement) because the source of the heat is the ambient temperature in the exterior environment, which is ultimately heated via the sun.

8.7 Reversible systems can provide air conditioning comfort cooling; however, when in cooling mode, the system is not considered renewable as it is not taking advantage of a renewable source of energy.

Heat Pump Appraisal

8.8 It is noted that heat pumps perform very well under the new Building Regulations, in consideration of the latest carbon factors, meaning that it will likely have much lower emissions

and environmental impact than alternatives. Heat pumps are therefore proposed for the heated areas of the development.

Micro Hydro Power

8.9 Micro hydro power systems harness energy from flowing water by using height differences (called “head”); the minimum allowable head is 1.5m and ideally not lower than 10m.

Micro Hydro Appraisal

8.10 There are no surface water courses immediately accessible to the site. Micro hydro is therefore not considered an option for the site, for technical feasibility reasons.

Micro Wind Power

8.11 Wind turbines are used to generate electricity; with power production determined by the rotation of the blades and being proportionate to the speed of their rotation. The technology is most efficient for constant, low turbulence wind profiles.

Micro Wind Appraisal

8.12 Whilst wind turbines are considered technically feasible in a limited capacity, wind speeds are relatively low and subject to turbulence. The technology is therefore likely to underperform.

8.13 Given the uncertainty over performance, the fact that any contribution will likely be quite minor, micro wind turbines are not proposed for the development.

Solar Systems

8.14 Both solar thermal and photovoltaic (PV) systems convert energy from the sun into a form which can be applied within the building. Solar thermal generates energy for heating (usually for hot water) and PV generates electricity. Hybrid photovoltaic / solar thermal collectors are also available and co-generate heat and power.

Solar System Appraisal

8.15 An extent of PV is proposed for the roof area. This area will be maximised in the context of the available roof space and other demands on the roof area (e.g., green roof).

9. Monitor, Verify & Report (Be Seen)

9.1 The Applicant is committed to protecting the building users from high prices and is therefore committed to post construction monitoring. This information will be used to encourage building users to minimise energy demand during peak hours. The Applicant will also undertake a programme of aftercare support as part of its handover process, which will also align with the BREEAM Man05 credit requirements.

9.2 The systems specified will be efficient and of sufficient size to accommodate peaks in energy demand, and thus short-term battery energy storage is not considered appropriate.

9.3 Extensive installation of smart meters, with distribution boards at every other floor and integration with an energy monitoring system, will facilitate the collation of data. Whilst it is expected that all loads will be monitored, the metering strategy has been optimised to reduce the overall embodied carbon of the electrical distribution of the scheme.

10. Summary

10.1 This Energy Statement provides an overview of the energy strategy in consideration of the site context, anticipated energy requirements and local priorities and initiatives.

10.2 A review of Richmond upon Thames Council's planning policies has identified a number of requirements relating to sustainable development including Local Plan Policy LP 22 (*Sustainable Design and Construction*). Consideration has also been given to the National and London planning policy framework.

Energy Strategy

Demand Reduction (Be Lean)

10.3 The approach seeks to accommodate the approach of efficient design first on the basis that it is preferable to reduce carbon emissions by reducing energy demand.

10.4 It is proposed to achieve a reduction in emissions through efficiency measures in accordance with the 15% target presented in London Plan Policy SI 2 and supported by the Local Plan. This is principally achieved through the selection of highly efficient lighting and control systems.

Use Energy More Efficiently (Be Clean)

10.5 So called "Clean" technologies are not proposed on site. CHP no longer provides a low carbon option when considered in the context of a decarbonising electricity grid. Furthermore, heat demands are very low and there is no existing DEN in the immediate vicinity of the site.

Use Renewable Energy (Be Green)

10.6 It is proposed to apply ASHPs to the space heating for the reception/shop areas only. Other spaces will not be comfort heated. An electric heater will also be provided in the toilet facilities.

10.7 Hot water will be provided by instantaneous electric heaters on the basis that demand is very low and this type of system avoids storage losses (and is therefore lower carbon than an alternative ASHP option).

