



ELEMENT SUSTAINABILITY – ISSUE NOTES

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1. INTRODUCTION

Element Sustainability has been commissioned by Prospect (GB) Limited to review the energy strategy of the proposed residential development at Hollins Cross Farm, Burnley.

The purpose of this Statement is to summarise the relevant policy background and requirements of Burnley Council (hereafter referred to as the council) and demonstrate the ways in which the applicant has addressed these aims through their proposals.

This Statement reviews the energy efficient design features of the scheme and appraises the energy strategy of the proposals in order to demonstrate how the scheme will contribute to sustainable development in the region and seek to mitigate the environmental impacts of the development.



2. DEVELOPMENT PROPOSALS

2.1 Development Site Description

The application site is located to the south of the Rosehill area of Burnley. It is currently an undeveloped, greenfield plot.

The site is bound to the north by New Road and to the east by Woodplumpton Road. Burnley Golf Club and its fairways extend along the eastern perimeter of the development plot with open farmland lying to the south. The area is characterised by agricultural uses with predominantly residential areas to the north within the existing settlement boundary. The site does not include any designated areas afforded special protection, such as areas of ecological or biodiversity value and nor is it located within a Conservation Area.

Figure 2.1 – Pre-development Site



2.2 Development Proposals

The development proposals include for the construction of high-quality residential houses, providing a total of two hundred homes comprising predominantly detached properties along with mews and semi-detached house types. See Table 2.1 for the Accommodation Schedule.



Table 2.1 –Accommodation Schedule

| Ref | House Type | Beds | Total Beds | Sq.Ft | FMV | Affordable | Total SqFt |
|-------------------|------------|-----------|------------|------------|------------|------------|---------------|
| T4D | Bromley | Det | 4 | 24 | 1562 | 6 | 9372 |
| T3D | Ardsley | Det | 4 | 52 | 1443 | 13 | 18759 |
| 44D | Whalley | Det | 4 | 68 | 1404 | 17 | 23868 |
| 43D | Sawley | Det | 4 | 88 | 1344 | 22 | 29568 |
| T2D | Mawdesley | Det | 4 | 48 | 1285 | 12 | 15420 |
| 42D | Cleverley | Det | 4 | 52 | 1234 | 13 | 16042 |
| 41D | Barley | Det | 4 | 52 | 1179 | 13 | 15327 |
| 32D | Overton | Det | 3 | 57 | 1114 | 19 | 21166 |
| 31D | Croston | Det | 3 | 75 | 1000 | 25 | 25000 |
| 32A | Barton | Semi/Mews | 3 | 60 | 915 | 20 | 18300 |
| 31A | Aughton | Semi/Mews | 3 | 21 | 881 | 7 | 6167 |
| 23A | Waltham | Semi/Mews | 2 | 8 | 811 | 4 | 3244 |
| 22A | Kirkham | Semi/Mews | 2 | 8 | 723 | 4 | 2892 |
| 21A | Highman | Semi/Mews | 2 | 10 | 693 | 5 | 3465 |
| 31A | Aughton | Semi/Mews | 3 | 33 | 881 | 11 | 9691 |
| 21A | Higham | Semi/Mews | 2 | 18 | 693 | 9 | 6237 |
| Total | | | | 650 | | 180 | |
| Grandtotal | | | | | 200 | 20 | 224519 |

Figure 2.1 presents the proposed development layout.

Figure 2.1 – Proposed Site Layout



3. POLICY REVIEW

3.1 Local Planning Policy

The Burnley Local Plan (adopted July 2018) is the key Development Plan Document for the area, this document will be used as the basis for decisions on land use planning in the borough. The Local Plan contains the following relevant planning policies:

Policy SP5: Development Quality and Sustainability requires the developer to apply high standards of design, construction and sustainability in all types of development. Proposals will be expected to address the following minimum requirements, in relation to Energy Efficiency (as appropriate to their nature and scale):

- a) Incorporate measures to minimise energy and water consumption;
- b) A BREEAM Assessment must be carried out for all non-residential development with a floor space above 1,000m² and a rating of 'Very Good' or better will be expected;
- c) Seek opportunities for on-site energy supply from renewable and low carbon energy sources; and,
- d) Seek opportunities to contribute to local and community-led renewable and low carbon energy initiatives.

3.3 National Planning Policy

In addition to the local planning policies, the National Planning Policy Framework (NPPF) 2021 is a material consideration. The NPPF (amended July 2021) replaces all previous PPSs and PPGs.

