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Energy Statement

Latimer Road

Wokingham

30 January 2026

Latimer Road,

Wokingham

Our Ref: 8174

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Introduction

This Energy Strategy Review has been prepared by Futura Bright on behalf of Doswell Developments (the Client) to validate the revised Energy Strategy for the proposed residential development at 10-12 Latimer Road, Wokingham.

This report and proposed energy strategy has been based on a specification developed through ongoing discussions with the Client on the deliverability of specific systems with regards to technical and financial feasibility.

The strategy has been calculated with reference to current Building Regulations, Planning Policy Requirements, and utilising additional, more detailed information now available on the specific heating systems proposed, and detailed building specification.

Sample SAP modelling has been undertaken on all 42 no. proposed residential dwellings, with the specification agreed with the Client, to provide detailed energy performance information beyond the sample calculations undertaken within the previous Energy Statement submitted as part of the Full Planning application.

In line with best practice and local policy guidance, the revised energy strategy has been developed utilising the Energy Hierarchy of Lean, Clean, and Green, with results provided at all stages to show improvements made through the application of efficiency and technology measures.

THE PROPOSED DEVELOPMENT

Description of Development

The site at 10–12 Latimer Road, Wokingham (RG41 2YD) occupies a previously developed urban plot within a predominantly residential area close to Wokingham town centre and railway station. The site is irregular in shape, with frontage to Latimer Road providing the primary vehicular and pedestrian access. It is bounded by existing residential properties to the north and west, with the eastern boundary defined by the adjacent railway corridor. The surrounding townscape is characterised by a mix of low- to mid-rise residential buildings, institutional uses, and supporting local facilities.

The existing site is occupied by a collection of low-rise commercial and ancillary buildings, historically used as a builders' yard and associated storage structures, together with areas of hardstanding.

The proposed development comprises the construction of four-storey residential blocks accommodating a total of 42 self-contained flats. The layout has been designed to respond to the constraints of the site and its surroundings, with building footprints arranged to define clear frontages to Latimer Road while respecting neighbouring residential amenity.

The scheme also incorporates associated external works, including car parking, cycle storage, refuse facilities, and landscaped areas.

FIGURE 1: REGIONAL LOCATION

FIGURE 2: SITE LOCATION

PLANNING POLICY CONTEXT

The proposed development at Latimer Road, Wokingham lies within the administrative boundary of Wokingham Borough Council. The site is therefore subject to the adopted development plan, comprising the Wokingham Borough Core Strategy Development Plan Document (adopted January 2010) and the Managing Development Delivery Local Plan (adopted February 2014), alongside relevant national planning policy and guidance.

At a strategic level, sustainability and climate change mitigation are embedded within the Core Strategy, outlined below:

Policy CP1: Sustainable Development sets out the overarching requirement for development to minimise resource consumption, reduce carbon emissions, and incorporate measures that support climate change mitigation and adaptation. The policy requires development proposals to demonstrate how energy and water consumption are minimised through appropriate layout, orientation, building form, fabric performance and construction methods, and how opportunities for on-site renewable or low-carbon energy generation have been considered.

In addition, **Policy CC04: Sustainable Design and Construction (Managing Development Delivery Local Plan)** requires new development to be designed and constructed to high sustainability standards. For residential development, this includes meeting internal water consumption targets and exceeding minimum Building Regulations standards where practicable. Although historic references to the Code for Sustainable Homes are now superseded, the policy intent remains relevant and is interpreted through compliance with current Building Regulations Part L (2021), Part O (Overheating) and Part G (Water Efficiency), alongside best-practice fabric and energy efficiency measures.

Wokingham Borough Council has also declared a Climate Emergency and adopted a Climate Emergency Action Plan (January 2020), which reinforces the expectation that new development contributes positively towards the borough's decarbonisation objectives. The Action Plan seeks to ensure that new major residential development moves towards net zero operational carbon, encourages the use of low-carbon and renewable energy technologies, supports reductions in regulated and unregulated emissions, and promotes future-proofed buildings that are resilient to climate change. The proposed development at Latimer Road has therefore been assessed against this policy context, with the energy and carbon assessment approach structured to demonstrate compliance with both adopted planning policy and the council's wider climate ambitions.

PREVIOUS ASSESSMENTS

Two energy and sustainability assessments have previously been undertaken for the Latimer Road site to support earlier stages of the proposed development. These assessments were prepared under differing regulatory and design contexts and have informed the evolution of the energy strategy for the site.

