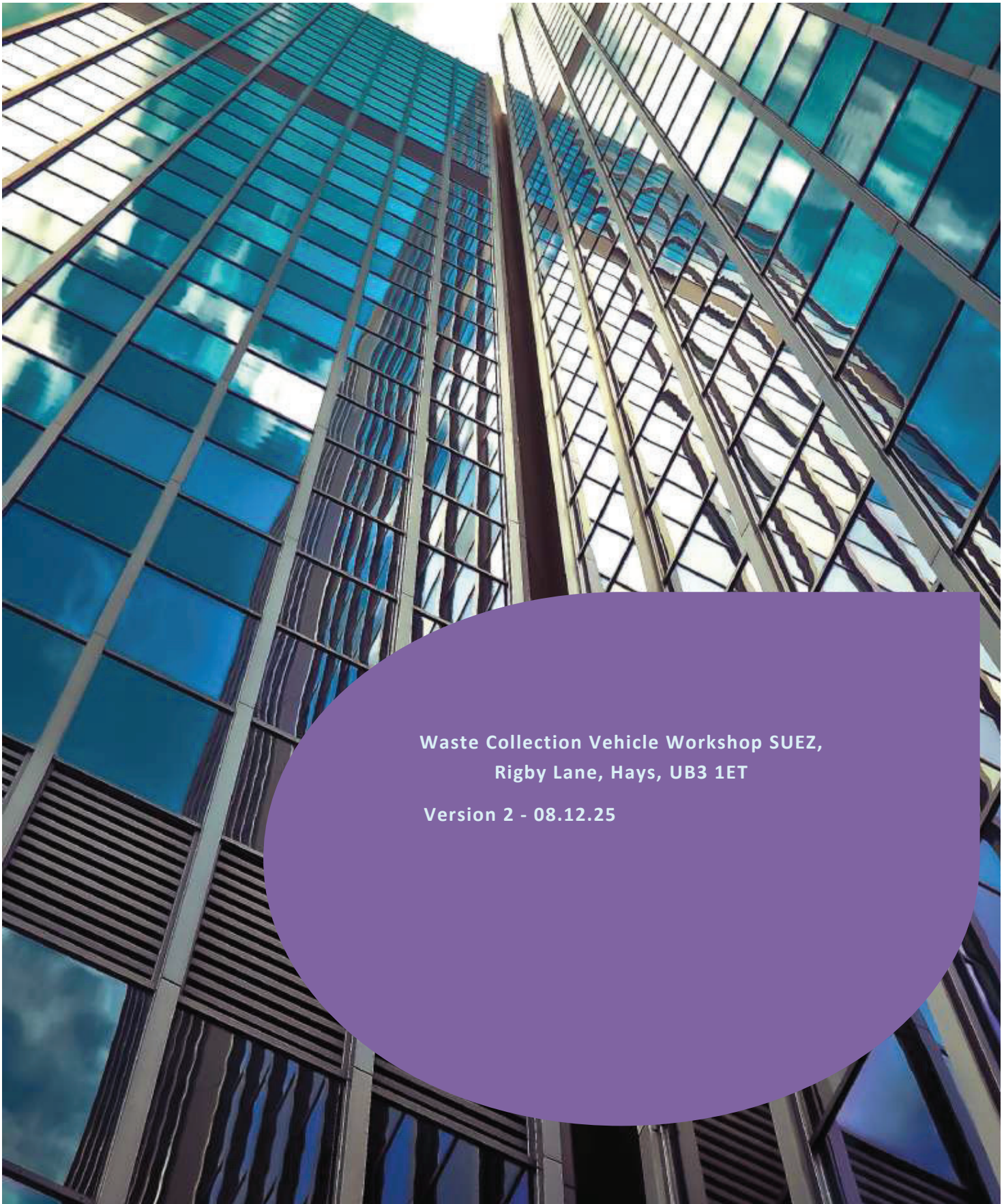
ENERGY STATEMENT



Waste Collection Vehicle Workshop SUEZ,
Rigby Lane, Hays, UB3 1ET

Version 2 - 08.12.25

Disclaimer

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1. Introduction

Building Compliance Assessments were commissioned to carry out an Energy Statement for the proposed addition of an ancillary workshop and associated infrastructure for the maintenance of waste collection vehicles. The workshop is proposed to be located on land to the south of the operational Waste Transfer Station (WTS) Rigby Lane, Hayes, Greater London UB3 1ET. The purpose of this Statement is to demonstrate that climate change mitigation measures comply with London Borough of Hillingdon Local Plan and the National Policy Framework including the designated energy hierarchy. It also ensures energy remains an integral part of the design and evolution of the development as documented in the revision table. The Statement sets out the proposed developments baseline energy consumption under Part L of the Building Regulations, it then outlines in detail the steps required to meet relevant planning requirements.