The NPPF states that the planning system should play an active role in guiding development to sustainable solutions. At the heart of the 2021 updated NPPF lies the 'presumption' in favour of sustainable development; the golden thread running through plan-making and decision taking (para. 11). There are three dimensions to sustainable development, as stated within the NPPF: economic, social and environmental. These dimensions give rise to the need for the planning system to perform a number of roles:

An economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;

A social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating beautiful and safe places, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and

An environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

These dimensions are considered to be mutually dependent with the NPPF, in its entirety, defining sustainable development. The NPPF states that 'the purpose of the planning system is to contribute to the achievement of sustainable development' (paragraph 7). It summarises the objective of sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their needs. It goes on to state that 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.



3.4 Regulatory Framework

3.4.1 Building Regulations

Building Regulations, Part L - Conservation of Fuel and Power sets the compliance standards for energy demand and carbon dioxide emissions from buildings.

Approved Document L1A addresses the conservation of fuel and power in new dwellings. The proposed development is registered against Building Regulations, Part L (2013) which requires all newly constructed dwellings need to comply with 5 criteria set out in Approved Document L1A unless exempted through the transitional provisions:

- I. The predicted rate of carbon dioxide emissions from the dwelling (the Dwellings Emission Rate DER) is not greater than the Target Emissions Rate (TER). Additionally, the Dwelling Fabric Energy Efficiency (DFEE) is not greater than the Target Fabric Energy Efficiency (TFEE);
- II. The performance of the building fabric and fixed building services should be no worse than the design limits set out in Table 2 of the Approved Document;
- III. The dwelling has appropriate passive control measures to limit the effect of solar gains on indoor temperatures in summer;
- IV. The performance of the dwelling as built, is consistent with the DER, including site checking that the air permeability is within reasonable limits; and
- V. The necessary provisions for energy efficient operation of the dwelling are put in place including operating and maintenance instructions aimed at achieving economy in the use of fuel and power in a way that householders can understand.

Approved Document L1A (2021) standards will come into effect in June 2022 therefore, in accordance with the requirements of the transitional arrangements, a proportion of the proposed development will be designed to comply with these emerging targets.

The Part L 2021 standards are expected to reduce dwelling carbon emissions by 31% in relation to Building Regulations Part L1A, 2013.

The criteria for Fabric Energy Efficiency requirement has also become significantly more onerous to achieve relative to current Part L1A (2013) building standards. Furthermore, additional criteria for Primary Energy Rate is a new metric being introduced as part of the upcoming 2021 regulations to drive energy efficiency within new dwellings and account for upstream energy uses.

Given the scale of the proposed development and the limited timeframe associated with the transitional arrangements between current and forthcoming building regulation Part L, it is likely that a significant proportion of the dwellings will be built in compliance with Part L1A (2021).



4. ENERGY STRATEGY

Details of the proposed energy strategy for this development are reviewed in the following section of the report.

- All dwellings at the site will benefit from a combination of enhanced building fabric specification allied to efficient mechanical and electrical systems and sophisticated controls will achieve compliance with the prevailing Building Regulation Part L standards.
- Priority is given to achieving energy and carbon emissions reductions by means of on-site measures, applying the principles of the energy hierarchy.

Part L1A (2013) Specification

The building specification reviewed in Sections 4.1 and 4.2 relates only to those dwellings required to comply with building regulation Part L1A (2013).

Part L1A (2021) Specification

The Prospect (GB) specification required to comply with forthcoming building regulation Part L1A (2021) is yet to be fully confirmed however, irrespective of the final solution, this is deemed compliant with the established policy guidance by virtue of the 31% Dwelling Emission Rate necessitated by this building regulation progression towards the Future Homes Standard.

The Part L (2021) 'interim' regulatory update is a steppingstone towards the Future Homes Standard, including proposed options to increase the energy efficiency requirements for new homes in 2020. The Future Homes Standard will require new build homes to be future-proofed with low carbon heating and world-leading levels of energy efficiency; it will be introduced by 2025.

The interim update will necessitate significant improvement in fabric energy efficiency (through the tighter fabric 'FEE' targets), drive energy efficiency systems and prioritise low carbon energy sources (through the new primary energy 'PER' targets) in order to secure compliance with the onerous 31% reduction in the overall carbon dioxide emissions target, relative to current building regulation requirements. Energy efficiency is therefore assured.

4.1 Build Fabric and Thermal Performance

The standard measurement of heat transfer through a given building material or construction type is the U-value (W/m^2K). In buildings, heat loss generally occurs through the following areas and elements of the construction:

- Ground Floor;
- External Walls;
- Roofs;
- Doors and windows;
- Thermal (cold) Bridging (heat loss through construction joints); and
- Uncontrolled ventilation.



The lower the U-value, the more slowly heat transfers and is lost out of a building. Table 4.1 presents the proposed material specification that could be incorporated to limit heat loss and ensure efficient operation of the proposed development.