The first assessment was an **Energy & Sustainability Statement prepared by eb7 Ltd (The PES), issued in November 2022 (Version 2).** This report supported an earlier iteration of the scheme and assessed compliance against the planning policy framework in place at the time, including the Wokingham Borough Core Strategy and Managing Development Delivery Local Plan. The assessment adopted the recognised energy hierarchy approach, considering demand reduction, efficient energy supply and renewable energy generation. Baseline energy performance was assessed using SAP 10.2 and the notional dwelling methodology aligned with the emerging Building Regulations Part L 2021 framework. The strategy assumed a centralised communal heating system, supplemented by enhanced fabric performance, photovoltaic panels and water efficiency measures, and demonstrated policy compliance in line with the council's sustainability objectives

A subsequent Energy Report was prepared by **Sadler Energy and Environmental Services Ltd, issued in December 2024**. This assessment reflected further development of the scheme design and was undertaken fully in accordance with Building Regulations Part L 2021 and SAP 2021. The report reviewed the energy performance of the proposed new-build dwellings and assessed a revised energy strategy, including a fabric-first approach, high-efficiency building services, and the integration of low- and zero-carbon technologies such as photovoltaic panels and centralised heat pump-based domestic hot water and heating systems. The assessment demonstrated substantial reductions in Dwelling Emission Rates compared to Target Emission Rates and confirmed compliance with both national regulations and Wokingham Borough Council's sustainability and climate change objectives

Since the completion of these earlier assessments, the regulatory framework has continued to evolve, and further technical analysis has been undertaken to refine the proposed energy strategy. This updated energy assessment has therefore been prepared to reflect the current scheme design, latest regulatory requirements, and lessons identified through previous assessments, providing a robust and up-to-date basis for assessing the energy and carbon performance of the proposed development.

Energy Assessment

As with previous assessments provided for the site, the development of the proposed energy strategy has been undertaken in line with best practice, and in consultation with the Client to ensure that high levels of emissions reductions can be provided throughout the scheme, whilst considering the technical and economic viability of the proposed energy systems – ensuring that the site remains an environmentally and economically sound proposition.

THE ENERGY HIERARCHY

The energy hierarchy is outlined in various guidance and best practice documents, and focusses on what is widely known as a 'fabric first' approach to building design.

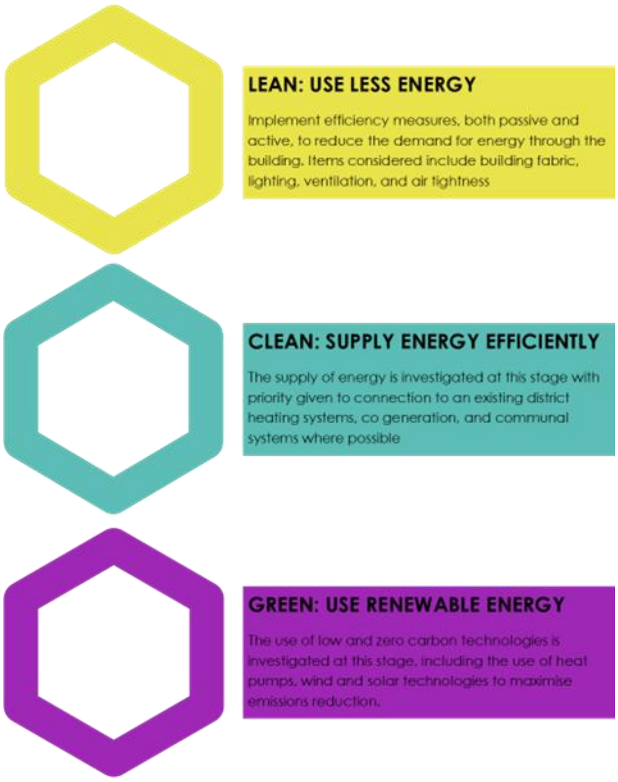
Energy and CO2 emissions reduction measures must be implemented in line with this hierarchy to demonstrate that a fabric first approach has been implemented, and that methods for servicing buildings are applied in the most environmentally appropriate way possible.

The Energy Hierarchy forms the basis for this Energy Strategy with improvements made to the proposed design through the implementation of emission reduction measures in line with the process outlined opposite.

Through the adoption of this approach, long term emissions reductions are secured through the implementation of efficiency measures first, with other 'green' technologies considered at the latter stages to provide heating and hot water.

The above approach is also considered in conjunction with the new national direction of travel away from the burning of fossil fuels on site, and the consideration of other, broader factors such as building location, fuel supply, building usage, and maintenance issues, which also form part of the efficient on-going operation of the proposed development.

FIGURE 3: THE ENERGY HIERARCHY



MODELLING AND CALCULATIONS

As newly constructed buildings, the dwellings at Latimer Road fall under Building Regulations Part L, as applied to new build constructions. Consequently, modelling for dwellings has been undertaken within certified SAP software in accordance with Building Regulations Part L 2021.

For completeness – to ensure full details are provided and the maximum detail can be provided in terms of building performance for energy and emissions – **all** residential dwellings have been modelled within SAP 10.2.

A summary of results and agreed specification can be found in the appendices for reference and review.

BASELINE EMISSIONS

The energy baseline forms the basis for which all subsequent improvements are measured and is based on the dimensions and orientation of the Proposed Development, but incorporates the 'Notional Specification' outlined within Approved Document L. To pass Building Regulations requirements, the Proposed Design must outperform the Notional (Target) dwelling on the following 3 metrics:

Emissions Rate (ER): the yearly emissions associated with regulated energy use per m2 of GIA

Primary Energy Rate (PER): the yearly energy required to be generated to supply the dwelling with needed power measured in kWh/m2/year.