10.8 An extent of PV is proposed at roof level to ensure compliance with the 35% planning policy target.

Monitor, Verify & Report (Be Seen)

10.9 The Applicant will undertake a programme of aftercare support as part of its handover process, which will also align with the BREEAM Man05 credit requirements. An energy monitoring system with metering by alternate floor plate will also be installed to allow the collection of data.

Carbon Savings

10.10 The following table summarise the carbon reductions at each stage of the Energy Hierarchy:

Figure 10.1 CO_2 Emissions after Each Stage of the Energy Hierarchy (SAP10.2)

Step	Carbon Dioxide Emissions (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021	6.3	1.0
After energy demand reduction	5.1	1.0
After heat network connection	5.1	1.0
After renewable energy	0.9	1.0

Figure 10.2 Regulated CO_2 Savings from Each Stage of the Energy Hierarchy

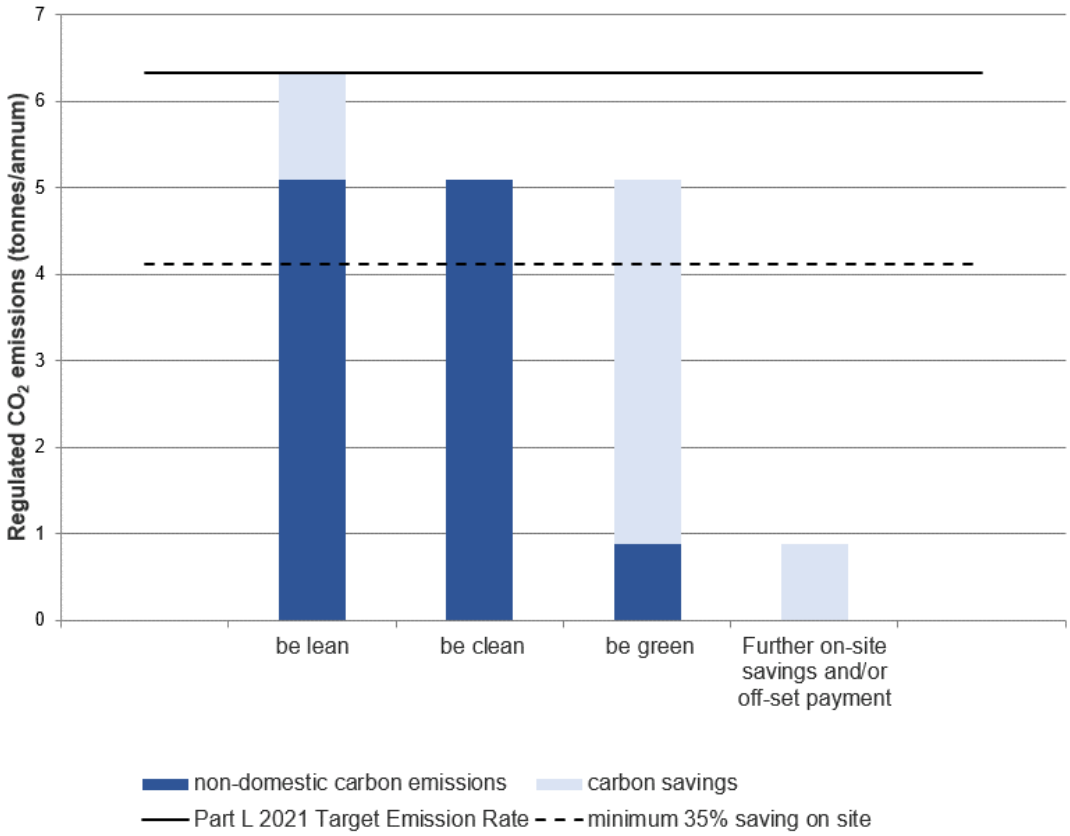
	Regulated Carbon Dioxide Savings	
	(Tonnes CO_2 per annum)	%
Savings from energy demand reduction	1.2	19%
Savings from heat network	0.0	0%
Savings from renewable energy	4.2	67%
Total Cumulative Savings	5.4	86%

10.11 The development will satisfy the Council target for an on-site carbon saving of >35% relative to Part L 2021. Residual emissions will be offset through a Carbon Offset payment. Based on current modelling and the GLA's recommended price of £95 per tonne of carbon dioxide, this is expected to equal £2,503.