Table 4.1 – Proposed Part L1A (2013) Building Specification

| Item | Specification |
|-----------------------------|--|
| Ground Floor | U=0.11W/m ² K |
| External Wall | U=0.25W/m ² K |
| Party wall | U=0.00W/m ² K (fully filled & sealed edges) |
| Roof – insulated at ceiling | U=0.11W/m ² K |
| Windows & Glazed Doors | U=1.30W/m ² K |
| Doors | U=1.20W/m ² K |
| Air Permeability | ~5.0m ³ /hm ² (@50Pa.) PLOT SPECIFIC |
| Cold Bridge | Bespoke PGB Construction Detail Psi Values |

These specifications and design attributes will provide the following benefits:

- High performance thermal insulation throughout the building envelope (ensuring very low U-values for all heat loss elements) and thermally efficient windows and doors will minimise heat loss through main building elements;
- Thermally efficient, double-glazed windows will be specified with argon gas fill and low emissivity coatings to limit heat loss through the panes;
- Low air permeability of at ~5.0m³/hm² (@50Pa.) is targeted for this build in order to minimise uncontrolled ventilation. This will further reduce heat losses and provide high levels of occupant comfort; and,
- Attention to cold bridging junctions including the provision of insulation to reduce heat and limit heat losses that occur at the junctions between building elements and around openings and will significantly improve the emission rate of the dwellings.

This specification will also help to deliver an energy efficient development that achieves compliance with the targets stipulated by Part L 1A (2013) regulations.

4.2 Building Services Specification

The proposed mechanical and electrical specifications that will be incorporated to ensure efficient servicing of the residential dwellings is presented in Table 4.2.

Table 4.2 – Proposed Mechanical and Electrical Specification

| Item | Specification |
|------------------|--|
| Ventilation | Intermittent Extract |
| Lighting | 100% 'Low E' or LED |
| Space Heating | Gas fired boiler (Worcester Greenstar 30si) |
| Water Heating | From main boiler. High efficiency cylinders, where required for heating design (Capacity varying dependant on dwelling size) |
| Heating Controls | Programmer, TRVs and room thermostat. Weather compensator |



This mechanical and electrical specification will deliver a Building Regulation Part L1A (2013) compliant solution and will provide the following benefits:

- No mechanical cooling is required for the dwelling as they are not considered to be at risk from overheating due to the orientation of the building and openable windows;
- Low energy and LED lighting will be specified throughout the site in order to maximise operational efficiencies and lifespan of the fittings. LEDs operate with an estimated energy efficiency of up to 90% when compared to traditional lighting and conventional light bulbs. This means that about c.90% of the electrical energy is converted to light, rather than wasted heat as in conventional bulbs. External areas will also benefit from PIR control and photocell dimming controls;
- High efficiency hot water storage will be specified by means of low standing (heat) loss immersion cylinders reducing hot water energy loads. To further limit energy demand for hot water, dwellings will be provided with water-efficient fixtures and fittings, to limit overall water consumption to <105 liters per person per day; and,
- Sophisticated heating controls including programmer and room thermostats will ensure the efficient delivery of heat to further reduce the dwellings' energy demand.

4.3 Low and Zero Carbon Energy Provision

The dwellings constructed in accordance with the current Part L1A (2013) regulatory standard will apply the aforementioned enhanced fabric and M&E specification. Consequently, renewable energy technology is not deemed necessary to secure compliance with the prevailing compliance standard.

It is recognised however that, as part of the site wide energy strategy to optimise the on-site dwelling emission rate reductions in support of the emerging regulatory compliance standard (Part L1A 2021), renewable energy systems are likely to be specified. Those remaining dwellings within the scheme which are constructed following the end of the anticipated Part L1A 2013~2021 transitional arrangement period will be specified in accordance with the current building regulation progression requirement.

A fully compliant solution, to meet the requisite energy and carbon dioxide emissions performance targets of the forthcoming building regulation update, will be provided. This solution may involve alternate technological solutions, such as heat pumps and/or roof mounted photovoltaic arrays, subject to technical feasibility and financial viability.

