Energy and Sustainability Report

Proposed Industrial Building at Fosters Bakery (Staincross) Limited
Towngate, Mapplewell, Barnsley, South Yorkshire, United Kingdom, S75 6AS

Applicant: Fosters Bakery (Staincross) Limited
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Development: New industrial building providing dry goods storage at ground floor with staff canteen and welfare accommodation at first floor

Contents

This Energy and Sustainability Report has been prepared in support of a planning application relating to the erection of a new industrial building at Fosters Bakery, Towngate, Mapplewell, Barnsley, South Yorkshire, S75 6AS. The proposed development will provide dry goods storage at ground-floor level together with a staff canteen and associated welfare accommodation at first-floor level. The report explains the planning-stage design principles and sustainability measures that will be applied to minimise energy demand, reduce regulated carbon emissions, support efficient operation of the building and promote a wider sustainable form of development. The overall approach combines a fabric-first energy strategy with efficient building services, water-saving measures, responsible material selection, sustainable construction practices and a clear route toward achieving a minimum BREEAM rating of Very Good.

1. Executive Summary

The proposed development is a new industrial building ancillary to the established Fosters Bakery operation. This report has been prepared to provide a concise planning-stage overview of how the proposal responds to energy efficiency and wider sustainability objectives. The strategy has been developed to support a practical, deliverable and proportionate response to current building regulations in England for buildings other than dwellings, whilst also seeking to embed sustainable design principles that will improve the long-term environmental performance of the building in use.

A minimum BREEAM rating of Very Good is intended for the development. To support this outcome, the scheme will utilise an efficient insulated building envelope, low-energy LED lighting, effective zoning and controls, high-performance building services, water-efficient sanitary fittings, responsible construction and commissioning procedures, and a review of suitable roof-mounted photovoltaic generation. The final BREEAM score will depend upon detailed design, procurement, construction-stage evidence and formal assessment by a licensed assessor, but the measures set out in this report provide a robust framework for achieving the target standard and demonstrate that sustainability has been considered from the outset of the planning process.

2. Introduction and Development Description

Planning permission is sought for the construction of a new industrial building within the existing Fosters Bakery site. The building will measure approximately 20m by 40m, with dry goods storage at ground-floor level and a staff canteen with associated welfare accommodation at first-floor level. The proposal supports the continued operation of the bakery by consolidating storage currently held off site, improving operational efficiency and reducing unnecessary transport movements between premises. As an ancillary extension to an established employment site, the building has been designed to be efficient to operate, practical to construct and aligned with the objective of delivering a more sustainable form of development.

3. Planning Context and Sustainability Objectives

3.1 National Policy

3.1.1 National Planning Policy Framework

The National Planning Policy Framework was revised on 12 December 2024 and remains a material consideration in planning decisions in England. Chapter 2 of the Framework, 'Achieving sustainable development', is of particular relevance to this report because it confirms that the purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of commercial development and supporting infrastructure in a sustainable manner. It further explains that sustainable development should be pursued through economic, social and environmental objectives which are interdependent and need to be advanced in mutually supportive ways. In environmental terms, the Framework specifically refers to the prudent use of natural resources, the minimisation of waste and pollution, and the need to mitigate and adapt to climate change, including the transition to a low-carbon economy.

The presumption in favour of sustainable development is a central theme of the Framework. In plan-making terms, the Framework expects plans to promote sustainable patterns of development that seek to meet development needs, align growth and infrastructure, improve the environment, mitigate climate change and adapt to its effects. In decision-making terms, it supports the approval of proposals that accord with an up-to-date development plan without delay and, where relevant policies are absent or out of date, indicates that permission should be granted unless a clear policy-based reason for refusal applies or any adverse impacts would significantly and demonstrably outweigh the benefits when assessed against the Framework as a whole. In the present case, the proposal relates to the expansion of an existing employment site through a building designed to improve operational efficiency while also incorporating energy-efficient design, low-carbon technology review, water-saving measures and a route toward BREEAM Very Good.

As such, the development is consistent with the broad objectives of the Framework in supporting economic activity whilst also responding positively to environmental sustainability considerations.

The sustainable development theme is reinforced elsewhere in the Framework, including Chapter 9 on promoting sustainable transport, Chapter 11 on making effective use of land, Chapter 12 on achieving well-designed places, and Chapter 14 on meeting the challenge of climate change, flooding and coastal change.