The resulting recommendations for the development follow the energy hierarchy of;

- Use Less Energy
- Use Renewable Energy

This Statement will also set out how the proposed development intends to address relevant planning policy requirements regarding wider sustainability issues. A set structure has been established to address multiple policy requirements under the same topic with specific detail on key issues as and where necessary.

2. Development Policies & Regulations

International and national bodies have set out broad principles of sustainable development. Resolution 42/187 of the United Nations General Assembly defined sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs. The UK Sustainable Development Strategy Securing the Future set out five 'guiding principles of sustainable development: living within the planet's environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly.[2]

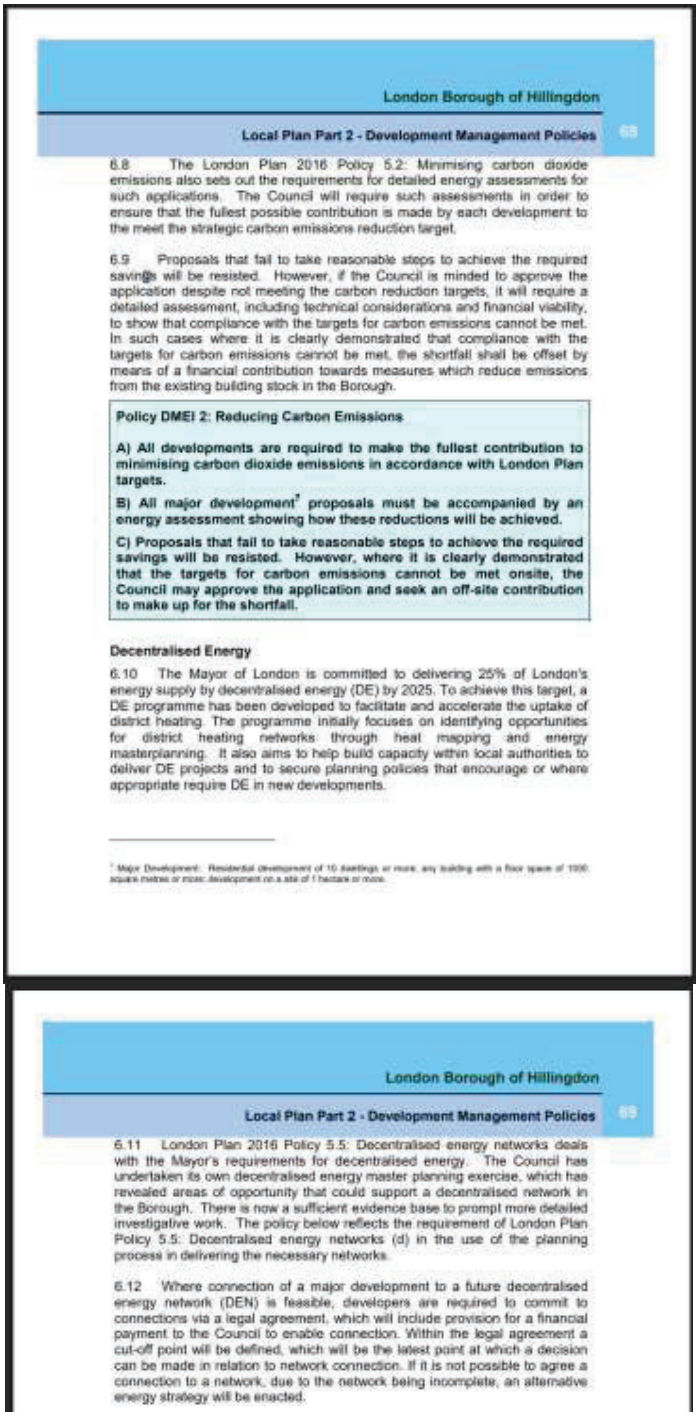
The National Planning Policy Framework sets out the Government's planning policies for England and how these should be applied. The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs. Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):[2]

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;[2]
- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and[2]
- an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.[2]

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

Local Development Strategy

The Proposed Development is required to achieve a reduction in CO2 emissions of 15%. This has been confirmed through the London Borough of Hillingdon Pre-App Response dated 16.09.2025. REF 643/PRC/2025/79



London Borough of Hillingdon

Local Plan Part 2 - Development Management Policies 68

6.8 The London Plan 2016 Policy 5.2: Minimising carbon dioxide emissions also sets out the requirements for detailed energy assessments for such applications. The Council will require such assessments in order to ensure that the fullest possible contribution is made by each development to the meet the strategic carbon emissions reduction target.

