LPH UK 1 Ltd,
Heathrow Flightpath Car Park,
Bath Road, Sipson, UB7 0DU

Energy Statement

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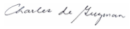
R002	Client Name, Address updated	1-5	JBL		18/06/2025	CDG		18/06/2025

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Executive Summary

The site is located along Heathrow Flightpath Car Park, Bath Road, Sipson, UB7 0DU, it is comprised of a large car park located approximately 100m to the north of Heathrow Airport, on the northern side of the A4 (Bath Road) and on the western side of the M4 spur leading to the airport.

The applicant is intending for hybrid application consisting of full planning permission for the creation of a mixed use sustainable vehicle parking facility (Sui Generis) and food and beverage unit (Class E), alongside ancillary welfare and staff buildings, and other supporting infrastructure and site levelling, and outline planning permission for a future extension to the facility, with all associated matters reserved except for access.

RED Engineering Design has been commissioned to advise on compliance of the designed scheme with the planning requirements as stipulated by **GLA Energy Assessment Guidance (2022)**, **The London Plan (2021)** and the **London Borough of Hillingdon Local Plan (2020)**.

The proposed development has a site area of 16,390.4m^2, with up to 199 public parking bays, F&B Unit (50m^2), Welfare Building (<50 m^2) and Staff Unit (<50 m^2).

The development therefore shall not be assessed using the detailed energy assessment process outlines in the GLA London plan, as it is not appropriate. It shall be addressed qualitatively rather than quantitatively in accordance with both LBH and GLA energy policies.

The report shows:

- The proposed building fabric is energy efficient.
- The proposed building services are energy efficient.
- There are no existing local heat networks to connect to.
- Renewable energy will be provided in the form of solar PV, EV chargers and air source heat pumps.

As such, the report shows the development is in accordance with both London Borough of Hillingdon and GLA energy policies.

CONTENTS

1.0 Introduction

This report sets out the approach to energy efficiency at a national level as well as how energy efficient design measures will be integrated into the proposed development in **Heathrow Flightpath Car Park, Bath Road, Sipson, UB7 0DU.**

1.1 Summary of Energy Statement Requirements

The objective of this report is to define and outline how to incorporate low energy and renewable energy systems into the project at an early stage so that advice can be given early on the implications of compliance with Part L of the Building Regulations and the implications in relation to relevant planning policies.

In this document, the principles for developing an energy strategy are presented, where the main objective of the energy strategy is to reduce the CO_2 emissions from the proposed development.

The development of the energy strategy is based on the following principles:

- Reduce demand
- Meet end-use demand efficiently
- Supply from low/zero carbon technologies
- Enable effective energy management

1.2 Structure of Report

The structure is in accordance with the GLA Guidance on preparing energy assessments. This report comprises a number of sections that together provide a full description of the evaluation criteria, input data, assumptions and modelling methodology used in order to provide recommendations for the project to reduce energy consumption and associated CO_2 emissions.

This comprises:

1.0	Introduction
2.0	Site Context
3.0	Policy Review
4.0	Demand reduction (Be Lean)
5.0	Cooling & Overheating
6.0	Clean: Decentralised Low / Zero Carbon Generation
7.0	Green: Review of Low / Zero Carbon Technologies
8.0	Conclusion

2.0 Site Context

The site is located in **Heathrow Flightpath Car Park, Bath Road, Sipson, UB7 0DU.**

The site comprises of parking area with a food and beverages unit to accommodate the customers, the site also have welfare and staff units. The site consists of standard EV car parking bays which will be separate to normal parking bays and accessible parking bays to accommodate all future customers. The south part of the site where the F&B is located also have standard parking bays and oversized bays. The site will have PV panel systems in 7 locations within the parking facility that will serve as roof and shading for the parking spaces.

The Site is bound by Bath Rd to the south; its main entrance beyond this way are going to the Heathrow airport. To the east and west side of the site are Tunnel Rd and Sipson way. On the north part surrounding the site are residential areas in Sipson way and Douglas Web House.

The Site is shown in **Figure 1**, below.