10.12 As the proposed system is fully electric, the development will effectively become net zero in line with the decarbonisation of the National Grid.

10.13 A copy of the GLA Carbon Emission Reporting Spreadsheet is appended to this report outlining the savings at each stage of the Energy Hierarchy.

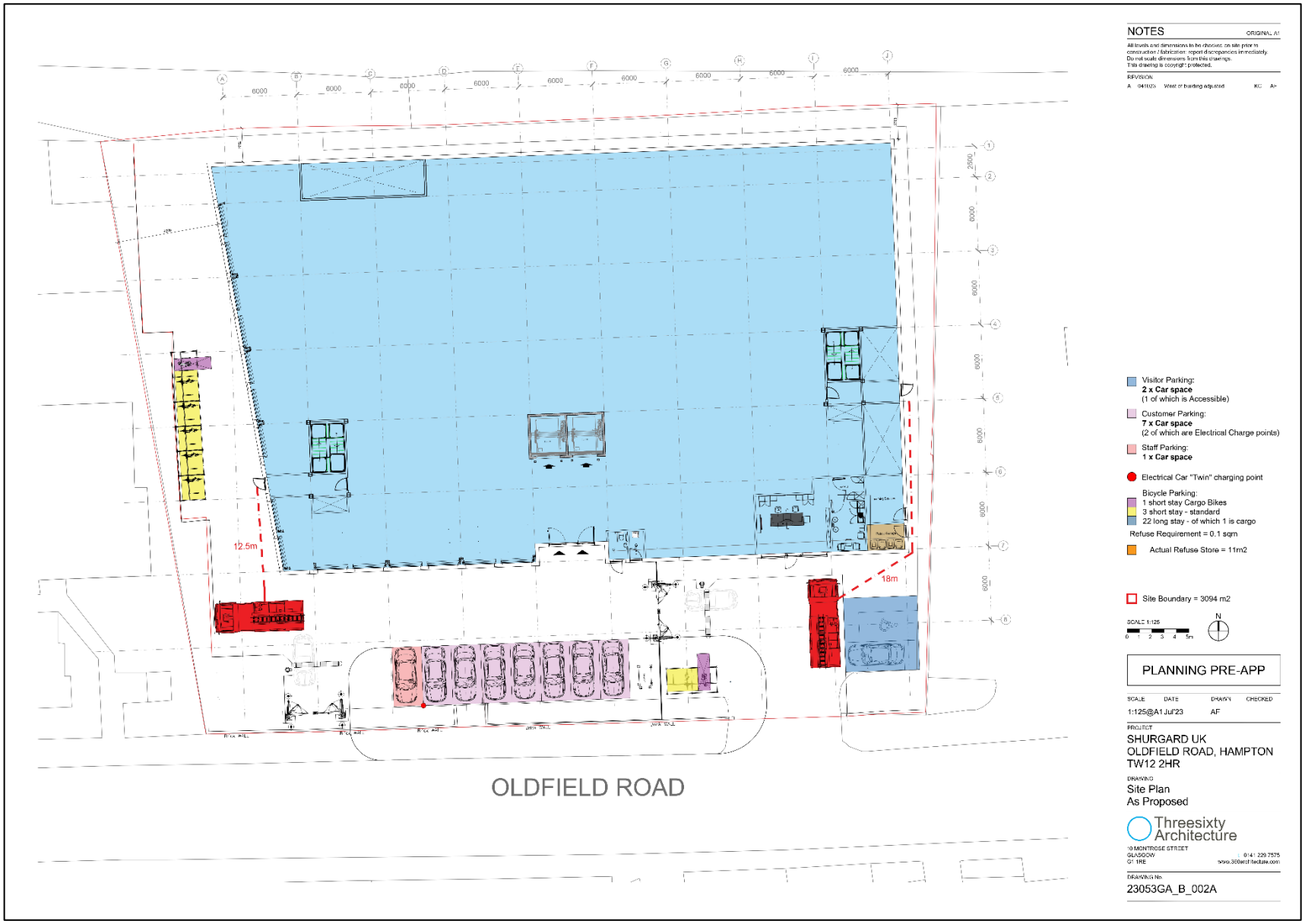
Figure 10.3 Graphic of Regulated CO_2 Savings from Each Stage of the Energy Hierarchy (Part L 2021)



10.14 Overall, the proposed energy strategy is considered consistent with the National Planning Policy Framework, London Plan and policies of the Council. When implemented, the scheme will provide an efficient and low carbon development.