6.9 Proposals that fail to take reasonable steps to achieve the required savings will be resisted. However, if the Council is minded to approve the application despite not meeting the carbon reduction targets, it will require a detailed assessment, including technical considerations and financial viability, to show that compliance with the targets for carbon emissions cannot be met. In such cases where it is clearly demonstrated that compliance with the targets for carbon emissions cannot be met, the shortfall shall be offset by means of a financial contribution towards measures which reduce emissions from the existing building stock in the Borough.

Policy DMEI 2: Reducing Carbon Emissions

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[7] 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.

Decentralised Energy

6.10 The Mayor of London is committed to delivering 25% of London's energy supply by decentralised energy (DE) by 2025. To achieve this target, a DE programme has been developed to facilitate and accelerate the uptake of district heating. The programme initially focuses on identifying opportunities for district heating networks through heat mapping and energy masterplanning. It also aims to help build capacity within local authorities to deliver DE projects and to secure planning policies that encourage or where appropriate require DE in new developments.

[7] Major Development: Residential development of 10 dwellings or more, any building with a floor space of 1000 square metres or more, development on a site of 1 hectare or more.

London Borough of Hillingdon

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6.11 London Plan 2016 Policy 5.5: Decentralised energy networks deals with the Mayor's requirements for decentralised energy. The Council has undertaken its own decentralised energy master planning exercise, which has revealed areas of opportunity that could support a decentralised network in the Borough. There is now a sufficient evidence base to prompt more detailed investigative work. The policy below reflects the requirement of London Plan Policy 5.5: Decentralised energy networks (d) in the use of the planning process in delivering the necessary networks.

6.12 Where connection of a major development to a future decentralised energy network (DEN) is feasible, developers are required to commit to connections via a legal agreement, which will include provision for a financial payment to the Council to enable connection. Within the legal agreement a cut-off point will be defined, which will be the latest point at which a decision can be made in relation to network connection. If it is not possible to agree a connection to a network, due to the network being incomplete, an alternative energy strategy will be enacted.

London Plan

Policy SI 2 Minimising greenhouse gas emissions

Policy SI 2 Minimising greenhouse gas emissions

A Major development should be net zero-carbon.[1][2][3] 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[4][5][6] 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.

2.1.D. Statutory Requirements

The proposed development will be required to comply with the statutory requirements of the applicable Building Regulations. This statement will address those regulations associated with Part L of the Building Regulations, specifically.

- Part L Volume 1 2021 Edition – Conservation of fuel and power in buildings other than dwellings

Building Regulations Part L defines the energy efficiency standards required for buildings. This regulation controls insulation values of thermal elements, areas of glazing, doors and other openings in the façade, efficiency, insulation and controls of heating appliances and systems as well as lighting and hot water storage efficiencies.

Waste and Recycling

As an operational site, bin storage is already available for the separation of wastes and recyclable materials. Given the limited number of staff associated with the workshop the existing bin storage facilities are considered appropriate for the proposed development. This has been discussed and agreed with LBH Planning Team as part of the pre-application discussions. Adequate space will be provided within the building to encourage separation of recyclables

Water

Water-efficient fixtures and fittings will be installed to reduce overall consumption, with the target of meeting the Building Regulations optional requirement of 110 litres per person per day. The guttering of the new workshop building will be specified to direct all roof runoff to a new rainwater harvesting tank. Water collected in the tank will be used for washing and dust suppression on the site reducing mains water consumption and the volume of storm water discharging from the site. The rainwater harvesting tank will be a simple IBC container – an image of which is provided below.

Flexibility and Adaptability

The internal layout has been designed to provide long-term flexibility, supporting potential future adaptation in response to changing occupant needs. Consideration has been given to access, circulation, and space provision to futureproof the development.

Biodiversity

The proposed development will contribute to national and local biodiversity targets by providing new habitat features and measures to support wildlife species e.g. providing opportunities for nesting birds through the installation of nest boxes or the installation of invertebrate boxes to encourage the use of the site by a range of invertebrate species.

Flood Risk and Water Management

The site is located within flood zone 1 and is under 1 hectare in size. However, the site does have a 1 in 30 year likelihood of surface water flooding for part of the area where the workshop is proposed. A flood risk assessment (FRA) has been produced and is provided separately at Appendix D.The FRA concludes that the flood risks present at the site are low and that development on the site will be 'safe' in flood risk terms throughout its lifetime without increasing flood risk elsewhere.