Collectively, these sections support development that is efficient in its use of land and resources, well designed, responsive to climate considerations and capable of operating in a more sustainable manner over the long term, all of which are relevant to the proposal.

3.1.2 Building Regulations Part L

The energy strategy for the proposed building will be developed to accord with the applicable requirements of Approved Document L, Volume 2: Buildings other than dwellings, 2021 edition incorporating the 2023 amendments, which provides the current guidance for buildings of this type in England. The document took effect on 15 June 2022, with further amendments published in February 2023. It establishes the framework for demonstrating compliance with the energy efficiency requirements of the Building Regulations for non-domestic development and is therefore directly relevant to the detailed design of the proposal.

For the purposes of this planning report, the key point is that detailed compliance will be demonstrated at the next design stage through the relevant non-domestic calculation methodology and as-built verification procedures. In practical terms, this will require the completed building to achieve the applicable performance standards for the building fabric, fixed building services, solar-gain control and the efficient operation of systems in use. The measures set out in this report, including a fabric-first approach, efficient services, appropriate controls and the review of rooftop photovoltaic generation, are intended to provide a sound basis for achieving compliance.

3.2 Local Policy

The Barnsley Local Plan, adopted on 3 January 2019, forms part of the statutory development plan for the borough and provides the principal local policy context for this report. In energy and sustainability terms, the most relevant policies include Policy CC1 on climate change, Policy CC2 on sustainable design and construction, Policy RE1 on low carbon and renewable energy, Policy Poll1 on pollution control, Policy T4 on transport and safety, Policy D1 on high-quality design, Policy BIO1 on biodiversity and geodiversity, Policy CC3 on flood risk, Policy CC4 on sustainable drainage, Policy I1 on infrastructure, and Policy GS1 on green space. Together, these policies support development that is energy efficient, resilient, well designed and appropriately integrated with its surroundings.

In particular, Policy CC2 expects non-residential development to minimise resource and energy consumption through sustainable design and construction features, where technically feasible and viable, and requires a minimum BREEAM rating of Very Good or any future national equivalent. That requirement is central to this report and is reflected in the proposed fabric-first approach, efficient fixed building services, low-energy lighting, water-saving fittings, responsible construction measures and the consideration of rooftop solar photovoltaic generation. The proposal also responds positively to Policy

CC1 through climate-conscious design and support for low-carbon measures, and to Policy RE1 through the consideration of appropriate design measures and on-site renewable or low-carbon technologies to reduce operational carbon emissions.

The proposal also has regard to wider local policy considerations. Policy BIO1 seeks the conservation and enhancement of biodiversity and geological features, and although this report does not include a dedicated ecological appraisal, the development should be taken forward in a manner that safeguards ecological value where relevant and supports biodiversity enhancement where practicable. Policies CC3 and CC4 are concerned with flood risk and sustainable drainage, and the detailed design should therefore ensure that surface-water management is addressed appropriately and that sustainable drainage measures are incorporated where required. Policy Poll1 is relevant in respect of lighting, noise, dust, drainage and pollution prevention, while Policy D1 supports a high standard of design appropriate to its context. Policy I1 requires development to contribute to infrastructure as necessary, and Policy GS1 provides a wider safeguard for existing green space where relevant. The proposal's location within an existing employment site, together with the consolidation of off-site storage into the existing bakery operation, also aligns with the broad intent of Policy T4 by helping to reduce unnecessary vehicle movements associated with the current arrangement.

The local policy context is reinforced by Barnsley Council's declaration of a climate emergency in 2019 and its wider carbon-reduction programmes aimed at achieving net zero for council operations by 2040 and borough-wide net zero by 2045. In addition, the Sustainable Construction and Climate Change Adaptation Supplementary Planning Document, adopted on 27 July 2023, provides more detailed guidance on sustainable construction, renewable energy, climate adaptation and BREEAM certification for non-residential buildings.

The approach taken in this report reflects the wider sustainable development agenda by seeking to improve the environmental performance of the proposed building relative to a basic compliant scheme. It does so through a practical hierarchy of demand reduction, efficient operation and consideration of low-carbon technologies, whilst also recognising related sustainability themes such as health and wellbeing, resource use, resilience, and the need for effective implementation during construction and occupation.

4. Energy Strategy Overview

Tackling climate change by reducing carbon emissions associated with energy consumption is a central objective of the proposed development. The design approach has therefore been formulated to reduce energy demand at source, improve the efficiency of building services and support the incorporation of low-carbon technologies where feasible.

