

JS LEWIS LTD

Energy Statement

Revision A

Proposed Lidl Store

Mottingham, Bromley

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Lidl UK GmbH

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EXECUTIVE SUMMARY

Lidl UK GmbH (“Lidl”) is seeking planning permission for the development of a low cost neighbourhood food store in Mottingham, Bromley. JS Lewis Ltd was instructed by Lidl to undertake an energy demand assessment and options appraisal for the site, and to draft an energy statement for the proposed development.

The proposal represents a major development by the standards defined by the local authority. The energy policy targets for major developments in the London Borough of Bromley are analysed in the policy section. As set out in this document, the proposals have addressed local policy requirements on energy.

The proposal addresses the energy hierarchy, the target for 35% savings in regulated CO₂ in the London Plan, the local guidance and policy on energy. The strategy is as follows:

- Energy targets:
 - Wall – U = 0.25 W/m²K
 - Floor – U = 0.24 W/m²K
 - Roof – U = 0.19W/m²K
 - Air tightness of 4 m³/m²/hr;
 - Standardised components to ensure efficient servicing and running used;
 - Appropriate lux levels in specification;
 - Highly efficient LED lighting throughout internally;
 - Motion detection controls to warehouse, welfare and delivery bay areas;
 - Lux and timer controls for car park;
 - Automatic switching of all lighting off and on 15 minutes either side of opening and closing times;
 - 6 no. electric car charging bays;
 - Solar PV installation;
 - Estimated 36% CO₂ saving over Part L as modelled in SBEM.

This statement has addressed the planning documents set out below:

- NPPF;
- The London Plan 2016;
- London Borough of Bromley Core Strategy.

The scheme has shown that it can comply with the key policy targets set out below:

- 35% improvement under GLA policy 5.2
 - ACHIEVED (comparing compliant scheme with proposed scheme)

Whilst the details of the measures to achieve this may vary as the detailed design progresses to the building control stage, the scheme can achieve it. Therefore, it has addressed local policy requirements on energy and CO₂.

1 INTRODUCTION

1.1 Background

This document is part of the planning application for the proposed Lidl store in Mottingham, Bromley. It sets out the policy framework, reviews the options for carbon savings and sets out the proposed approach to energy. At the planning stage some aspects of the detailed design are yet to be finalised. As a result, the strategy set out herein is exactly that - a strategy that will evolve as the design evolves.

1.2 Scheme Description

The site lies to the South West of the B226/Mottingham Road opposite Mottingham Library. The site currently comprises a Public House building, with car park area to the front, and also a garden to the rear. The proposals seek full planning permission for a Lidl food store, 33 parking spaces (of which 6 no. are electric car charging points) and associated works. The proposed store will be located in the North West corner of the site facing onto the Mottingham Road, from where access will be achieved. The store is 1,380sqm gross internal area, with 749sqm sales area. The sales area and delivery access is contained on the ground floor, while storage, welfare and office space is provided to the first floor. The north east façade incorporates extensive glazing, avoiding excessive solar gain and resulting in lower cooling loads.

1.3 Energy Use in Retail

The approach to low carbon buildings has evolved from early 'Merton Rule' policies that specifically drove onsite renewable energy to an increasing focus on carbon savings, and more recently, closing the gap between design performance and performance in occupation. Part L 2013 demonstrates an increasing focus on energy efficiency.

Supermarket retail uses have a unique energy demand profile. They tend to require high levels of electricity for refrigerating perishable foods, and for lighting the retail area. Heating and cooling requirements tend to represent a low proportion of the site carbon emissions. Part L and the London Plan policy 5.2 deal with heating, cooling and lighting energy demands predominantly.

1.4 Lidl UK

Lidl UK tends to have energy demands well below the UK benchmark for retail uses. In particular, electricity demands are significantly lower. This is a reflection of Lidl UK's low cost business model. The company is a convenience retailer offering a limited range of foodstuffs at discounted prices within an efficient and convenient environment. A primary consideration for the business model is the minimisation of cost at all stages.