The Development

3: Location

Figure 1: Site Location Plan Courtesy Of Google Maps

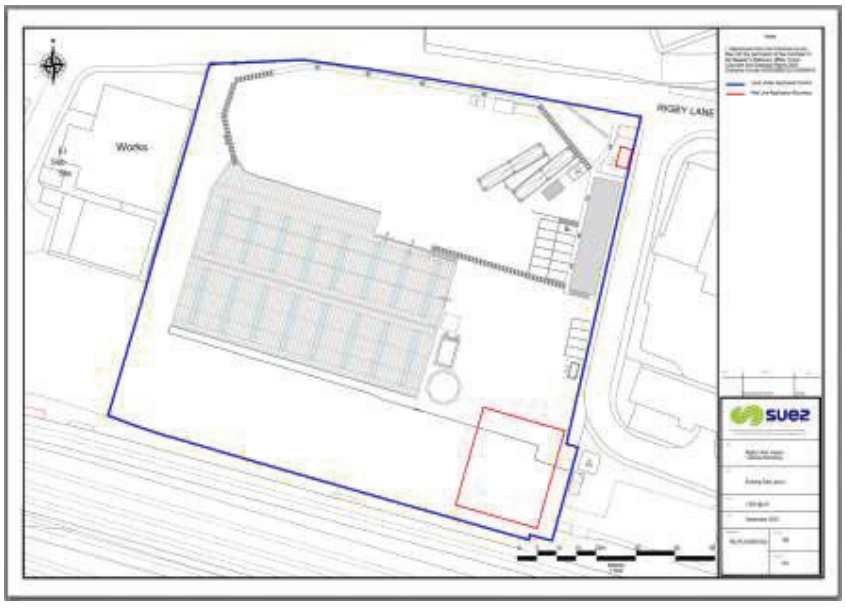

Figure 2: Existing Layout

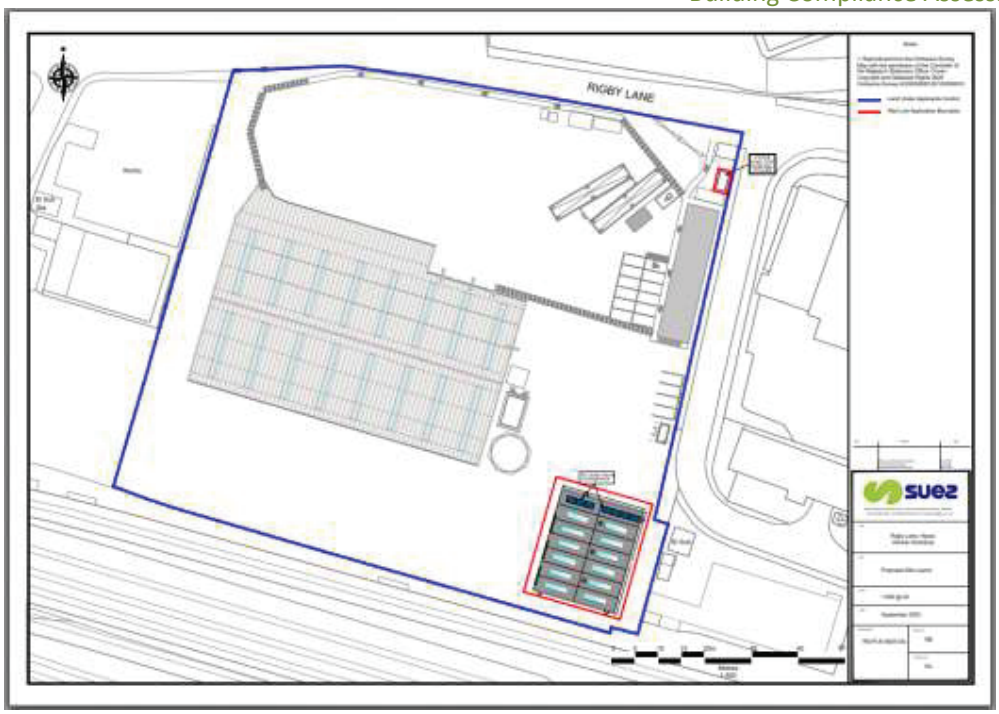

Figure 3: Proposed Layout

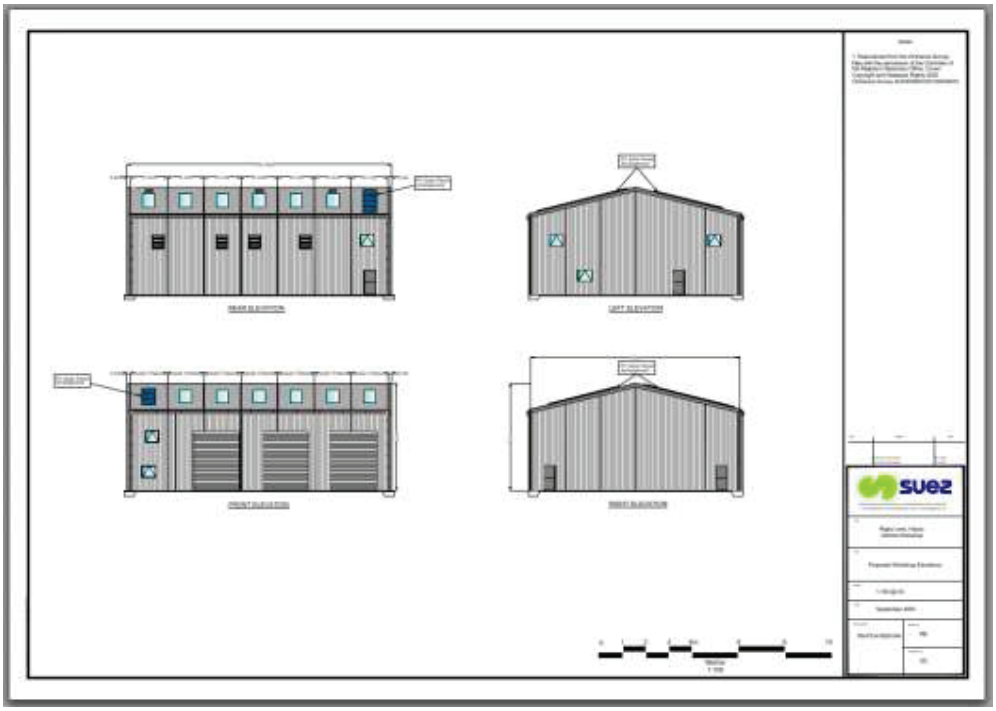

Figure 4:Proposed Elevations

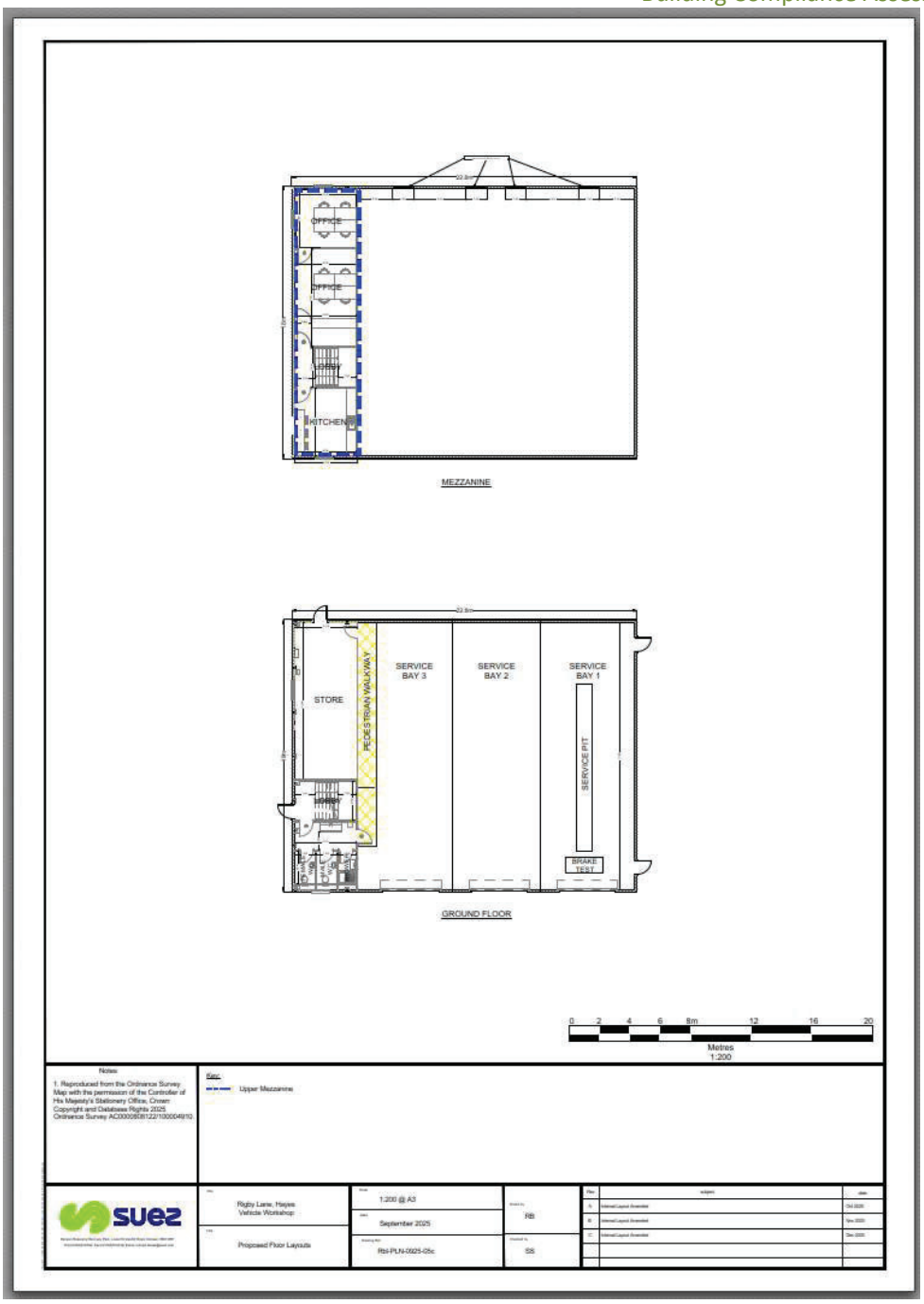

Figure 5: Proposed Floor Plans

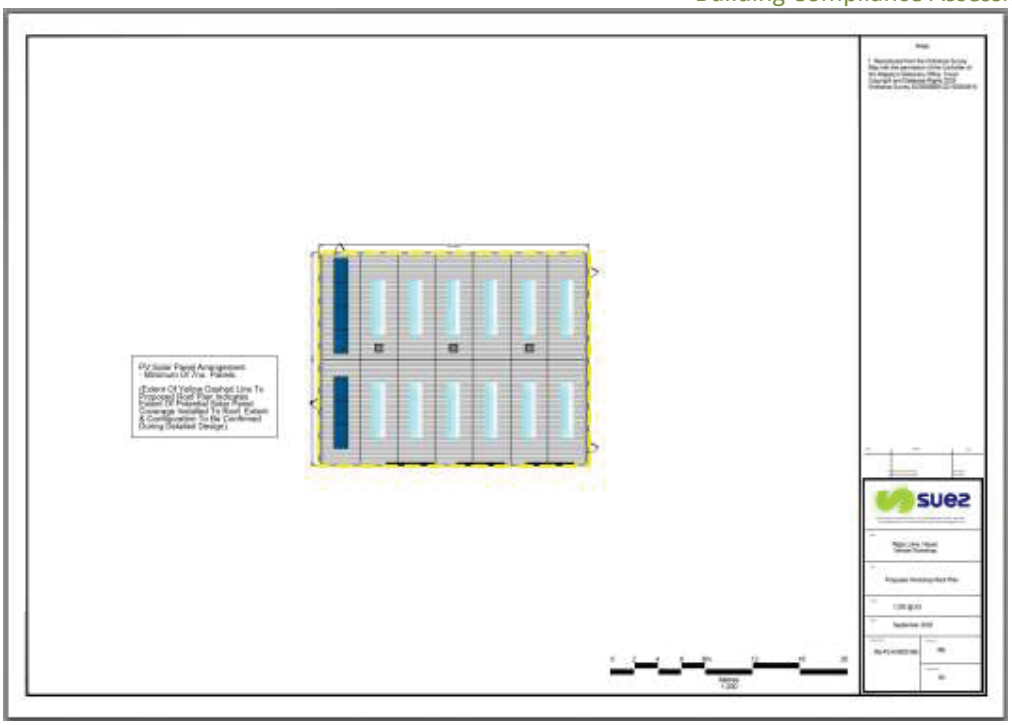

Figure 6: Proposed Roof Plan

4. Assessment Methodology

All assessments have been conducted using DCLG-approved software. For this proposal, the assessments were conducted using Design Builder.

The Carbon Dioxide Emissions expressed under 'Regulated' within this report reflect those emission targets set out by Part L and are made up of the total emissions for; Heating, Hot Water, Cooling, Controls, Fans, Pumps and Lighting. These have been calculated using DCLG-approved software. Furthermore, the Latest Carbon Figures through the Design Builder software have been used meaning that the amount of carbon emissions per KWh is accurate.

5. U Value

Fabric Element	Proposed	Part L
Walls	0.26	0.26
Floors	0.18	0.18
Roof	0.16	0.16
Glazing	1.6	1.6

6: Low Zero Carbon Feasibility Study

A low zero carbon (LZC) feasibility study has been conducted to assess and determine the appropriateness of different technologies being integrated into the design of the proposed development. The list is not exhaustive but aims to highlight the most common and commercially viable solutions to alternate and renewable energy.