The project team intends to use BREEAM New Construction as the principal sustainability framework to guide the design as it progresses. Although formal certification may be confirmed separately, the building is intended to be designed and constructed to a standard consistent with achieving a minimum BREEAM rating of Very Good, in accordance with local planning policy expectations for non-residential development.

In practical terms, the energy strategy is intended to improve performance relative to a baseline compliant non-domestic building by targeting three linked measures: the reduction of heating and cooling demand, the reduction of primary energy consumption and the reduction of regulated carbon emissions. At planning stage, the exact scale of improvement will be confirmed through detailed design development and the applicable building regulations methodology, but these metrics provide the basis on which the energy performance of the proposal will be assessed as the design progresses.

The sequential design approach is to address energy performance in a logical order. The first step is to reduce demand through passive design and a high-performance building envelope. The second is to provide efficient fixed building services and controls so that the building operates effectively in use. The third is to consider the incorporation of low and zero carbon technologies, with roof-mounted photovoltaic generation identified at this stage as the most likely viable measure. Detailed compliance will be demonstrated through the appropriate non-domestic methodology at the next design stage, but the principles set out in this report establish a robust framework for achieving the intended performance outcome.

At the next design stage, the proposed building will be modelled using the Simplified Building Energy Model methodology in order to generate the relevant Building Regulations compliance outputs and assess projected regulated carbon emissions. The design-stage calculations will compare a baseline compliant option with alternative scenarios incorporating the proposed renewable and low-carbon measures, including roof-mounted photovoltaic generation. This process will help inform the final selection of building services and related plant specification so that the completed development can demonstrate a strong overall energy and carbon performance in line with the objectives of this report.

5. Fabric and Passive Design Measures

Passive design measures are those that reduce energy consumption by designing out energy demand before reliance is placed on active systems. They are generally the most effective and durable measures available because they are embedded within the building form and fabric. For this reason, a fabric-first approach will form the basis of the proposed building's energy performance. The external envelope will be specified to achieve low U-values, good continuity of insulation and robust detailing at junctions in order to reduce thermal bridging. The building will be designed and constructed to achieve an appropriate standard of airtightness for its use, supported by good workmanship and on-site testing where required. Openings will be limited to those necessary for access, daylight, ventilation and operational use, and glazing to occupied welfare areas will be selected to balance daylight, heat loss and solar gain. Together, these measures will reduce the underlying heating and cooling demand of the building before the addition of mechanical systems.

The proposed development will seek to incorporate levels of insulation that improve upon the baseline requirements of Approved Document L, Volume 2, together with strong standards of airtightness, where this is technically feasible and compatible with the operational requirements of the building. At planning stage, the detailed specification remains subject to technical design; however, the design intent is to deliver a robust thermal envelope that reduces heat loss and supports the wider fabric-first strategy described in this report. The table below sets out typical limiting U-values associated with the current regulatory framework, together with indicative enhanced design targets for the proposed development.

Building element	**Typical limiting U-value (W/m^2K)**	**Indicative enhanced target U-value (W/m^2K)**
Roof	0.25	0.16
External walls	0.35	0.22
Ground floor	0.25	0.18
Windows and glazed screens	2.2	1.4
Pedestrian doors	2.2	1.4
Vehicle access doors	1.5	1.2

The values above are indicative planning-stage targets only and will be reviewed as the design develops, having regard to construction build-up, structural coordination, fire and acoustic requirements, junction detailing and the practical needs of the building in use. The final specification will be confirmed through detailed design and the relevant non-domestic energy assessment process.

5.1 Airtightness and Air Permeability

The airtightness of the building envelope will be an important consideration in reducing unnecessary heat loss and improving the overall energy performance of the development. The detailed design will therefore seek to minimise uncontrolled air leakage through appropriate envelope detailing, careful junction design and good construction quality on site. Although the presence of large vehicle access doors may limit the extent to which airtightness can be improved when compared with smaller fully conditioned buildings, the design intent is to achieve a robust and practical standard of air permeability consistent with the building's form and operational use.