Appendices

A. Site Plans


NOTES
ORIGINAL A1
All levels and dimensions to be checked on site prior to construction / fabrication: report discrepancies immediately. Do not scale dimensions from this drawings. This drawing is copyright protected.
REVISION
A 04/10/23 West of building adjusted KC AF
6000
2500
12.5m
18m
OLDFIELD ROAD
Visitor Parking:
2 x Car space
(1 of which is Accessible)
Customer Parking:
7 x Car space
(2 of which are Electrical Charge points)
Staff Parking:
1 x Car space
Electrical Car "Twin" charging point
Bicycle Parking:
1 short stay Cargo Bikes
3 short stay - standard
22 long stay - of which 1 is cargo
Refuse Requirement = 0.1 sqm
Actual Refuse Store = 11m2
Site Boundary = 3094 m2
SCALE 1:125
0 1 2 3 4 5m
N
PLANNING PRE-APP
SCALE DATE DRAWN CHECKED
1:125@A1 Jul'23 AF
PROJECT
SHURGARD UK
OLDFIELD ROAD, HAMPTON
TW12 2HR
DRAWING
Site Plan
As Proposed
Threesixty Architecture
10 MONTROSE STREET
GLASGOW
G1 1RE
0141 229 7575
www.360architecture.com
DRAWING No.
23053GA_B_002A

B. Key Local Planning Policy Requirements

London Planning Policy Framework

London Plan (2021)

Policy SI1 Improving air quality [extract]

[…]

B) To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:

1) Development proposals should not:

a) lead to further deterioration of existing poor air quality […]

Policy SI 2 Minimising greenhouse gas emissions

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

B) Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.

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

1) through a cash in lieu contribution to the borough's carbon offset fund, or

2) off-site provided that an alternative proposal is identified and delivery is certain.

D) Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

E) Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

F) Development proposals referable to the Mayor should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

Policy SI3 Energy infrastructure

A) Boroughs and developers should engage at an early stage with relevant energy companies and bodies to establish the future energy and infrastructure requirements arising from large-scale development proposals such as Opportunity Areas, Town Centres, other growth areas or clusters of significant new development.

B) Energy masterplans should be developed for large-scale development locations (such as those outlined in Part A and other opportunities) which establish the most effective energy supply options. Energy masterplans should identify:

1) major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals and social housing)

2) heat loads from existing buildings that can be connected to future phases of a heat network

3) major heat supply plant including opportunities to utilise heat from energy from waste plants

4) secondary heat sources, including both environmental and waste heat

5) opportunities for low and ambient temperature heat networks

6) possible land for energy centres and/or energy storage

7) possible heating and cooling network routes

8) opportunities for futureproofing utility infrastructure networks to minimise the impact from road works

9) infrastructure and land requirements for electricity and gas supplies

10) implementation options for delivering feasible projects, considering issues of procurement, funding and risk, and the role of the public sector

11) opportunities to maximise renewable electricity generation and incorporate demand-side response measures.

C) Development Plans should:

1) identify the need for, and suitable sites for, any necessary energy infrastructure requirements including energy centres, energy storage and upgrades to existing infrastructure

2) identify existing heating and cooling networks, identify proposed locations for future heating and cooling networks and identify opportunities for expanding and inter-connecting existing networks as well as establishing new networks.

D) Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:

1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:

a) connect to local existing or planned heat networks

b) use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)

c) use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network)

d) use ultra-low NOx gas boilers

2) CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality

3) where a heat network is planned but not yet in existence the development should be designed to allow for the cost-effective connection at a later date.

E) Heat networks should achieve good practice design and specification standards for primary, secondary and tertiary systems comparable to those set out in the CIBSE/ADE Code of Practice CP1 or equivalent.

Policy SI 4 Managing heat risk

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

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

1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure

2) minimise internal heat generation through energy efficient design

3) manage the heat within the building through exposed internal thermal mass and high ceilings

4) provide passive ventilation

5) provide mechanical ventilation

6) provide active cooling systems.