Technology	Pros	Cons	Comments	Technically Feasible
Air Source Heat Pump (ASHP)	Can provide a significant proportion of heating and cooling for most building types Can generate heat and chilled water with good efficiency ratios	Can only produce heat up to 45°C thus delivered hot water temperatures can be low and result in an increase in electric immersion heating, increasing dependency on energy use from the national grid. Efficiencies in cold weather can be very low External condenser units can be unsightly and cause some noise issues	They're especially effective in well-insulated buildings.	Yes
Biomass Boiler	Can provide very low carbon heating and hot water Can be fitted in small and large-scale opportunities, giving the flexibility to use either a localized or district heating system Can form part or all of a Combined Heat And Power (CHP) System	Large plant room required to house boiler and fuel store Potentially more maintenance requirement, dependant on boiler type used Negative impact on local air quality from the emissions of the system	Could be challenging to source local fuel to maintain carbon neutral status Negative impact on local air quality Storage units would be required for an automatic pellet fed Systems	No
Combined Heat & Power (CHP)	Can provide both heat and power Can be an effective contributor to overall carbon emissions reduction	Requires a significant and consistent load to be efficient Only generates power when generating heat Plant room design is more complex	Small scale systems can be difficult to have service due to the limited number of trained service engineers	No
Ground Source Heat Pump (GSHP)	Can provide a significant proportion of heating and cooling for most building types Can generate heat and chilled water with good efficiency ratios	Can only produce heat up to 45°C thus delivered hot water temperatures can be low and result in an increase in electric immersion heating, increasing dependency on energy use from the national grid. Expensive to install via a borehole method Requires a large amount of land for shallow-depth loop systems	Not suitable for the location	No
Photovoltaics	High carbon emissions offset Relatively maintenance-free and low-cost installation Expected panel life in excess of 25 years Multiple mounting and orientation options are available Can be combined with a battery storage system to fully utilize free electricity generation	Shading impacts the generation of the system Inverter lifespan only expected to be 10 years	Will provide a considerable amount of regulated energy along with the unregulated energy demands of the proposed scheme	Yes
Solar Thermal Hot Water	Can provide a significant proportion of hot water demand Relatively low maintenance and installation cost	Does not produce enough heat during winter months to bring the cylinder up to temperature Restricted on mounting and orientation options	Maintenance and longevity issues make this technology ultimately more expensive	No
Wind Power	High carbon emissions offset Can be combined with a battery storage system to fully utilize free electricity	Produces noise and shadow flicker Need to be installed where they are free from turbulence caused by obstructions The system is reliant on a consistent wind speed to generate electricity Planning permission can be difficult to obtain	Could work in this scenario but often comes up against local constraints.	Yes
Hydroelectric	High carbon emissions offset Can produce electricity consistently Uses a naturally renewable source	Suitable locations can be difficult to find Restrictions from the Environment Agency and Fisheries can make the scheme unviable to install High installation and maintenance cost	No on-site water source	No
Community or District Heating	Allows a mixed use of fuel sources to be utilized Reduces space required in individual units for boilers and cylinders	Requires significant space for a local community network Internal heat gains can cause overheating in communal areas District connections require considerable planning to ensure ease of connection	The proposed development is not big enough to justify creating a new network.	No

Table 2: Low Zero Carbon Feasibility Study

7. Energy Review

This Section of the statement aims to address those policies concerned with the energy conservation/efficiency of the proposed scheme along with the considerations for using alternate and renewable technologies to achieve a minimum 15% reduction in Carbon Emissions. As stated in the introduction of this statement we are following the:

	Regulated CO_2 Emissions (Kg/Yr)
Baseline: Part L 2021 Edition (TER)	602.84

Target Emission Rate

	Regulated CO_2 Emissions (Kg/Yr)
Part L 2021 Edition (BER)	590.42

Dwelling Emission Rate (Use Less Energy)

	Regulated CO_2 Emissions (Kg/Yr)
Part L 2021 Edition (DER With PV)	335.21

Dwelling Emission Rate(Including PV)

A baseline energy consumption figure has been generated for the proposed development by assessing the proposed building. This figure demonstrates the predicted energy consumption for the whole development against the minimum requirements of Building Regulations Part L 2013 Updated 2021.

As shown above, the predicted energy use for the development built to the minimum standard in Part L is 602.84 Kg/year of CO_2. The Client has chosen low U-values for all thermal elements and has reduced the CO2 with a fabric first approach at the 'use less energy' stage yielding 590.42 kg/year of CO2 giving a 2% reduction. By then installing 2.8 KWP of Solar PV the proposed gets a further reduction yielding 335.21 kg/year of CO2. This is a 44% reduction over Part L.

8. Conclusion:

In conclusion, we consider the proposals to meet the requirements of Part L and the specific requirements of the London Borough of Hillingdon Local Plan and the London Plan. This has been demonstrated by modelling the proposed Low Energy Building in design builder and providing calculated figures for the predicted energy demand, CO_2 emissions and the reduced energy demand, CO_2 emissions after renewables. The client has chosen to opt for a Split VRF Heat pump and 2.8 KWP of Solar PV to achieve a 44% reduction. In this scenario the client only needs to achieve 15% reduction but has in fact gone beyond that and reduced it by 44%.