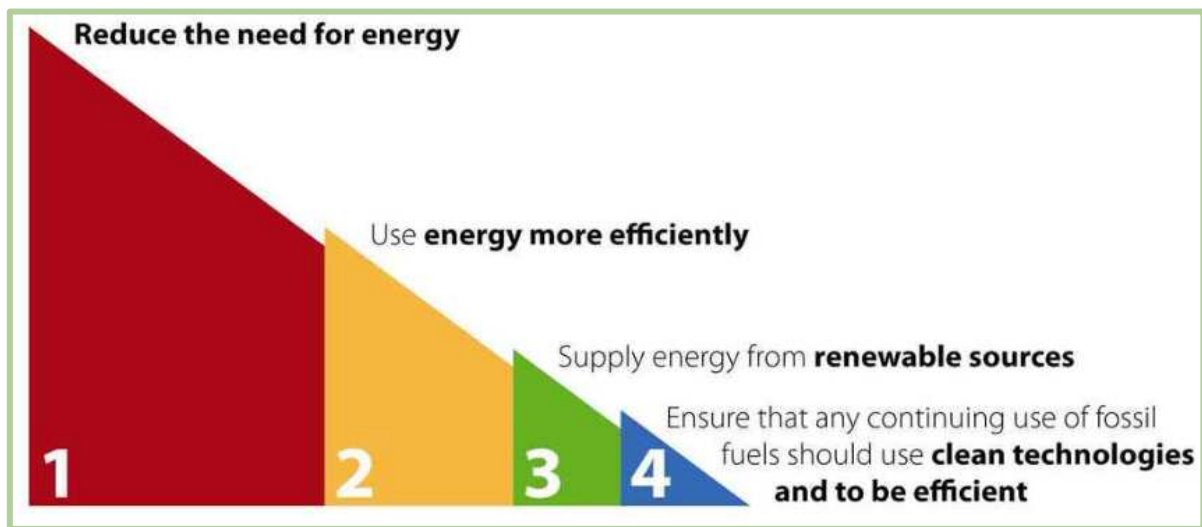


5. ENERGY HIERARCHY

The Energy Hierarchy provides a framework to guide energy policy and decision making to achieve practical and cost-effective carbon emission reductions. The hierarchy prioritises demand-side activities to reduce wastage and improve efficiency (see Figure 6.1).

The scheme will incorporate a significantly enhanced material specification along with high quality design and construction standards in order to improve the energy efficiency of the whole building through a ‘fabric led’ energy strategy. The construction, design and specification proposed for this scheme will deliver dwellings that are inherently efficient and cost-effective during occupation.

Figure 6.1 – The Energy Hierarchy



First Principle

The building will be constructed with a material and design specification which far exceed the prevailing minimum Building Regulation standards and includes numerous efficiency measures designed to reduce heat losses and minimise energy demand, as follows:

- Enhanced levels of insulation to achieve low u values;
- The design air permeability target for the residential units is approximately 5.0m³/hm² (@50Pa.). This low design air permeability target will reduce uncontrolled ventilation and assist to limit heat loss through the structure of the build; and,
- The g value of the glazing within the development will be optimised to control solar gain in the summer months and allow beneficial gains in the winter season so as to minimise the overheating risk and limit the heating energy demand within the properties.

This ‘fabric led’ approach to minimising energy demand and associated carbon dioxide emissions is aligned with the first principle of the energy hierarchy which states that reduction in energy demand should be achieved initially by energy efficiency.



Second Principle

As per the second principle of the Energy Hierarchy:

- Sophisticated control systems for the space and water heating will ensure that energy consumed by the development is used efficiently;
- Hot water in the dwellings will be separately programmable and high efficiency cylinders with low standing losses will be specified; and,
- 100% LED provision and sophisticated control systems will be incorporated throughout the development. Photocell and automatic presence control of the lighting will be specified in order to further improve the efficiency of the lighting system within the external zones.

Third Principle

Renewable energy technologies are expected to factor in the build specification for the remaining plots which will be built in compliance with the forthcoming Part L1A (2021) regulations, although this is yet to be confirmed

The proposed development is therefore, aligned with the key principles of the energy hierarchy.



6. CONCLUSION

This Statement has reviewed the energy efficiency measures to be applied within the proposed development at Hollins Cross Farm, Burnley.

- The development will be designed and specified in accordance with the principles of the energy hierarchy which accords with the guidance provided by Burnley Local Plan Policy SP5.
- Minimising the impacts of climate change is a key element of the proposed design. All dwellings at the site will incorporate an enhanced 'fabric led' material specification (benefiting from low air permeability and high specification u values), along with high quality design and exemplary construction standards to improve the energy efficiency of the scheme.

Those plots at the site which are to be built in compliance with Part L1A (2021) will incorporate a revised energy efficiency specification.

- The specification required to comply with forthcoming building regulation Part L1A (2021) is yet to be fully confirmed however, it is likely that renewable technology, potentially including photovoltaic arrays or heat pumps will further reduce carbon emissions, when allied to the proposed fabric and M&E specification will secure the target dwelling emission rate reduction over Part L1A (2021) for those dwellings built in compliance with this new regulatory standard.

In summary, these proposals will deliver a residential scheme that is inherently efficient and cost-effective during occupation which accords with the adopted local planning policy guidance.