Figure 1 - Aerial View of Site Location

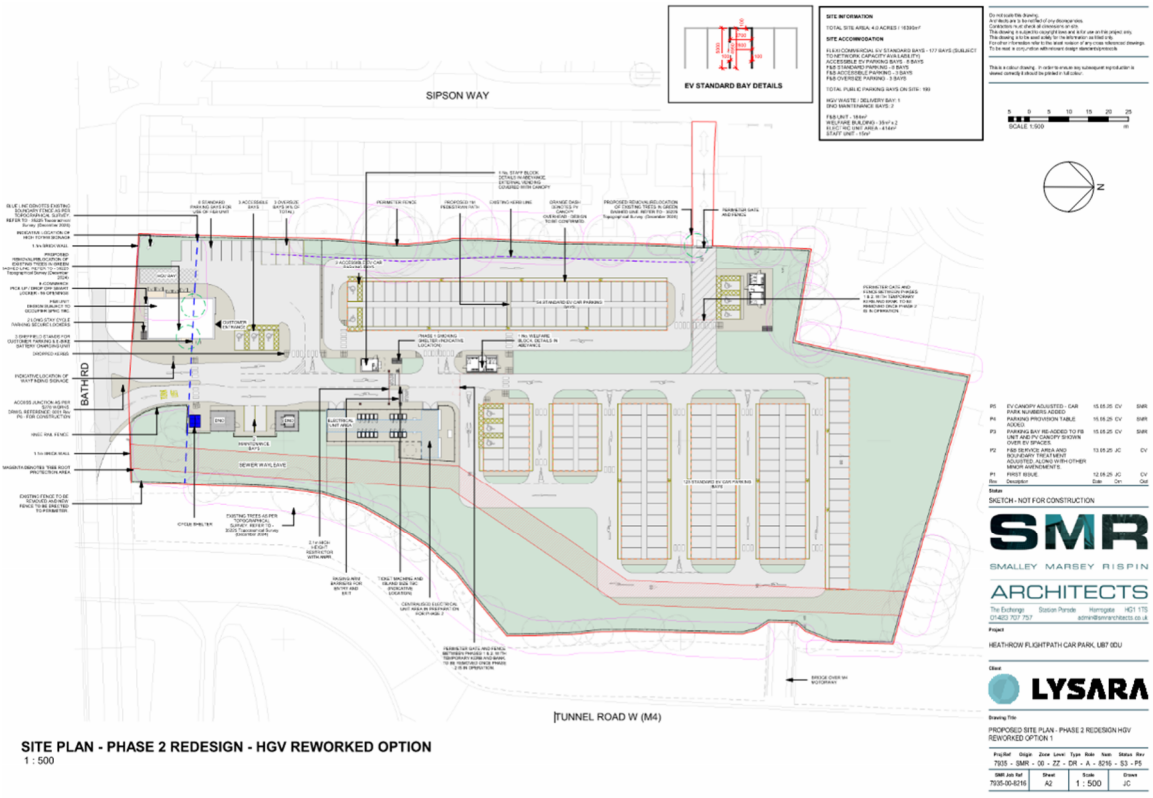

Figure 2 - Site Layout

3.0 Policy Review

This section reviews the planning policies, energy and sustainability targets that are relevant to this development.

3.1 National Planning Policy Framework (December 2024)

The purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development and supporting infrastructure in a sustainable manner. 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. At a similarly high level, members of the United Nations – including the United Kingdom – have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030. These address social progress, economic well-being and environmental protection.

Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

- an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

These objectives should be delivered through the preparation and implementation of plans and the application of the policies in this Framework; they are not criteria against which every decision can or should be judged. Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.

So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development.

Plans and decisions should apply a presumption in favour of sustainable development.
For **plan-making** this means that:

- all plans should promote a sustainable pattern of development that seeks to: meet the development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects;

- strategic policies should, as a minimum, provide for objectively assessed needs for housing and other uses, as well as any needs that cannot be met within neighbouring areas6, unless:

- the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for restricting the overall scale, type or distribution of development in the plan area; or

- any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.

For **decision-taking** this means:

- approving development proposals that accord with an up-to-date development plan without delay; or
- where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:

    - the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for refusing the development proposed; or

    - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole, having particular regard to key policies for directing development to sustainable locations, making effective use of land, securing well-designed places and providing affordable homes, individually or in combination.