Fabric Energy Efficiency (FEE): the yearly heat loss through the building fabric measured in kWh/m2/year.

In this instance, the 'Target' values for the above metrics are created through the SAP modelling software itself, through a simultaneous calculation using the 'notional' values outlined within Approved Document L. These target values form the energy baseline, and represent the minimum allowable values for Building Regulations Compliance.

As all dwellings are located within the same thermal envelope, a grouped average of results are provided within the body of the report, with individual dwelling performance provided within the summary appendix.

TABLE 1: BASELINE EMISSIONS

Assessed Area	Average TER (kgCO2/m2/yr)	Total emissions (t/y)
2836.99	12.93	36.68

Initial SAP modelling has confirmed that, if built out to the minimum requirements of Building Regulations Part L, the site would emit a potential **36.68 tonnes of CO2 emissions per year.**

LEAN: DEMAND REDUCTION

In line with the energy hierarchy, both passive and active efficiency measures have been considered and implemented as part of a comprehensive design proposal.

Passive Design Measures

Passive design measures are those which work on elements of the building fabric and construction to reduce overall energy use and emissions. These measures typically do not use energy as part of their efficiency, and they for the first step of the hierarchy to ensure an efficient fabric is achieved.

Building Fabric Specification

The following U-values have been used as the basis for the energy calculations:

TABLE 2: PROPOSED FABRIC SPECIFICATION

Passive Item	Proposed U-Values	Part L min. req. U-Values
External Wall	0.15	0.26
Ground Floor	0.10	0.18
Roof	0.09	0.18
External Door	1.60	1.60
External Window	1.20	1.40
Air Permeability	<3 $m^3/hr/m^2$	<8 $m^3/hr/m^2$

As a whole, the building is to be highly insulated beyond the minimum requirements of Building Regulations Part L as illustrated above to reduce heat loss and minimise the heat demand of the building. These improved fabric components will work in conjunction with a significantly reduced building air permeability, the emission of the building will be reduced significantly through fabric measures.

Thermal Bridging

Thermal bridging – the passage of heat through construction or geometric bridges – will also be reduced through the careful consideration of bridges as part of the detailed design process.

Full details of the bridging details to be used on the site are to be drawn up, therefore at this stage the Y-Value (the heat loss associated with the total bridging of the dwelling) has been factored down as an indication of the improvement anticipated here.

The default figure within SAP is 0.200. However, modern construction methods often perform far better than this when modelled as a complete block average and, based on previous projects using similar construction techniques, a revised Y value of 0.05 has been used within the sample modelling at present.

Full thermal bridge modelling (which has been instructed by the Client with Futura Bright) will be undertaken as the design progresses to confirm the values to be entered within the SAP modelling software as part of the detailed Building Regulations compliance checks.

Active Design Measures

Active measures are generally more technology based, and use mechanical or electrical efficiency devices to further improve emissions reductions.

The measures will also be introduced as part of the new buildings comprehensive approach to emissions reductions.

Lighting

Energy loads will be reduced through the specification of low energy, LED lighting throughout with a minimum efficacy of 110Lm/W. External lighting will be fitted with appropriate controls to prevent inappropriate use, these are applied based on the intended use utilising PIR and photocell sensors as required.

Heating Controls

Heating controls will also be optimised with the use of centralised time and temperature zone controls, with a minimum of 2 no. zones within each dwelling. This allows different areas of the home to be heated at differing times and temperatures, reducing heating demand.

Where heaters are proposed which have potential for individual controls (panel heaters for instance), these will feature a centralised programmer with appliance stats to control the temperature within each space.

Ventilation

Mechanical ventilation with heat recovery is to be installed throughout as part of a whole dwelling ventilation system. These systems remove warm and damp air from bathrooms and kitchens, and supply fresh air to living spaces which has been pre-warmed via a heat exchanger. These systems provide fresh air throughout the dwelling in a managed way, ensuring high levels of air exchange, good air quality, and minimal losses.

The specification of summer bypass also assists in the reduction of overheating occurrences during times of excessive external temperatures.

Air Pressure Testing

Air Pressure Testing – undertaken post construction – is a measure of a buildings 'leakiness' and therefore how much heat can be lost to atmosphere through the positive and negative pressures associated with external air movement (wind etc.).

The more air tight a building is, the less heat is lost through this leakage rate and the less heat is required to replace losses.

Whilst the assumptions around air pressure testing results are relatively easy to make at design stages, this is heavily dependent on construction quality, materials, and awareness of the site team – especially around services penetrations through the envelope. Therefore, it is important to be realistic in this regard.

The SAP notional building specification outlined within Approved Document L signifies a value of 8 m3/hr/m2 being appropriate here. The proposed performance of the dwelling, following consultation with the Client is **4m3/hr/m2.**

ACTIVE COOLING AND THE ENERGY HIERARCHY

A dynamic overheating assessment has been undertaken for the proposed development at Latimer Road, Wokingham, and forms part of the technical package submitted in support of the scheme. The assessment confirms that the proposed dwellings can achieve compliance with Building Regulations Part O (Overheating), subject to the specification and mitigation measures outlined within the report.