5.2 Reducing Energy Demand

The proposed building is expected to have a relatively modest operational energy demand when considered in the context of its overall volume. The ground-floor dry goods storage area is not intended to be space heated or cooled, reflecting the operational requirements of the goods stored, and this mirrors the arrangement at the existing off-site dry goods store where only the small office is conditioned. The more intensively occupied accommodation is limited to the first-floor canteen, welfare spaces and any small office areas, allowing building services to be focused on those parts of the development where thermal comfort is required. The combination of a high-performance building envelope, limited conditioned accommodation and appropriately targeted servicing is therefore expected to support an efficient operational profile. Detailed performance will be confirmed at the next design stage through the relevant non-domestic energy assessment methodology.

6. Building Services and Operational Energy

At this stage of the design process, it is anticipated that the proposed building will be served through a servicing approach that reflects the arrangement already present within the existing bakery operation. The ground-floor dry goods storage area is not intended to be provided with space heating or comfort cooling, as the goods stored do not require environmental conditioning. Instead, building services will be concentrated on the first-floor canteen and welfare accommodation, together with any small office areas, where appropriate thermal comfort and domestic hot water provision will be required. Heating and hot water for the occupied accommodation are intended to be supplied from the main bakery using reclaimed heat, thereby making beneficial use of energy already generated within the wider operation. In addition, the staff welfare areas are expected to be served by energy-efficient heat pump systems capable of providing cooling during summer conditions, together with suitable back-up heating provision for winter operation. This reflects the differing operational requirements of the occupied

and storage elements of the building and is consistent with the objective of avoiding unnecessary energy use.

The detailed specification of plant and controls will be confirmed through the next design stages, but the intention is that the conditioned welfare and office accommodation will be served by efficient, appropriately sized plant with suitable time and temperature controls to reflect patterns of occupation and use. External heat pump equipment will be mounted on the side of the building in a position away from neighbouring houses, helping to limit potential amenity effects while supporting the cooling and supplementary heating strategy for the occupied accommodation. As the storage area itself is not intended to be conditioned, unnecessary heat loss and air exchange associated with goods access will be minimised through the specification of large opening doors fitted with either rapid-opening and closing roller shutters or permanent heavy-duty strip curtains. Although these measures are proposed principally for operational robustness and pest-ingress control, they will also assist in limiting uncontrolled air movement between the building interior and external environment. This overall approach is intended to provide a practical and energy-conscious servicing strategy for the proposed building at planning stage.

Adequate ventilation will be an important part of the environmental design of the proposed building in order to maintain good indoor air quality, provide fresh air to occupied spaces and reduce the risk of stale conditions, condensation and associated fabric issues. At this stage, the development is expected to rely primarily on natural ventilation together with limited mechanical ventilation where required to serve the canteen, welfare and other occupied accommodation. This approach is considered proportionate to the proposed use and is consistent with the intention to avoid unnecessary energy consumption from more intensive mechanical servicing.

The lighting strategy will seek to maximise the use of natural daylight and minimise reliance on artificial lighting. Rooflights are proposed within the extension roof to bring daylight into the warehouse area and reduce daytime lighting demand, with the detailed number, size and arrangement to be confirmed through technical design. Artificial lighting will comprise energy-efficient LED fittings throughout, supported by suitable controls such as occupancy and daylight-responsive sensors so that lighting output can respond to internal lux levels and unnecessary energy use is avoided. This approach will help reduce operational electricity demand and supports the wider energy-efficiency objectives of the scheme.

7. Low and Zero Carbon Technologies

Roof-mounted solar photovoltaic panels are proposed as the principal on-site renewable energy technology for the development, and the design team has confirmed that a photovoltaic array will be specified for the extension roof. On the basis of the building form and the operational electricity profile of the existing facility, an installation in the order of 40 kWp is currently being considered as a notional design-stage assumption. At this stage, an east-west split arrangement is understood to be the most likely configuration, subject to final roof layout, structural coordination, plant arrangement and electrical design. This approach would allow the proposed extension to generate a meaningful proportion of its operational electricity demand on site and would make a positive contribution toward the scheme's wider energy and sustainability objectives.

The indicative array size has been informed by available electricity-consumption information for the existing operation and is intended to remain proportionate to expected site demand, thereby supporting direct on-site use of generated electricity in preference to unnecessary export. The final system capacity, orientation and anticipated output will be confirmed through the next design stage, informed by more detailed load data and photovoltaic feasibility modelling. Nevertheless, the commitment to incorporate roof-mounted photovoltaics at this stage provides a clear and credible response to local planning policy support for renewable and low-carbon energy generation.