3.2 The London Plan (Adopted March 2021)

3.2.1 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:

- be lean: use less energy and manage demand during operation
- be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
- be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site
- 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 % beyond Building Regulations is required for major development. Residential development should achieve 10 %, and non-residential development should achieve 15% 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, which are not covered by Building Regulations, i.e. unregulated emissions.

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

3.3 London Borough of Hillingdon Local Plan (Adopted 16 January 2020)[1]

3.3.1 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 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.

3.3.2 POLICY DMEI 3: Decentralised Energy

d) All major developments are required to be designed to be able to connect to a Decentralised Energy Network (DEN).
e) Major developments located within 500 metres of an existing DEN, and minor new-build developments located within 100 metres, will be required to connect to that network, including provision of the means to connect to that network and a reasonable financial contribution to the connection charge, unless a feasibility assessment demonstrates that connection is not reasonably possible.
f) Major developments located within 500 metres of a planned future DEN, which is considered by the Council likely to be operational within 3 years of a grant of planning permission, will be required to provide a means to connect to that network and developers shall provide a reasonable financial contribution for the future cost of connection and a commitment to connect via a legal agreement or contract, unless a feasibility assessment demonstrates that connection is not reasonably possible.
g) The Council will support the development of DENs and energy centres in principle, subject to meeting the wider policy

3.4 GLA Energy Assessment Guidance 2022

An energy assessment should be submitted with an application. Relevant parts of the **GLA Energy Assessment Guidance 2022** should be followed which sets out the information that should be provided within the energy assessment. For this type of development, which a ground level carpark facility with a small free standing building consisting of a F&B unit, Welfare unit and staff unit. Of the three units that are free standing building, only the F&B is applicable to Part L regulations, with the scale of its regulated energy demand relative to its size (50m^2). It would not be expected to detail the energy efficiency of the building envelope, space heating demand or overheating mitigation for the development due to the minimal scale of the regulated energy demand, therefore a full GLA energy assessment approach is not applicable.

The applicant should confirm that the free standing building will be serviced with fixed heating/cooling systems. In line with London Plan, the applicant should still provide a proportionate energy strategy that:

- Clearly outlines the scope of works with respect to energy and the energy uses on site.
- Seeks to follow the energy hierarchy and minimise CO_2 emissions for the regulated and unregulated energy.

[1] https://www.hillingdon.gov.uk/media/3084/Hillingdon-Local-Plan-Part-2-Development-Management-Policies/pdf/pdLPP2_Development_Management_Policies_-_ADOPTED_VERSION_JAN_2020_1.pdf?m=1598370641570

- Demonstrates how energy efficiency measures have been applied to remaining services, such as lighting (e.g. energy efficient lighting and controls has been specified).
- Considers opportunities to generate renewable energy on-site, particularly solar PV on suitable roof areas, to support site-wide energy demand (e.g. lighting)

3.5 Building Regulations Part L

Structure / Building	Building Regulations Part L Applicability	Reason for Inclusion/Exemption	Status
F&B Unit (184m^2)	-	Free Standing Building Over 50m2	**Included**
Welfare Buildings (2 x 35m^2)	Paragraph 0.11	Free standing buildings with floor area <50m^2 exempt	**Exempt**
Staff Unit (15m^2)	Paragraph 0.11	Free standing buildings with floor area <50m^2 exempt	**Exempt**

Table 1 - Building's applicability to Part L

As can be seen in the table above, the only building to which Part L is applicable is the F&B Unit.

3.6 Energy Statement Approach

The GLA energy assessment requirements are focussed on major and referable applications, although this development may be considered a major development as the site area exceeds 1 hectare, the London Plan Energy Assessment approach is applicable to building developments over 1,000m^2 floor area, it is not appropriate for a, EV car park development with less than 300m^2 of associated free standing buildings.

As such, this report will qualitatively show how the proposed development will be aligned with the following principles of the energy hierarchy:

- **Be Lean:** use less energy and manage demand during operation
- **Be Clean:** exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
- **Be Green:** maximise opportunities for renewable energy by producing, storing and using renewable energy on-site

4.0 Demand reduction (Be Lean)

This section of the report describes the demand reduction measures. Measures include both architectural and building fabric elements (passive design) and energy efficient services (active design). These relate to the F&B Unit on site. The fitout of the F&B units would be subject to the occupier specification, which is yet to be determined.