In accordance with national guidance and best practice, the Cooling Hierarchy has been applied to ensure that the risk of overheating is minimised as far as reasonably practicable through passive and low-energy design measures, prior to considering mechanical or active cooling solutions. The hierarchy has been applied as follows:

Reduce the amount of heat entering the building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure:

The site layout and building form have been developed to respond to the constraints of the surrounding urban context, including neighbouring residential properties and the adjacent railway corridor. While the flatted nature of the scheme limits opportunities for full cross-ventilation in all dwellings, this has been incorporated wherever feasible within the internal layouts, particularly within corner plots and top-floor units.

Fixed external solar shading devices are not proposed as part of the scheme, as the external appearance and architectural detailing are required to respond sensitively to the existing townscape character along Latimer Road. However, effective shading is provided through a combination of building massing, window reveals, inset balconies, and the articulation of the façades, which all act to limit direct solar gain. In addition, surrounding buildings, boundary treatments and retained vegetation provide further incidental shading benefits.

Glazing has been carefully specified to balance daylight provision, outlook and solar control. A reduced solar transmittance (g-value) has been adopted within the Part O assessment to limit unwanted summer gains, whilst maintaining adequate internal daylight levels. Collectively, these measures reduce the amount of heat entering the dwellings and mitigate overheating risk as far as possible without compromising residential amenity.

Minimise Internal Heat Generation Through Energy Efficient Design

Internal heat gains are minimised through the adoption of energy-efficient building services and appliances, in line with the wider energy strategy for the development. All glazing will incorporate low-emissivity (low-E) coatings, reducing both heat loss in winter and excessive solar gain in summer. Water-efficient fittings, including showers and sanitaryware, are specified to reduce hot water demand, storage losses and associated internal heat gains.

Lighting throughout the dwellings will comprise 100% low-energy fittings, further limiting internal heat generation while reducing regulated energy demand.

Manage Heat Through Building Fabric and Thermal Mass

The proposed buildings are anticipated to be constructed using a concrete frame with infill construction, resulting in an overall medium thermal mass classification. While internal finishes are expected to limit the extent of exposed thermal mass, the structure will nevertheless assist in moderating internal temperature fluctuations by absorbing heat during peak daytime conditions and releasing it during cooler periods.

The relatively lightweight internal fit-out also ensures that the dwellings remain responsive to ventilation, allowing excess heat to be effectively purged when external conditions permit. Opportunities to enhance thermal moderation through floor finishes and internal materials will be explored further at detailed design stage.

Provide Passive Ventilation

Passive ventilation is provided through openable windows to all habitable rooms, exceeding minimum Building Regulations requirements. Window sizes and opening areas have been designed to maximise ventilation potential and allow effective purging of heat during warmer periods. Where dwellings have openings on more than one façade, opportunities for cross-ventilation are achieved.

Upper-floor dwellings benefit from an increased ability to utilise night-time ventilation, as security constraints are reduced relative to ground-floor units, further assisting with passive cooling during periods of elevated temperatures.

Provide Mechanical Ventilation

To support compliance with Building Regulations Parts L and F, the development incorporates whole-house mechanical ventilation with heat recovery (MVHR). These systems include a summer bypass mode, allowing increased air change rates during warmer conditions without recovering heat, thereby assisting in reducing internal temperatures.

Mechanical ventilation also plays an important role in mitigating overheating risk in dwellings where window opening is constrained due to external noise sources, including proximity to the railway and surrounding roads. In these cases, the MVHR system provides a controlled and reliable means of maintaining internal comfort without reliance on excessive window opening.

Provision of Active Cooling

The use of active cooling systems is not proposed as a standard feature of the development. Overheating risk is expected to be managed primarily through the combination of passive design measures and mechanical ventilation strategies described above. However, where identified as necessary by the dynamic overheating assessment, a limited number of dwellings will be provided with supplementary cooling measures to ensure full compliance with Part O.

This approach ensures that active cooling is only introduced where demonstrably required, in line with the Cooling Hierarchy, and avoids unnecessary energy use or carbon emissions.

The overheating assessment undertaken shows that additional cooling measures are required within limited dwellings to ensure compliance with Part O requirements. These are outlined within the supporting Overheating Assessment undertaken by Futura Bright on this element, with a summary of dwellings below for information.

These cooling measures are not full fan coils systems and provide tempered air only to the existing MVHR units, limiting internal temperatures when temperatures reach a pre-determined limit.

This system is therefore not deemed as comfort cooling, and is designed as an internal overheating control measure, which will be activated only in the most extreme of circumstances in line with manufacturer's requirements.

The dwellings needing this additional cooling systems are listed below, with full details in the supporting Overheating Assessment.

Plots requiring MVHR Cooling Pack:

- Flat 12
- Flat 21
- Flat 31
- Flat 32
- Flat 34
- Flat 35
- Flat 38

CLEAN: HEATING INFRASTRUCTURE

'Clean' energy solutions prioritise the use of available, existing heating networks and combined heat and power where this is feasible to support and enhance the growing number of heating networks throughout the country.