Local Planning Policy

Richmond Local Plan (2018)

Policy LP 10

Local Environmental Impacts, Pollution and Land Contamination

A. The Council will seek to ensure that local environmental impacts of all development proposals do not lead to detrimental effects on the health, safety and the amenity of existing and new users or occupiers of the development site, or the surrounding land. These potential impacts can include, but are not limited to, air pollution, noise and vibration, light pollution, odours and fumes, solar glare and solar dazzle as well as land contamination.

Air Quality

B. The Council promotes good air quality design and new technologies. Developers should secure at least 'Emissions Neutral' development. To consider the impact of introducing new developments in areas already subject to poor air quality, the following will be required.

1. an air quality impact assessment, including where necessary, modelled data;
2. mitigation measures to reduce the development's impact upon air quality, including the type of equipment installed, thermal insulation and ducting abatement technology;
3. measures to protect the occupiers of new developments from existing sources;
4. strict mitigation for developments to be used by sensitive receptors such as schools, hospitals and care homes in areas of existing poor air quality; this also applies to proposals close to developments used by sensitive receptors.

Noise and Vibration

C. The Council encourages good acoustic design to ensure occupiers of new and existing noise sensitive buildings are protected. The following will be required, where necessary:

1. a noise assessment of any new plant and equipment and its impact upon both receptors and the general background noise levels;
2. mitigation measures where noise needs to be controlled and managed;
3. time limits and restrictions for activities where noise cannot be sufficiently mitigated;
4. promotion of good acoustic design and use of new technologies;
5. measures to protect the occupiers of new developments from existing sources

Light Pollution

D. The Council will seek to ensure that artificial lighting in new developments does not lead to unacceptable impacts by requiring the following, where necessary:

1. an assessment of any new lighting and its impact upon any receptors;
2. mitigation measures, including the type and positioning of light sources;
3. promotion of good lighting design and use of new technologies.

Odours and Fume Control

E. The Council will seek to ensure that any potential impacts relating to odour and fumes from commercial activities are adequately mitigated by requiring the following:

1. an impact assessment where necessary;
2. the type and nature of filtration to be used;
3. the height and position of any chimney or outlet;
4. promotion and use of new abatement technologies;

Land Contamination

F. The Council promotes, where necessary, the remediation of contaminated land where development comes forward. Potential contamination risks will need to be properly considered and adequately mitigated before development proceeds

Construction and demolition

G. The Council will seek to manage and limit environmental disturbances during construction and demolition as well as during excavations and construction of basements and subterranean developments. To deliver this the Council requires the submission of Construction Management Statements (CMS) for the following type of developments.

1. all major developments;
2. any basement and subterranean developments;
3. developments of sites in confined locations or near sensitive receptors; or
4. if substantial demolition/excavation works are proposed.

Where applicable and considered necessary, the Council may seek a bespoke charge specific to the proposal to cover the cost of monitoring the CMS

Policy LP 17

Green roofs and walls

Green roofs and/or brown roofs should be incorporated into new major developments with roof plate areas of 100sqm or more where technically feasible and subject to considerations of visual impact. The aim should be to use at least 70% of any potential roof plate area as a green / brown roof.

The onus is on an applicant to provide evidence and justification if a green roof cannot be incorporated. The Council will expect a green wall to be incorporated, where appropriate, if it has been demonstrated that a green / brown roof is not feasible.

The use of green / brown roofs and green walls is encouraged and supported in smaller developments, renovations, conversions and extensions.

Policy LP 20

Climate Change Adaption

A. The Council will promote and encourage development to be fully resilient to the future impacts of climate change in order to minimise vulnerability of people and property.

B. New development, in their layout, design, construction, materials, landscaping and operation, should minimise the effects of overheating as well as minimise energy consumption in accordance with the following cooling hierarchy:

1. minimise internal heat generation through energy efficient design
2. reduce the amount of heat entering a building in summer through shading, reducing solar reflectance, fenestration, insulation and green roofs and walls
3. manage the heat within the building through exposed internal thermal mass and high ceilings
4. passive ventilation
5. mechanical ventilation
6. active cooling systems (ensuring they are the lowest carbon options)..