2 POLICY REVIEW

2.1 National Policy

National Planning Policy Framework (2018)

The National Planning Policy Framework sets out a framework for positive growth, making progress in environmental, social and economic areas, and enhancing existing areas. It is a material consideration in planning decisions, and reinforces the need for decisions to be determined in accordance with the local plan, unless material considerations indicate otherwise.

The policies throughout the NPPF constitute the government's view of what sustainable development is, and requires the planning process to perform a number of roles:

1. An economic role – building a strong economy, supporting growth and innovation;
2. A social role – supporting communities through providing housing supply, a high quality built environment, and accessible local services;
3. An environmental role – contributing to natural and built environments, improving biodiversity, using resources prudently, minimizing waste and addressing climate change, including moving to a low carbon economy.

The 2018 National Planning Policy Framework retains a presumption in favour of sustainable development. Section 14 concerns itself with climate change. In particular, paragraphs 148-154 discuss energy consumption and carbon emissions:

148. The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Planning for climate change

149. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures⁴⁸. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

150. New development should be planned for in ways that:

a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

151. To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

152. Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

153. In determining planning applications, local planning authorities should expect new development to:

- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
- b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

154. When determining planning applications for renewable and low carbon development, local planning authorities should:

- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
- b) approve the application if its impacts are (or can be made) acceptable⁴⁹. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

The NPPF sets out the importance of dealing with climate change, and the use of energy efficiency and renewable energy. Development should be in sustainable locations to reduce CO2 emissions. It notes the need to align local policies with the national timeline for low carbon buildings. Further, the document makes it clear that the delivery of local standards should be balanced with viability considerations.

National Timescale for Zero Carbon Buildings

This has been abolished as of July 2015.

2.2 London Plan 2016

The London Plan and supporting documents form part of the planning policy framework for the proposed development. The key documents with regard to energy are the London Plan (2016) Chapter 5, and the latest Guidance on Preparing Energy Strategies (2016). The key elements of these are reviewed below:

The London Plan (2016)

The London Plan includes the following policies for major applications:

- 5.2 – Minimising CO2 Emissions
 - Application of the energy hierarchy;
 - Commercial: 35% improvement on Part L 2010, unless clearly demonstrated that the specific targets cannot be fully achieved onsite;
 - Residential: zero carbon through:
 - Minimum building regulations compliance through efficiency;
 - Target 35% CO2 savings onsite;
 - Target zero carbon through onsite measures or offsetting if not viable onsite.
- 5.3 – Sustainable Construction
- 5.6 – Decentralised Energy
 - Evaluate CHP;
 - Prioritise connection to existing or planned decentralised energy networks where feasible;
- 5.7 – Renewable Energy
 - Achieve 20% renewables where viable;
- 5.9 – Overheating and Cooling
 - Apply the cooling hierarchy and minimise cooling needs.

Emerging London Plan 2017

Policy SI2 reflects the current adopted position on energy and CO2 savings.

2.3 Local Policy

Local policies on energy from the Core Strategy have not been retained and therefore the Council defers to the London Plan (2016). The key aspects are for developments to achieve 35% reduction in CO2. Schemes should also consider options for connecting to district heat networks.

3 ENERGY

3.1 Building Energy Modelling

A detailed thermal model of the building using SBEM software has been undertaken, which is certified as a valid software package for demonstrating Part L compliance at building control stage. The model incorporated the efficient building specification requirements of Lidl UK, and accounted for the site-specific design. This model provided a detailed breakdown of energy demands which were used to assess the viability of clean and renewable energy technology. A number of iterations and combinations of measures were reviewed as part of a comprehensive exercise.

The limitations of building modelling should be noted. Energy use in occupancy rarely reflects modern modelling techniques which tend to be optimistic. A sound understanding of energy use in occupancy and how this is managed is also important. Further, SBEM has significant limitations in some of the assumptions it makes and is not recommended as a design tool, but merely a compliance tool. At the planning stage, it is inevitable that a number of assumptions have to be made to inform the modelling exercise. As the design progresses the model is refined.

3.2 Viability Assessment

Each technology has different technical limitations including availability of energy demand to service, availability of resource, environmental constraints, availability of technology sizes and other issues.