District Heating Network

There are no district heating schemes within the immediate vicinity of the site for the Proposed Development to connect into – therefore the use of this technology is not feasible as per the previous assessment of the site.

Co-Generation

Whilst the use of cogeneration can be beneficial in some instances, heat load is typically required to be high and/or consistent for these to work effectively and efficiently.

The use of cogeneration on the site does have the potential to provide some CO2 emissions savings however, this also has the potential to run contrary to other key policies in the area – specifically in relation to local air quality.

CHPs use gas to generate both heat and hot water, however their emissions are generally higher in NOx and particulate matter when compared to gas boilers. In addition, the use of gas on site for any purpose goes against the current direction of travel in national policy which is to remove the burning of fossil fuels from the site entirely through the use of electricity as the primary heating fuel.

This allows the site to benefit from the future decarbonisation of the national grid and eliminate on site emissions completely.

As a result of this shift in national best practice and the benefits of electricity on site for heating in terms of emissions, cogeneration is not proposed.

Building Level Systems

Initial proposals for the Proposed Development involve the use of centralised heating and hot water systems provided through ASHP systems.

The design process followed by the Client has highlighted a potential number of flaws in this design proposal including – but not limited to – the following issues:

- Location of centralised heat pump systems and its impact in relation to the structure (if roof mounted) and noise pollution.
- Internal locations for domestic hot water storage
- System losses impacting overall performance
- Routing of internal pipework throughout the building – specifically between apartments and maisonette spaces.
- Internal gains associated with the pipework exacerbating overheating issues in the summer.

It is for this reason that the Proposed Development is not considering the use of communal heat pumps in this instance.

GREEN: LOW & ZERO CARBON TECHNOLOGIES

In line with previous applications for the site, the Proposed Development intends to incorporating Low and Zero Carbon (LZC) technologies as part of its energy strategy in line with the requirements of the Local Plan, whilst considering the broader implications of their installation as part of a comprehensive building design proposal.

This section outlines the feasibility of a range of renewable energy technologies for the proposed development. The assessment considers each LZC technology for their viability by means of:

- Technical Feasibility
- CO2 savings offered
- Other potential impacts

Local constraints, considerations and restrictions are also considered where these are thought to be relevant to the application of the technology.

Systems Discussion – Heating

The application of differing systems to heat the space and hot water of the proposed development has been discussed with the design team to ensure that any proposals not only meet the requirements of emissions reductions, but also form part of a comprehensive strategy on the site which meets the needs of our Client (developer) and the end Client, in addition to their overall feasibility - both physically and financially.

The use of electricity throughout the site forms a key part of this strategy and is in line with the general national direction of travel away from the burning of fossil fuels on site.

In initial discussions, the preference was for the use of electricity on the site as the sole source of power. This reduces connection costs associated with the running of gas throughout the site and will enable the site to benefit from future grid decarbonisation whilst also emitting no on-site emissions.

The high performance of the building fabric, and the installation of a number of efficiency measures within the proposed buildings results in the use of direct electric heating – via resistance panel heaters – a strong viability here.

These provide responsive, direct heat to targeted spaces, with little installation costs. Combined with effective and efficient heat recovery ventilation and an air tight, high performance fabric, the use of these for space heating within a low demand building is now possible.

The systems discussed below, are done so within the above context.

UNVIABLE TECHNOLOGIES

Wind Power

The generation of power through the use of wind turbines has the potential to generate a large quantity of electricity and provide high levels of emissions offset. Due to the location of the Proposed Development, the surrounding environment and its urban location, the use of this technology – which would be highly visible - is not considered appropriate.

Biomass

A biomass system would offer a heating system fuelled by plant-based materials such as wood, crops or food waste. A biomass system design for this development would consider generation of space heating and domestic hot water through the combustion of biofuels such as woodchip or wood pellets. These fuels offer a high energy content per unit of volume.

A biomass boiler occupies a larger floor area than a conventional gas-fired boiler with the additional requirement for locations to be provided for fuel storage. The burning of biofuels such as wood pellets expel exhaust gases which contain substantially more NOx emissions and particulate matter than its gas boiler equivalents, which would have a negative impact on the local air quality and would be contrary general air quality guidance and the national direction of travel away from the burning of fossil fuels on site.

As such the use of this technologies is not deemed appropriate for this site based on location and use.

Solar Thermal

The use of solar thermal technology has the potential to provide emissions and energy offset through roof mounted panels. However, unlike PV (discussed below), the maximum limit for solar thermal is based on hot water load, rather than available installation space.

Within the proposed design, solar thermal would also need to be distributed to each apartment individually – where cylinders are located – or to a central, communal store, which is not proposed.

For these reasons, the use of solar thermal has been discounted at this stage.

VIABLE TECHNOLOGIES

In light of the above assessment, the following outlines potential technologies that are viable for the site, but not necessarily proposed.