C. Opportunities to adapt existing buildings, places and spaces to the likely effects of climate change should be maximised and will be supported.

Policy LP 22

Sustainable Design and Construction

A. Developments will be required to achieve the highest standards of sustainable design and construction to mitigate the likely effects of climate change. Applicants will be required to complete the following.

1. Development of 1 dwelling unit or more, or 100sqm or more of non-residential floor space (including extensions) will be required to complete the Sustainable Construction Checklist SPD. A completed Checklist has to be submitted as part of the planning application.

2. Development that results in a new residential dwelling, including conversions, change of use, and extensions that result in a new dwelling unit, will be required to incorporate water conservation measures to achieve maximum water consumption of 110 litres per person per day for homes (including an allowance of 5 litres or less per person per day for external water consumption).

3. New non-residential buildings over 100sqm will be required to meet BREEAM 'Excellent' standard.

4. Proposals for change of use to residential will be required to meet BREEAM Domestic Refurbishment 'Excellent' standard (where feasible).

Reducing Carbon Dioxide Emissions

B. Developers are required to incorporate measures to improve energy conservation and efficiency as well as contributions to renewable and low carbon energy generation. Proposed developments are required to meet the following minimum reductions in carbon dioxide emissions:

1. All new major residential developments (10 units or more) should achieve zero carbon standards in line with London Plan policy.
2. All other new residential buildings should achieve a 35% reduction.
3. All non-residential buildings over 100sqm should achieve a 35% reduction. From 2019 all major nonresidential buildings should achieve zero carbon standards in line with London Plan policy.

Targets are expressed as a percentage improvement over the target emission rate (TER) based on Part L of the 2013 Building Regulations.

C. This should be achieved by following the Energy Hierarchy:

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy

Decentralised Energy Networks

D. The Council requires developments to contribute towards the Mayor of London target of 25% of heat and power to be generated through localised decentralised energy (DE) systems by 2025. The following will be required:

1. All new development will be required to connect to existing DE networks where feasible. This also applies where a DE network is planned and expected to be operational within 5 years of the development being completed.
2. Development proposals of 50 units or more, or new non-residential development of 1000sqm or more, will need to provide an assessment of the provision of on-site decentralised energy (DE) networks and combined heat and power (CHP)

3. Where feasible, new development of 50 units or more, or new non-residential development of 1000sqm or more, as well as schemes for the Proposal Sites identified in this Plan, will need to provide on-site DE and CHP; this is particularly necessary within the clusters identified for DE opportunities in the borough-wide Heat Mapping Study. Where on-site provision is not feasible, provision should be made for future connection to a local DE network should one become available.

Applicants are required to consider the installation of low, or preferably ultra-low, NOx boilers to reduce the amount of NOx emitted in the borough.

Local opportunities to contribute towards decentralised energy supply from renewable and low-carbon technologies will be encouraged where appropriate

Retrofitting

E. High standards of energy and water efficiency in existing developments will be supported wherever possible through retrofitting. Householder extensions and other development proposals that do not meet the thresholds set out in this policy are encouraged to complete and submit the Sustainable Construction Checklist SPD as far as possible, and opportunities for micro-generation of renewable energy will be supported in line with other policies in this Plan.

C. GLA Spreadsheet

Part L 2021 Performance

Residential

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

	Carbon Dioxide Emissions for residential buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	0.0	
After energy demand reduction (be lean)	0.0	
After heat network connection (be clean)	0.0	
After renewable energy (be green)	0.0	

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

	Regulated residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Be lean: savings from energy demand reduction	0.0	0%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	0.0	0%
Cumulative on site savings	**0.0**	**0%**
Annual savings from off-set payment	0.0	-
	(Tonnes CO_2)	
Cumulative savings for off-set payment	**0**	-
Cash in-lieu contribution (£)	**0**	

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

Non-residential

Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-residential buildings

	Carbon Dioxide Emissions for non-residential buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	6.3	1.0
After energy demand reduction (be lean)	5.1	1.0
After heat network connection (be clean)	5.1	1.0
After renewable energy (be green)	0.9	1.0