4.1 Description of Passive Energy Features.

4.1.1 Site Orientation and Site Location

The proposed LPH UK 1 Ltd Carpark will feature a dedicated Food & Beverage (F&B) building located on the southern side of the site. The carpark will include designated parking bays equipped with charging stations for electric vehicles (EVs), supporting sustainable transport. Additionally, photovoltaic (PV) systems will be installed across various sections of the parking area. These PV arrays will serve dual purposes—generating renewable energy and acting as roof structures or shading devices for the site.

4.1.2 U-values

The building will be highly insulated with fabric thermal performance in accordance with Part L 2021 Building Regulations.

4.1.3 Glazing Performance

The windows will be energy efficient and provide thermal performance in accordance with Building Regulations Part L 2021 requirements.

4.2 Description of Active Energy Features

4.2.1 Energy Efficient Lighting

The general lighting will be provided by modern highly efficient LED luminaires, with a luminaire efficacy of ≥95 lumens/watts.

4.2.2 Lighting Controls

Lighting controls including PIR occupancy sensors will be provided to all relevant internal areas of the development.

4.2.3 Domestic Hot Water

The development will incorporate stand-alone hot water electric heater.

4.3 Lean Energy & Carbon Savings

Lean energy and carbon savings are achieved through energy efficiency measures as follows:

- High levels of insulation
- Efficient LED lighting
- Lighting occupancy controls
- Electric water heaters are used for hot water

5.0 Cooling & Overheating

In order to reduce potential overheating and reliance upon air conditioning systems, the building designs incorporate measures in accordance with the cooling hierarchy presented in policy SI 4 of London Plan as follows:

- *Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure. It is also expected that external shading will form part of major proposals.*
    - The F&B building located at southern part of the site will be highly insulated and use fabric thermal performance according to Part L 2021 Building regulations.

- *Minimise internal heat generation through energy efficient design: For example, heat distribution infrastructure within buildings should be designed to minimise pipe lengths, particularly lateral pipework in corridors of apartment blocks, and adopting pipe configurations which minimise heat losses e.g., twin pipes.*
    - High efficiency LED luminaires will be employed within the buildings minimising internal gains.
    - There will be no significant heat gains from heating pipework or hot water storage vessels as there is no water based heating system and the domestic hot water will be provided by point of use water heaters with negligible storage volume and no secondary circulation.

- *Provide passive ventilation: For example, through the use of openable windows, shallow floorplates, dual aspect units or designing in the 'stack effect' where possible.*
    - The floor plate is very narrow, and openable windows may be incorporated.

- *Provide mechanical ventilation: Mechanical ventilation can be used to utilise 'free cooling' where the outside air temperature/enthalpy is below that in the building during summer months. This will require a by-pass on the heat recovery system for summer mode operation.*
    - No mechanical ventilation but natural ventilation will be used through opening of doors.

- *Provide active cooling systems: The increased use of air conditioning systems is generally not supported, as these have significant energy requirements and, under conventional operation, expel hot air, thereby adding to the urban heat island effect. However, once passive measures have been prioritised if there is still a need for active cooling systems, such as air conditioning systems, these should be designed in a very efficient way and should aim to reuse the waste heat they produce.*
    - A VRF air source heat pump will be provided to the F&B building, which will provide comfort cooling and heating when required.