Heat Pumps – An Introduction

Heat pumps use the compression and expansion of a refrigerant to generate useful heat which can be utilised for both space heating and hot water. Some heat pump systems can also be used for cooling where this is required. The use of heat pumps is becoming increasingly favourable due to reducing costs, and the increasing thermal efficiency of buildings making the application of the technology more viable. Generally, heat pumps either use air or the ground as the heat source dependant on site limitations.

The Coefficient of Performance of the system is the ratio of heat energy produced, relative to the electrical energy used to operate the heat pump. Typically, this is 3:1 or 4:1 and is why heat pumps can be deemed as low carbon/renewable technologies, and how energy use and CO2 emissions savings are made.

Due to the lower flow and return temperatures delivered through heat pumps, these are best accompanied by oversized radiators and/or underfloor heating to maximise emitter area and ensure sufficient heat is delivered to maintain comfortable internal conditions. The delivery method will be confirmed through detailed MEP design.

In general, heat pumps are provided in 2 no. variants, depending on the medium used for heat collection:

Ground Source Heat Pumps (GSHP)

The site is situated within an urban location with minimal external grounds available for the placement of a ground loop system, and the use of boreholes as part of a GSHP system for a development of this size and location would be financially prohibitive and potentially unsafe given the proximity to the railway. With there being little space within the site plan for the locating of ground loops, the use of boreholes would be the only option for this technology, which has further financial implications due to the technicality of installation and drilling.

Therefore, the use of GSHP is not considered viable for this site.

Air Source Heat Pumps (ASHP)

Air Source Heat Pumps work in a similar way to GSHP systems, but with the collector medium being the air. The heat from the air is collected via an external condenser unit which uses a fan (or set of fans) to drive air flow over the collector element. ASHP has the potential to provide heating, hot water, or both through a variety of system types. The technology of ASHP is rapidly developing and can provide significant savings in emissions and energy use in the majority of applications.

There is a marginal drop in performance when compared to GSHP, but the lower capital costs of installation, and the greater flexibility of plant location and type also make ASHP a feasible option for the site.

The use of ASHP to provide heating is discounted due to pipe routing and condenser location considerations discussed above. However the use of heat pumps for hot water only, via a packaged ASHP cylinder have a high potential to offer emissions and energy use savings.

The use of this technology will provide a non-intrusive solution to emissions reduction, which fits with the proposed heating method, and is capable of providing the majority of hot water requirements, supplemented by the efficiency measures outlined at the start of this assessment.

MEP engineers will need to ensure that 2 no. ~150mm duct routes are provided to external air for the cylinder, in addition to those needed for the ventilation equipment also.

Cylinders are available in a number of sizes through a number of manufacturers. However at this stage a 170 litre, Dimplex Edel unit forms the basis for the calculations undertaken.

Photovoltaic Panels

Photovoltaic (PV) panels are a popular method of harnessing energy from the sun to provide some – if not all – electrical demand through renewable energy generation.

Typically, panels are roof mounted, and the proposed development does have elements of South, East and West facing pitched roofs which would be ideal for the location of PV. Generally, PV on North facing roofs should be avoided.

PV panels are available in an array of output sizes, dependant on the emission offset required, electrical requirements, and the budget available for their purchase and installation. A typical panel is of approximately 400W peak output, and measures approx. 1m x 1.75m in size.

In general, panels are arranged in series and connected back to the dwelling via an export compatible meter system. This allows the PV to provide power to the dwelling where there is demand for it, with any excess being exported to the National Grid in return for payment back to the building owner by the energy supplier.

The use of PV on the sit, whilst feasible, is not proposed at this stage for a number of reasons:

1. The access requirements for the PV array considering the height of the building
2. The limited impact to the end residents in terms of energy bills – as the PV will likely be wired back to landlord supply.
3. Visual implications of the PV on the building.
4. Potential glint and glare issues from the PV to the adjacent railway tracks which could cause safety issues. This would need to be confirmed through a Glint and Glare Assessment where installed.

PROPOSED APPROACH

The Proposed Development has aimed to strike a balance with regards to its heat and hot water provision approach, with a strong bias to efficiency measures. This has allow simpler heating systems to be incorporated into the design whilst maintaining a robust approach to emissions reductions.

The proposed approach incorporates:

– Highly efficient building fabric
– Heat recovery ventilation
– High specification glazing
– Low air permeability
– Direct electric panel heaters
– ASHP hot water cylinders

The application of all these technologies on the site results in the following emissions reductions in line with the energy hierarchy:

TABLE 3: EMISSIONS FOLLOWING ALL PROPOSED MEASURES

	Assessed Area (m2)	**Average TER** (kgCO2/m2/yr)	**Total emissions** (t/y)
Baseline	2837	12.93	36.68
Proposed	2837	5.88	16.68
Improvement		**54.55%**	

Conclusions

This Energy Strategy Review has been prepared to validate the revised energy and sustainability approach for the proposed residential development at Latimer Road, Wokingham, following further design development and detailed technical assessment. The report demonstrates that the proposed scheme achieves a robust, policy-compliant and deliverable energy strategy in line with current Building Regulations, local planning policy, and national best practice.