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-residential buildings

	Regulated non-residential carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Be lean: savings from energy demand reduction	1.2	19%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	4.2	67%
Total Cumulative Savings	**5.4**	**86%**
Annual savings from off-set payment	0.9	-
	(Tonnes CO_2)	
Cumulative savings for off-set payment	**26**	-
Cash in-lieu contribution (£)	**2,503**	

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

D. Indicative Energy Model Outputs (Be Lean)

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Shurgard Hampton (Be Lean)

As designed

Date: Thu Nov 23 11:18:39 2023

Administrative information

Building Details

Address: 74 Oldfield Road, Hampton, London, TW12 2HR

Certifier details

Name: Pete Jeavons

Telephone number: +44 (0) 20 7846 9041

Address: 55a Catherine Place, London, SW1E 6DY

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.22

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

Foundation area [m^2]: 83.12

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2annum$	0.72	
Building CO_2 emission rate (BER), $kgCO_2/m^2annum$	0.62	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	7.79	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	6.74	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.2	0.2	0100000E_W1
Floors	0.18	0.12	0.12	0100000E_F_A0
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	0100000E_C_A0
Windows** and roof windows	1.6	1.4	1.4	0100000E_W1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	1.2	1.2	GF000001_W1_O0
Vehicle access & similar large doors	1.3	1.2	1.2	GF000001_W1_O1
High usage entrance doors	3	-	-	No external high usage entrance doors

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

$U_{a\text{-}Calc}$ = Calculated area-weighted average 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- ASHP space heating

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	-	-
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.

1- SYST0002-DHW

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

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	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
GF_Offices	-	-	-	-	0.3	-	-	-	-	0.9	N/A

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
B_Circulation Lobby	110	-	-
B_Stairs	110	-	-
B_Lifts	110	-	-
B_Stairs 2	110	-	-
B_Warehouse storage	120	-	-
GF_Stairs	110	-	-
GF_Toilets	110	-	-
01_Stairs 2	110	-	-
01_Warehouse Storage	120	-	-

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
01_Stairs 2	110	-	-
02_Warehouse Storage	120	-	-
02_Stairs 2	110	-	-
02_Stairs 1	110	-	-
03_Warehouse Storage	120	-	-
03_Stairs 2	110	-	-
03_Stairs 1	110	-	-
GF_Circulation	110	-	-
GF_Warehouse Storage	120	-	-
GF_Warehouse Area	120	-	-
GF_Refuse	110	-	-
GF_Offices	110	-	-
GF_Services	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?
GF_Offices	NO (-86.1%)	NO
GF_Services	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?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	8782.4	8782.4
External area [m²]	21807.6	21807.6
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	5
Average conductance [W/K]	3223.01	3634.75
Average U-value [W/m²K]	0.15	0.17
Alpha value* [%]	13.51	23.62

* 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
100	**Storage or Distribution**
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	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	0.12	0.17
Cooling	0.03	0.06
Auxiliary	0.01	0.02
Lighting	4.36	5.3
Hot water	0.04	0.04
Equipment*	0.81	0.81
TOTAL**	**4.57**	**5.59**

* 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	0.31
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*0.31*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	130.77	121.18
Primary energy [kWh_{PE}/m²]	6.74	7.79
Total emissions [kg/m²]	0.62	0.72

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] No Heating or Cooling										
	Actual	118.2	12.1	0	0	0	0	0	0	0
	Notional	102	17.8	0	0	0	0	0	---	---
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	121.6	53.8	13	3.3	0.7	2.59	4.48	2.64	6
	Notional	166.5	99	17.5	6.3	2.2	2.64	4.4	---	---

Key to terms

Heat dem [MJ/m2] = Heating energy demand
Cool dem [MJ/m2] = Cooling energy demand
Heat con [kWh/m2] = Heating energy consumption
Cool con [kWh/m2] = Cooling energy consumption
Aux con [kWh/m2] = 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

E. Indicative Energy Model Outputs (Be Green)

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Shurgard Hampton (Be Green)