6.0 Clean: Decentralised Low / Zero Carbon Generation

The following two options for decentralised energy will be investigated in this section of the report:

- Option 1: District heating
- Option 2: Combined heat and power (CHP)

6.1 District Heating

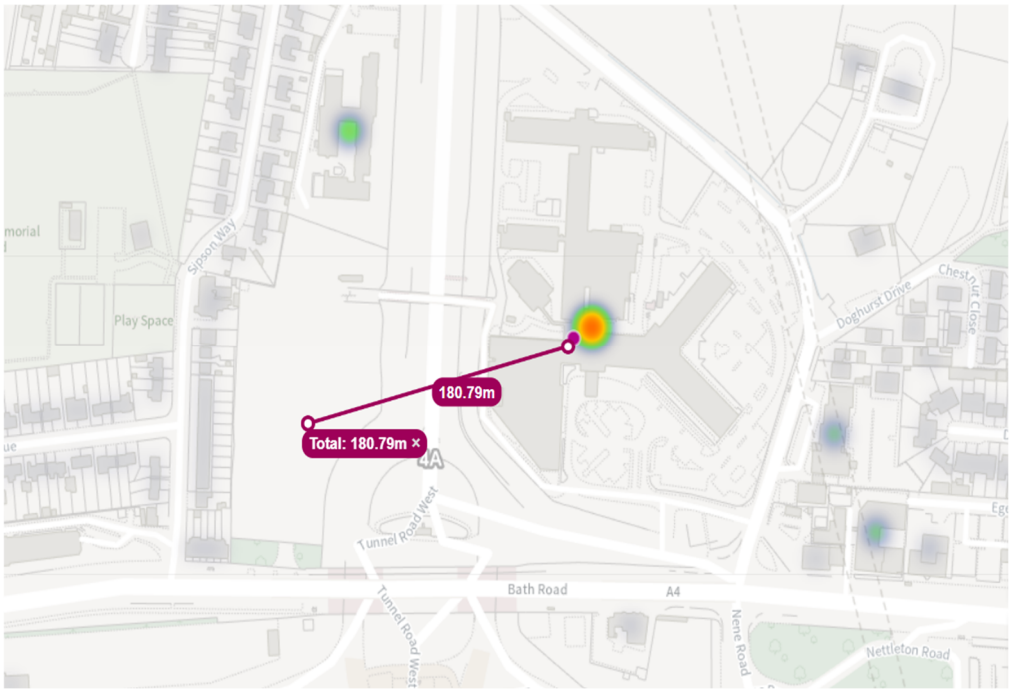

Figure 3 - London Heat Map

The London Heat Map shows no existing heating network accessible from the site. The closest proposed network is shown across Tunnel Rd, at around 200 metres away. However, as the building has low space heating demand and a low domestic hot water demand, connection to a heat network would not be feasible irrespective of proximity. Also, work to connect to a heat network would be disproportionately high compared to the low demand of the development. It is also not commercially viable and embodied carbon would be high, likely resulting in higher Life Cycle carbon emissions.

Therefore, connection to an energy network is **unfeasible** for the development. As a result, Combined Heat and Power (CHP) will be investigated as an alternative solution to district heating.

6.2 Combined Heat & Power

As an alternative to Option 1 (District Heating), the development could incorporate Combined Heat and Power (CHP) engines as part of a decentralised energy concept.

The use of CHP results in the highly efficient use of fuel, with primary energy savings of 30-45% compared with the conventional separate generation to achieve the same quantity of heat and power. Due to the efficiency of CHP, emissions to the environment have traditionally been 30% less than in separate generation of electricity and heat in the UK, however decarbonisation to the UK national grid over the last 10-15 years has seen a dramatic fall in carbon emissions from grid electricity and as such CHP no longer offers carbon savings. In addition, burning fossil fuels on site would have a detrimental impact on local air quality and this area. And furthermore, the site has no LTHW heating system, just a low domestic hot water demand which would be insufficient to justify a CHP. CHP is therefore deemed **unfeasible**.

7.0 Green: Review of Low / Zero Carbon Technologies

The purpose of this section is to analyse feasibility of each of the different Low/Zero carbon technologies for the site.

7.1 Biomass

Biomass boilers provide heat with a very low resulting net carbon emission taken over the life cycle of the fuel; CO_2 emitted in the combustion process is nearly balanced by the CO_2 absorbed by photosynthesis during the growth of the biomass vegetation.

Embedded CO_2 emissions result from the processing and transportation of the fuel. Therefore, as part of a carbon reduction strategy a wood pellet or wood fuelled boiler would have a significant positive impact on CO_2 reductions.