The assessment has been undertaken in accordance with Building Regulations Part L 2021, utilising certified SAP 10.2 software, and applies the recognised Energy Hierarchy approach of Lean, Clean and Green. A comprehensive, dwelling-by-dwelling modelling exercise has been carried out for all 42 proposed apartments, providing a level of detail beyond that contained within earlier submissions and ensuring that the reported performance is representative of the full development.

A strong fabric-first approach forms the foundation of the proposed strategy. Enhanced insulation standards, high-performance glazing, significantly improved air tightness and reduced thermal bridging have been incorporated to minimise heat loss and reduce overall energy demand. These passive measures are supported by efficient building services, including whole-house mechanical ventilation with heat recovery, optimised lighting and controls, and highly efficient hot water provision.

Overheating risk has been assessed through a dynamic thermal modelling assessment undertaken in accordance with Building Regulations Part O. The design prioritises passive mitigation measures in line with the Cooling Hierarchy, including building form, glazing specification, ventilation strategy and thermal mass. Active cooling is not proposed as a standard feature; however, limited supplementary cooling measures integrated with the MVHR system are provided to a small number of dwellings where required to ensure full compliance with Part O.

The proposed heating and hot water strategy has been developed in close consultation with the Client to ensure long-term operational efficiency and deliverability. The use of direct electric space heating combined with individual air source heat pump hot water cylinders avoids the technical, spatial and overheating constraints associated with communal heat networks, while aligning with the national direction of travel away from on-site fossil fuel combustion and enabling the development to benefit from the ongoing decarbonisation of the electricity grid.

The combined effect of the proposed measures results in a **reduction in total regulated carbon emissions from 36.68 tonnes CO_2 per annum under a Part L compliant baseline to 16.68 tonnes CO_2 per annum** following the full application of the energy hierarchy. This represents an **overall 54.55% reduction in regulated emissions,** achieved without reliance on off-site carbon offset payments.

In conclusion, the proposed energy strategy delivers a balanced, future-proof and policy-compliant solution that prioritises demand reduction, minimises operational carbon emissions, manages overheating risk effectively and remains technically and economically viable. The strategy represents a robust response to the site constraints and regulatory requirements and supports Wokingham Borough Council's wider sustainability and climate change objectives.

Key Energy & Sustainability Outcomes:

- 42 new dwellings assessed using SAP 10.2 (Part L 2021)
- Fabric-first strategy exceeding Part L minimum standards
- Air tight design
- Direct Electric Heating provision
- ASHP Hot Water
- 54.55% reduction in regulated CO_2 emissions vs Part L baseline
- No reliance on fossil fuels or on-site gas
- Full compliance with Part O overheating requirements
- Active cooling limited to supplementary MVHR cooling packs in 7 dwellings only

Appendix A: SAP and SBEM Summary Specification Sheets

SAP Modelling Specification Summary

Document reference: 8174-FB-ZZ-XX-SP-SUS-0001

Building Regulations L1 2021	Rev.	P01	Date	18/09/2025
Project Number & Name:	8174 - Latimer Road			

Building Specification

Element	U-values	Description
External Walls	0.15	Brick Exterior 102.5mm, 100mm insulation, 102.5mm blockwork, 12.5mm plasterboard - or similar buildout achieving a U-value of 0.15
Main Roof	0.09	Flat roof or Plane roof buildout with approximately 200mm insulation - or similar buildout achieving a U-value of 0.09
Ground Floors	0.10	Solid Exposed or Ground Floor buildout with approximately 150mm insulation - or similar buildout achieving a U-value of 0.1
External Doors	1.60	Solid Door with less than 30% glazed area
External Windows	1.20	Double glazed, G-Value 0.45, Frame factor 0.7

Building Services, Performance and Renewables

Item	Description
Construction Details (PSI values)	Psi Y-Value of 0.05 applied to thermal bridges
Space Heating	Electric Panel Heaters
Domestic Hot Water	Electric Air Source Heat Pump (ASHP) DHW cylinder for water heating only
Controls	Central Programmer with Appliance Thermostats
Compensation	N/A
Heating Emitters	Electric Panel Heat Radiators
Hot Water Cylinder	170L standing loss 1.92Kw/24hr
Mechanical Ventilation	MVHR serving bedrooms, bathrooms and kitchen/living spaces (assumed Nuaire MRXBOXAB-ECO3 or similar)
Lighting	Low energy lighting specified as 6W lights, 110 Efficacy
Renewables	N/A
Overheating	Separate Report Provided by Futura Bright
Air Permeability	4 m3/hm2
Additional Notes	N/A