The development will also incorporate electric vehicle charging to utilise rechargeable electric fork-lift trucks rather than combustion-powered plant. This will further support the transition to lower-carbon site activity and complements the proposed photovoltaic installation by creating a direct on-site use for renewable electricity generation. Taken together, these measures will help improve the environmental performance of the development in operation and strengthen its response to local policy support for low-carbon infrastructure.

8. Water Efficiency and Wider Sustainability Measures

Although this statement is focused primarily on energy, the wider sustainability strategy relevant to BREEAM Very Good also includes water and resource efficiency measures. Sanitary fittings in the canteen and welfare areas should be specified to achieve low potable water consumption, including dual-flush WCs, low-flow taps and efficient appliances where provided. Metering, leak detection and responsible specification of durable materials can also contribute to improved building performance in use. Construction waste management, responsible sourcing of materials where practical,

and consideration of maintenance and replacement cycles should be addressed during the next design stages in order to support the overall BREEAM score.

9. Sustainable Construction, Materials and Waste

The proposal will also seek to support sustainable construction principles through the efficient use of materials and the responsible management of waste. At detailed design stage, the project team should consider material durability, ease of maintenance and responsible sourcing where practical, together with construction methods that minimise unnecessary waste generation. A construction-stage approach to waste reduction, segregation and recycling should be implemented so that the environmental impact associated with the delivery of the development is reduced as far as reasonably practicable. These measures are relevant to both the wider sustainability objectives of the scheme and the credits available under BREEAM.

10. Health, Wellbeing, Transport and Pollution

In addition to energy efficiency, the proposal has potential to deliver wider sustainability benefits through the quality of the internal environment and the efficient operation of the site. Occupied welfare accommodation should benefit from suitable daylight, ventilation and thermal comfort, helping to support staff wellbeing and creating a usable and durable workplace environment. The consolidation of dry goods storage within the existing bakery site is also expected to reduce unnecessary vehicle trips between separate premises, thereby offering an operational efficiency benefit and a modest reduction in transport-related emissions. During detailed design and construction, due regard should also be given to lighting control, noise from plant, refrigerant selection, drainage and pollution prevention so that the completed building performs appropriately in its surroundings and supports a well-managed form of development.

11. BREEAM Very Good Strategy and Delivery

The target for the development is a minimum BREEAM rating of Very Good. BREEAM is a recognised environmental assessment method covering management, health and wellbeing, energy, transport, water, materials, waste, pollution and related issues. For non-domestic new construction, achievement of the target rating will require the project team to secure credits across a number of categories rather than relying on any single design measure. The strategy for this scheme is therefore to combine a strong building fabric specification with efficient services, good commissioning and handover procedures, water-saving fittings, responsible construction practices and renewable-energy provision where feasible.

At this stage, the report should be read as a planning-stage commitment framework rather than a final assessor-led scorecard. A licensed BREEAM assessor should be appointed during detailed design so that credits can be targeted, evidence requirements can be built into the procurement process and any minimum standards applicable to the chosen scheme version can be reviewed and addressed. On that basis, it is considered realistic for the proposal to be designed and delivered to achieve a minimum BREEAM Very Good standard, subject to detailed specification and formal assessment.

11.1 Commissioning, Handover and Verification

To ensure that the intended energy and environmental performance is achieved in practice, the development should be subject to appropriate commissioning, testing and handover procedures. This includes commissioning of fixed building services, provision of operating and maintenance information, and the use of design-stage and as-built compliance assessments under the relevant non-domestic methodology. Post-construction review should confirm that installed systems, controls and setpoints are consistent with the design intent and that the evidence required for BREEAM certification has been assembled and retained. This approach is consistent with accepted guidance for energy statements and helps ensure that performance commitments made at planning stage are carried through into construction and operation.

12. Conclusion

This Energy and Sustainability Report demonstrates that the proposed industrial building can be delivered in accordance with a clear and proportionate strategy that supports sustainable development objectives and provides a credible route to achieving a minimum BREEAM Very Good standard. Through a fabric-first approach, efficient building services, water-saving measures, responsible material and waste practices, careful commissioning and the review of on-site photovoltaic generation, the development has been designed to reduce energy demand, improve environmental performance and support the continued efficient operation of the existing bakery site. Detailed compliance calculations and formal BREEAM assessment will be progressed at the next design stages, but the principles set out in this report provide an appropriate basis for planning consideration.