Biomass fuel is generally regarded as a zero-carbon emission fuel over the lifetime of the plant material although there will be a residual carbon footprint related to collecting, processing and transporting the fuel. The latest SAP 10 carbon emission factor for biomass wood pellets is 0.053 kg CO_2/kWh, around a quarter of either mains gas (0.210 kg CO_2/kWh) or grid electricity (0.233 kg CO_2/kWh).

However, an overriding reason against using this type of technology is its high NO_X emissions and particle content of the exhaust gases from typical biomass units that may raise objections from the Environmental Agency and planning department. In London, where air quality is already of high concern, this is particularly problematic. Furthermore, the site has insufficient heat demand to operate a biomass boiler effectively.

In light of the above considerations, biomass boilers are **not deemed feasible** for this development.

7.2 Wind Turbines

In urban environments with numerous buildings in close proximity to the site, turbulent air flow results in significantly reduced output from wind turbines. In addition, the site is on the Heathrow flight path, which would impose further restrictions.

At such, this technology is **not deemed feasible**.

7.3 Solar Domestic Hot Water

The application of solar thermal panels is for the heating of domestic hot water, due to the very limited domestic hot water demand, this technology is **not deemed feasible**.

7.4 Ground Source Heat Pumps

A Ground Source Heat Pump (GSHP) is a central heating and/or cooling system that pumps heat to or from the ground. During the winter season it uses the earth as a heat source, whereas during the summer season it can use the earth as a heat sink. The design increases the efficiency and reduces the operational costs of the heating and cooling systems by taking advantage of the moderate constant temperature in the ground.

Below a certain depth, the ground maintains a constant temperature of 10-12°C winter and summer. A heat pump extracts some of this energy and increases it to a temperature suitable for space heating; this is achieved by circulating water or glycol through either a horizontal matrix of PVC pipework or via a series of boreholes.

The ground source heat pump performance could be higher than the equivalent air source heat pump and, providing the flow and return water temperatures in the heating/cooling circuit can be kept relatively low, seasonal coefficients of performance (COP's) of 3.5 to 4.0 can be achieved.

Due to the decarbonisation of the UK national grid, and the corresponding drop in grid electricity carbon emissions factors over the last decade, heat pumps are becoming much more favourable solution in comparison to gas boilers as they achieve significant carbon savings now and these will improve as the grid decarbonises further.

For this development, there is a very low heat demand which would no justify use of this technology, as such it is **not deemed feasible**.

7.5 PV Solar Panels

Photovoltaic modules convert sunlight directly to DC electricity. They can be integrated into buildings in numerous ways including sloping and flat roofs, building façades, glass roof structures, and solar shading devices. There are mainly three types of PV cells: multi-crystalline silicon, amorphous silicon, and mono-crystalline silicon with the latter being the most efficient.

PV panels can be building, ground or canopy mounted. A PV system is deemed **feasible** for this site. The proposals include a car park canopy mounted PV system, which subject to design development is likely to be sized at approximately 580 kWp. The annual PV solar energy generation will significantly exceed the annual regulated energy consumption of the site.

7.6 Air Source Heat Pumps

Heat pumps can utilise heat available in the air, water or ground to heat buildings. Liquid through the evaporator side of the Air Source Heat Pumps (ASHP) absorbs heat from the outside air which is then passed through a compressor where its temperature is increased. The higher temperature heat is then transferred at the condenser side of the ASHP to the heating and hot water circuits of the development.

There are two main types of air source heat pump systems:

- An air to water system which distributes the heat via a wet central heating system
- An air-to-air system which circulates the heat by fans to heat the development (including VRF and DX Splits)

Heat pumps can produce around 3-4 units of heat for every unit of electricity consumed, making them very efficient.

For the F&B Unit an ASHP (or reversible DX split / VRF unit) is considered **feasible**.

8.0 Conclusion

The development will not be evaluated using the detailed energy assessment process outlined in the GLA London Plan, as it is deemed inappropriate for such small scale of buildings. Instead, it has been addressed qualitatively in line with both London Borough of Hillingdon Local Plan and GLA energy policies.

The report demonstrates that:

- The proposed building fabric is energy efficient.
- The proposed building services are energy efficient.
- There are no existing local heat networks to connect to.
- Renewable energy will be provided in the form of solar PV, EV chargers and air source heat pumps.