SAP Modelling Results Summary

		Emissions Rate			Fabric Energy Efficiency			Fabric Energy Efficiency			
Unit	SAP Rating	Target Emissions Rate (TER)	Dwelling Emissions Rate (DER)	Improvement	Target Fabric Energy Efficiency (TFEE)	Dwelling Fabric Energy Efficiency (DFEE)	Improvement	Target Primary Energy Rate (TPER)	Dwelling Primary Energy Rate (DPER)	Improvement	Floor Area (m^2)
Flat 1	76 C	15.6	7.05	55%	38.05	37.51	1%	83.29	74.41	11%	50.7
Flat 2	76 C	13.48	6.2	54%	36.37	35.43	3%	71.52	65.28	9%	71.5
Flat 3	73 C	12.31	6.09	51%	39.51	39.03	1%	65.07	63.57	2%	109.44
Flat 4	76 C	11.06	5.53	50%	31.83	34.43	-8%	58.43	58.04	1%	98.7
Flat 5	80 C	11.64	5.14	56%	27.96	28.17	-1%	61.8	54.58	12%	72.88
Flat 6	76 C	12.91	6.19	52%	33.77	34.77	-3%	68.44	65.09	5%	71.3
Flat 7	81 B	13.33	5.53	59%	27.25	23.92	12%	71.08	59.15	17%	50.7
Flat 8	80 C	11.86	5.11	57%	28.89	26.41	9%	62.82	54.25	14%	71.5
Flat 9	79 C	12.9	5.45	58%	33.64	29.63	12%	68.37	57.72	16%	70.5
Flat 10	80 C	12.4	5.44	56%	25.96	25.97	0%	65.97	58.01	12%	56.5
Flat 11	80 C	13.24	5.76	56%	27.47	26.95	2%	70.47	61.51	13%	50.2
Flat 12	82 B	10.08	4.32	57%	20.55	19.27	6%	53.37	46.35	13%	72.88
Flat 14	81 B	10.95	4.81	56%	24.62	23.07	6%	57.88	51.29	11%	71.3
Flat 15	78 C	14.93	6.55	56%	34.65	32.73	6%	79.69	69.39	13%	50.7
Flat 16	80 C	13.81	5.83	58%	29.5	26.87	9%	73.68	62.14	16%	50.7
Flat 17	77 C	12.9	5.9	54%	33.58	32.59	3%	68.4	62.28	9%	71.5
Flat 18	78 C	13.3	5.76	57%	35.44	32	10%	70.53	60.88	14%	70.5
Flat 19	80 C	12.7	5.64	56%	27.36	27.83	-2%	67.57	60.06	11%	56.5
Flat 20	80 C	13.57	6	56%	29	29	0%	72.25	63.84	12%	50.2
Flat 21	82 B	10.51	4.53	57%	22.52	21.86	3%	55.68	48.46	13%	72.78
Flat 22	81 B	11.14	4.94	56%	25.51	24.26	5%	58.92	52.57	11%	71.3
Flat 23	80 C	13.58	5.68	58%	28.41	25.45	10%	72.41	60.65	16%	50.7
Flat 24	72 C	15.06	7.64	49%	42.52	43.02	-1%	80.02	79.97	0%	66.2
Flat 25	76 C	15.65	7.08	55%	39.02	38	3%	83.56	74.74	11%	52
Flat 26	78 C	12.85	5.77	55%	31.9	30.57	4%	68.25	61.09	10%	67.2
Flat 27	78 C	12.04	5.46	55%	30.68	30.25	1%	63.75	57.78	9%	75
Flat 28	72 C	13.75	7.06	49%	40.22	42.09	-5%	72.88	73.88	-1%	80.6
Flat 29	77 C	12.5	5.66	55%	33.73	32.5	4%	66.28	59.64	10%	79
Flat 30	77 C	15.69	6.81	57%	38.45	35.9	7%	83.78	72.04	14%	50
Flat 31	81 B	11.14	4.73	58%	26.81	24.1	10%	58.99	50.38	15%	76
Flat 32	80 C	14.08	5.78	59%	30.84	26.84	13%	75.08	61.68	18%	50
Flat 33	80 C	12.04	5.26	56%	29.03	26.32	9%	63.8	55.84	12%	68.4
Flat 34	81 B	11.25	4.8	57%	27.3	24.76	9%	59.57	51.11	14%	69.8
Flat 35	80 C	14.31	5.93	59%	31.9	28.23	12%	76.33	63.23	17%	72.3
Flat 36	78 C	12.78	5.85	54%	32.39	30.48	6%	67.8	61.8	9%	68.4
Flat 37	77 C	12.93	6.01	54%	33.16	32.24	3%	68.62	63.47	8%	69.8
Flat 38	73 C	13.95	6.97	50%	38.94	40.41	-4%	74.01	73.06	1%	72.3
Flat 39	76 C	13.81	6.51	53%	37.34	36.38	3%	73.32	68.48	7%	68.4
Flat 40	76 C	13.35	6.25	53%	37.36	36.18	3%	70.76	65.65	7%	68.4
Flat 41	74 C	13.74	6.57	52%	39.08	37.87	3%	72.89	68.92	5%	76.2
Flat 42	73 C	14.28	6.95	51%	40.59	40.2	1%	75.75	72.89	4%	72.1
Flat 43	71 C	14.95	7.46	50%	43.57	43.36	0%	79.36	78.1	2%	71.91
Averaged	**N/A**	**12.93**	**5.88**	**54%**	**32.71**	**31.62**	**3%**	**68.65**	**62.20**	**9%**	**2836.99**

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