As designed

Date: Thu Nov 23 11:24:35 2023

Administrative information

Building Details

Address: 74 Oldfield Road, Hampton, London, TW12 2HR

Certifier details

Name: Pete Jeavons

Telephone number: +44 (0) 20 7846 9041

Address: 55a Catherine Place, London, SW1E 6DY

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.22

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

Foundation area [m²]: 83.12

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	0.72	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	0.1	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	7.79	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	0.86	
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	$U_{b\text{-}Limit}$	$U_{b\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.2	0.2	0100000E_W1
Floors	0.18	0.12	0.12	0100000E_F_A0
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	0100000E_C_A0
Windows** and roof windows	1.6	1.4	1.4	0100000E_W1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	1.2	1.2	GF000001_W1_O0
Vehicle access & similar large doors	1.3	1.2	1.2	GF000001_W1_O1
High usage entrance doors	3	-	-	No external high usage entrance doors

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

$U_{b\text{-}Calc}$ = Calculated area-weighted average 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- ASHP space heating

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.5	6	-	-	-
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.

1- SYST0002-DHW

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

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	SFP [W/(l/s)]									HR efficiency	
ID of system type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	**Zone**	**Standard**
GF_Offices	-	-	-	-	0.3	-	-	-	-	0.9	N/A

General lighting and display lighting	General luminaire	Display light source	
Zone name	**Efficacy [lm/W]**	**Efficacy [lm/W]**	**Power density [W/m²]**
Standard value	95	80	0.3
B_Circulation Lobby	110	-	-
B_Stairs	110	-	-
B_Lifts	110	-	-
B_Stairs 2	110	-	-
B_Warehouse storage	120	-	-
GF_Stairs	110	-	-
GF_Toilets	110	-	-
01_Stairs 2	110	-	-
01_Warehouse Storage	120	-	-

General lighting and display lighting	General luminaire	Display light source	
Zone name	**Efficacy [lm/W]**	**Efficacy [lm/W]**	**Power density [W/m²]**
Standard value	95	80	0.3
01_Stairs 2	110	-	-
02_Warehouse Storage	120	-	-
02_Stairs 2	110	-	-
02_Stairs 1	110	-	-
03_Warehouse Storage	120	-	-
03_Stairs 2	110	-	-
03_Stairs 1	110	-	-
GF_Circulation	110	-	-
GF_Warehouse Storage	120	-	-
GF_Warehouse Area	120	-	-
GF_Refuse	110	-	-
GF_Offices	110	-	-
GF_Services	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?
GF_Offices	NO (-86.1%)	NO
GF_Services	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?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	8782.4	8782.4
External area [m²]	21807.6	21807.6
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	5
Average conductance [W/K]	3223.01	3634.75
Average U-value [W/m²K]	0.15	0.17
Alpha value* [%]	13.51	23.62

* 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
100	**Storage or Distribution**
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	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	0.09	0.17
Cooling	0.03	0.06
Auxiliary	0.01	0.02
Lighting	4.36	5.3
Hot water	0.04	0.04
Equipment*	0.81	0.81
TOTAL**	**4.54**	**5.59**

* 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	3.96	0.31
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*3.96*	*0.31*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	130.77	121.18
Primary energy [kWh_{PE}/m^2]	0.86	7.79
Total emissions [kg/m²]	0.1	0.72

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] No Heating or Cooling										
	Actual	118.2	12.1	0	0	0	0	0	0	0
	Notional	102	17.8	0	0	0	0	0	---	---
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	121.6	53.8	9.8	3.3	0.7	3.43	4.48	3.5	6
	Notional	166.5	99	17.5	6.3	2.2	2.64	4.4	---	---

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= 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

F. General Notes

The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Ensphere Group Ltd for inaccuracies in the data supplied by any other party.

The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

No site visits have been carried out, unless otherwise specified.

This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.

The copyright in the written materials shall remain the property of Ensphere Group Ltd but with a royalty-free perpetual licence to the client deemed to be granted on payment in full to Ensphere Group Ltd by the client of the outstanding amounts.

The report is provided for sole use by the Client and is confidential to them and their professional advisors. No responsibility whatsoever for the contents of the report will be accepted to any person other than the client, unless otherwise agreed.

These terms apply in addition to the Ensphere Group Ltd "Standard Terms of Business" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Business the said Standard Terms of Business shall prevail.). In the absence of such a written contract the Standard Terms of Business will apply.

Ensphere Group Ltd
55A Catherine Place,
London, SW1E 6DY
+44 (0) 20 7846 9040
www.enspheregroup.com