3.3 The Energy Hierarchy

The energy hierarchy is promoted by local policy. This prioritises efficiency measures over and above clean energy, and over renewable energy. Clean energy comes second, including heat recovery and gas CHP. Last comes renewable energy. Lidl has been using energy efficiency techniques as a means to reducing energy costs. This is reflected in the measured energy performance as set out above.

3.3.1 Baseline Emissions

The baseline emissions are modeled through SBEM, using the notional building values. The demands were assessed as follows:

| Baseline (TER) | | |
|--------------------|---------|--------|
| Energy consumption | kWh | kgCO2 |
| Heating | 2,903 | |
| Cooling | 44,834 | |
| Auxiliary | 27,486 | |
| Lighting | 38,718 | |
| Hot Water | 7,628 | |
| Total | 121,568 | 59,265 |

Figure 1: Business As Usual Energy Demands

3.3.2 Summary of Proposed Efficiency Measures

- Wall – U = 0.25 W/m2K
- Floor – U = 0.24 W/m2K
- Roof – U = 0.19W/m2K
- Air tightness of 4 m3/m2/hr;

- Standardised components to ensure efficient servicing and running used;
- Appropriate lux levels in specification;
- Highly efficient LED lighting throughout internally;
- Motion detection controls to warehouse, welfare and delivery bay areas;
- Lux and timer controls for car park;
- Automatic switching of all lighting off and on 15 minutes either side of opening and closing times;
- Solar PV installation (estimated as 50kWp);
- Estimated 35% CO2 saving over Part L 2013 as modelled in SBEM.

3.3.3 Clean Energy

There are no known district heat schemes in the vicinity, and it is unlikely that they would be able to supply energy at a competitive price to Lidl's current energy costs (see section 1.4). Connection is therefore not viable. A connection now or in the future with the proposed use is therefore not ever likely to be economic.

Gas CHP was considered but found to be not viable, making an annual loss. This is because supermarket retail is a poor match for gas CHP at this scale. Gas CHP requires far more significant heat loads before it can be considered viable. Using the smallest available unit on the market, the full load equivalent running hours remained well below CIBSE recommended minimums. The energy hierarchy has been applied.

3.3.4 Future-Proofing

As noted above, the scheme has a low level of heat and coolth demand when considering it in terms of district heating and cooling systems. A connection is very unlikely to make commercial sense now or in the future with the proposed use. Nevertheless, the site layout lends itself to a future connection should the need ever arise.

3.3.5 Renewable Energy

Solar PV will be included. To meet the 35% planning target, it is estimated at the planning stage that approximately 50kWp is required. The renewable energy technology included is as follows:

- Solar PV (estimated to be 50kWp - figure to be refined at the building control stage to optimise for the 35% CO2 savings).

The scheme achieves an estimated 35% saving over Part L 2013 with this strategy:

| | kgCO2/sqm |
|---------------------------------|-----------|
| TER | 43.90 |
| BER | 28.10 |
| Scheme Savings over Part L 2013 | 36% |

Figure 2: CO2 Improvement Made

Based on the estimated 50kWp solar PV array scenario, the CO2 savings would be 36% overall, and the renewable energy contribution would be in excess of the London Plan target of 20%.



Figure 3: Comparison with London Plan CO2 Target

With estimated savings of 36%, the GLA target is met at the planning stage. The breakdown of savings is as follows:

| Emissions Summary | | | |
|--------------------|-------|------|--|
| BAU | 59.27 | tCO2 | |
| Energy efficiency | 59.27 | tCO2 | |
| CHP | 59.27 | tCO2 | |
| Renewables | 37.94 | tCO2 | |
| Efficiency savings | 0% | | |
| CHP savings | 0% | | |
| Renewables savings | 36% | | |
| Total savings | 36% | | |

Figure 4: CO2 Summary

The energy hierarchy has been addressed as follows:

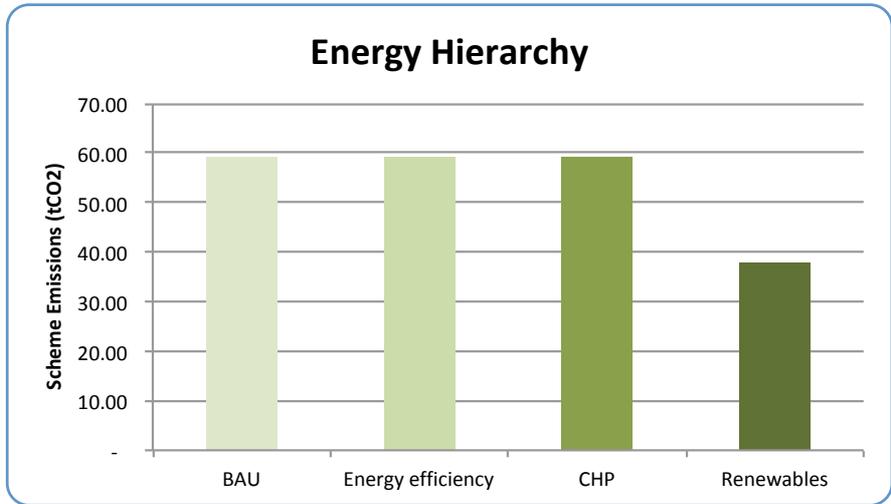


Figure 5: Energy Hierarchy for Proposed Development

3.3.6 Cooling Hierarchy

The scheme requires some active cooling as part of the standard approach to managing and maintaining the retail function. In terms of overheating risk, the active cooling system removes this. In terms of the cooling hierarchy, the selection is as follows:

1. Minimise heat generation through efficient design;
 - a. LED lighting and efficient plant used reduces the internal energy gains;
2. Reduce heat entering building
 - a. Fenestration is limited and to NE façade, reducing heat gain.
3. Passive ventilation;
 - a. Not possible with the proposed use.
4. Mechanical ventilation;
 - a. Mechanical ventilation is required and used with an active cooling provision.
5. Active cooling systems.
 - a. Active cooling is required for the use – an efficient VRF system is proposed.

4 CONCLUSION

4.1 Proposed Store

Lidl UK GmbH (“Lidl”) is seeking planning permission for the development of a low cost neighbourhood food store in Mottingham, Bromley. JS Lewis Ltd was instructed by Lidl to undertake an energy demand assessment and options appraisal for the site, and to draft an energy statement for the proposed development.

The proposal represents a major development by the standards defined by the local authority. As set out in this document, the proposals have addressed local policy requirements on energy. The proposal addresses the energy hierarchy, the target for 35% savings in regulated CO₂ in the London Plan, the local guidance and policy on energy.

4.2 Energy Strategy

The scheme has addressed local and regional policy on energy and CO₂. The proposed strategy at the planning stage is as follows:

- Energy
 - Wall – U = 0.25 W/m²K
 - Floor – U = 0.24 W/m²K
 - Roof – U = 0.19W/m²K
 - Air tightness of 4 m³/m²/hr;
 - Standardised components to ensure efficient servicing and running used;
 - Appropriate lux levels in specification;
 - Highly efficient LED lighting throughout internally;
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 - Lux and timer controls for car park;
 - Automatic switching of all lighting off and on 15 minutes either side of opening and closing times;
 - Solar PV installation;
 - Estimated 36% CO₂ saving over Part L as modelled in SBEM.

At the planning stage some aspects of the detailed design are yet to be finalised. As a result, the strategy set out herein is exactly that - a strategy that will evolve as the design evolves.

4.3 Compliance

This statement has addressed the planning documents set out below:

- NPPF;
- The London Plan 2016;
- Bromley Council policy.

The scheme has shown that it is capable of achieving the 35% CO₂ reduction. Whilst the exact measures for doing this may vary as the scheme progresses, it has been demonstrated that this is achievable. Therefore, it addresses local policy requirements on energy and CO₂.

APPENDIX A – REFERENCES

National Planning Policy Framework (2018)

London Plan (2016)

AND

Drawings and information from the proposed scheme.

JS LEWIS LTD