9. Results (see next page)

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Before PV

As designed

Date: Fri Dec 05 12:51:43 2025

Administrative information

Building Details

Address: Waste Collection Vehicle Workshop Suez, Rigby Lane, Hayes, UB3 1ET

Certifier details

Name: Liam Hanley

Telephone number:

Address: , ,

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.3.1

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

Foundation area [m^2]: 137.95

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

Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	4.37	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	4.28	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	45.77	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	45.05	
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	0.26	0.26	Ground Floor - Store_W_6
Floors	0.18	0.18	0.18	Ground Floor - Store_S_3
Pitched roofs	0.16	0.16	0.16	Mezz - Office_R_3
Flat roofs	0.18	0.18	0.18	Ground Floor - Store_R_4
Windows** and roof windows	1.6	1.6	1.6	Ground Floor - Store_G_7
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]

* 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/m^2K

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	5

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	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Project HVAC

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.35	5	-	-	-
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					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Project DHW

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

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

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
Ground Floor - Store	120	-	-
Ground Floor - Lobby	120	-	-
Ground Floor - Toilet	120	-	-
Mezz - Kitchen	120	-	-
Mezz - Office	120	-	-
Mezz - Office	120	-	-
Mezz - Circulation	120	-	-

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?
Ground Floor - Store	NO (-60.7%)	NO
Ground Floor - Lobby	NO (-72.7%)	NO
Ground Floor - Toilet	N/A	N/A
Mezz - Kitchen	NO (-61.6%)	NO
Mezz - Office	NO (-56.4%)	NO
Mezz - Office	N/A	N/A
Mezz - Circulation	NO (-83.6%)	NO

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?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m^2]	138	138
External area [m^2]	549	549
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	3
Average conductance [W/K]	138.57	133
Average U-value [W/m^2K]	0.25	0.24
Alpha value* [%]	27.12	22.13

* 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
100	**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
	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/m^2]

	Actual	Notional
Heating	16.83	19.78
Cooling	3.05	2.59
Auxiliary	0	0
Lighting	8.15	6.8
Hot water	1.17	1.17
Equipment*	17.06	17.06
TOTAL**	**29.2**	**30.34**

* 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/m^2]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	284.58	229.05
Primary energy [kWh_{PE}/m^2]	45.05	45.77
Total emissions [kg/m^2]	4.28	4.37

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	245.6	39	16.8	3	0	4.05	3.55	4.35	5
	Notional	188	41.1	19.8	2.6	0	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

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

After PV

As designed

Date: Fri Dec 05 12:55:46 2025

Administrative information

Building Details

Address: Waste Collection Vehicle Workshop Suez, Rigby Lane, Hayes, UB3 1ET

Certifier details

Name: Liam Hanley

Telephone number:

Address: , ,

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

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Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	23.5	
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	0.26	0.26	Ground Floor - Store_W_6
Floors	0.18	0.18	0.18	Ground Floor - Store_S_3
Pitched roofs	0.16	0.16	0.16	Mezz - Office_R_3
Flat roofs	0.18	0.18	0.18	Ground Floor - Store_R_4
Windows** and roof windows	1.6	1.6	1.6	Ground Floor - Store_G_7
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]

* 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/m^2K

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	5

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	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Project HVAC

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.35	5	-	-	-
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					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Project DHW

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

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

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
Ground Floor - Store	120	-	-
Ground Floor - Lobby	120	-	-
Ground Floor - Toilet	120	-	-
Mezz - Kitchen	120	-	-
Mezz - Office	120	-	-
Mezz - Office	120	-	-
Mezz - Circulation	120	-	-

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?
Ground Floor - Store	NO (-60.7%)	NO
Ground Floor - Lobby	NO (-72.7%)	NO
Ground Floor - Toilet	N/A	N/A
Mezz - Kitchen	NO (-61.6%)	NO
Mezz - Office	NO (-56.4%)	NO
Mezz - Office	N/A	N/A
Mezz - Circulation	NO (-83.6%)	NO

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?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m^2]	138	138
External area [m^2]	549	549
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	3
Average conductance [W/K]	138.57	133
Average U-value [W/m^2K]	0.25	0.24
Alpha value* [%]	27.12	22.13

* 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
100	**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
	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/m^2]

	Actual	Notional
Heating	16.83	19.78
Cooling	3.05	2.59
Auxiliary	0	0
Lighting	8.15	6.8
Hot water	1.17	1.17
Equipment*	17.06	17.06
TOTAL**	**29.2**	**30.34**

* 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/m^2]

	Actual	Notional
Photovoltaic systems	14.75	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*14.75*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	284.58	229.05
Primary energy [kWh_{PE}/m^2]	23.5	45.77
Total emissions [kg/m^2]	2.43	4.37

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	245.6	39	16.8	3	0	4.05	3.55	4.35	5
	Notional	188	41.1	19.8	2.6	0	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