London Borough of Merton

Explanatory Note: Approaches to Sustainable Design and Construction

August 2018

Version 1.3
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1. PURPOSE OF THIS EXPLANATORY NOTE

The purpose of this note is to provide guidance on the approach for sustainable design and construction for residential, non-residential and mixed-use developments in Merton, in accordance with the requirements set out in Policy CS15 (Climate Change) of Merton’s Core Planning Strategy (2011), and Chapter 5 of the Greater London Authority’s (GLA) London Plan (2016).

2. BACKGROUND

Merton’s Core Planning Strategy (2011) is underpinned by a robust evidence base, including the Sustainable Design and Construction Evidence Base and Code for Sustainable Homes Level 4 in Merton - Viability Study 2010 undertaken by Adams Integra.

Merton’s Core Strategy was the subject of extensive consultation throughout its preparation and an independent examination in February 2011. In June 2011 the council received the Inspector’s binding Report which found Merton’s Core Strategy sound.

3. POLICY CONTEXT

Policy CS15 (Climate Change) states as follows:

All minor and major development, including major refurbishment, will be required to demonstrate the following unless developers can robustly justify why full compliance with the policy requirements is not viable:

a. How it makes effective use of resources and materials, minimises water use and CO₂ emissions;

b. How development proposals are making the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:
   i. Be lean: use less energy
   ii. Be clean: supply energy efficiently
   iii. Be green: use renewable energy

c. How it is sited and designed to withstand the long term impacts of climate change, particularly the effect of rising temperatures on mechanical cooling requirements;

d. Regeneration plan in town centre are an excellent opportunity to implement District Heat and Power networks, and all major development would be strongly encouraged to be ‘Multi Utility Services Company (MUSCo) ready where viable and actively contribute to the networks where possible;

e. We will require all new development comprising the creation of new dwellings to achieve Code for Sustainable Homes Level 4;

f. All non-domestic development over 500m² which does not qualify for assessment under Code for Sustainable Homes will be expected to be built to a minimum of BREEAM (Building Research Establishment Assessment Method) Very Good standard, and meet CO₂ reduction targets in line with the requirements of the London Plan or national policy, whichever is the greater.

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3 Local Plan Evidence Base - http://www.merton.gov.uk/environment/planning/planningpolicy/localplan/planningresearch.htm
4. APPLICATION OF THE POLICY

Variable targets and policy requirements are applied to new development in Merton in accordance with the type and quantum of development to be delivered. The requirements for the main development types are outlined in sections 4.1 to 4.3, below.

All information and carbon dioxide emissions calculations should be calculated and submitted in accordance with the methodology outlined in the GLA’s Energy Planning guidance (2016) and the published guidance within the GLA’s Sustainable Design and Construction SPG (2014).

4.1 Residential

All new developments comprising the creation of new dwellings must include a Sustainable Design and Construction Statement or standalone Strategy (depending on the size of the development) that details how the development proposal will comply with Merton’s Core Planning Strategy Policy CS15 Climate Change (parts a-e) and the policies outlined in Chapter 5 of the London Plan.

The submitted sustainable design and construction statement/strategy should detail how the development will:

- Achieve internal water usage rates not in excess of 105 litres per person per day.
- Demonstrate that it has been designed in accordance with the Mayor’s energy hierarchy (be lean; be clean; be green) outlined in Policy 5.2 of the London Plan, and Policy CS15 part b of Merton’s Core Planning Strategy. This advocates a ‘fabric first’ approach to maximising energy efficiency before seeking to address any shortfall in performance through the use of renewable technologies.
- Achieve onsite carbon dioxide emissions reduction targets in accordance with the relevant emissions reduction target (see below). The emissions data should be displayed in accordance with the GLA’s Energy Planning guidance and include:
  a) a breakdown of the percentage reduction in regulated carbon dioxide emissions achieved at each level of the energy hierarchy;
  b) a breakdown of the carbon dioxide emissions reductions in tonnes achieved at each stage of the energy hierarchy; and
  c) SAP/BRUKL output documentation demonstrating that the development has achieved the required on-site regulated carbon dioxide emissions reductions.
- Be designed to withstand the long term impacts of climate change, particularly the risk of overheating.

4.1.1 Code for Sustainable Homes

In accordance with the Government Ministerial Statement of 25 March 2015, new residential developments in the borough granted planning permission after 25 March 2015 are no longer required to achieve a specified level of the Code for Sustainable Homes. However, Merton will continue to enforce mandatory minimum requirements for energy performance and water efficiency for the delivery of new residential units across the borough.

4.1.2 New build – minor (1-9 units)

Minor development proposals should include a Sustainable Design and Construction statement within their Design & Access statement outlining how the development will achieve no less than a 19% reduction in regulated carbon dioxide emissions (beyond Buildings Regulations Part L 2013) on-site.

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2 GLA Sustainable Design and Construction SPG: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/supplementary-planning-guidance/sustainable-design-and
4.1.3 **New build – major (>9 units)**

Major development proposals should submit a standalone Sustainable Design and Construction Strategy, inclusive of an energy assessment, detailing how the development will demonstrate compliance with the Zero Carbon emissions target outlined in Policy 5.2 of the London Plan, and mitigate overheating and reduce cooling demand in line with Policy 5.9 of the London Plan.

A checklist summarising the submission requirements for major residential development proposals is included in Appendix 1 of this document, for reference.

All such major development proposals must:

- Achieve no less than a **35% reduction** in regulated carbon dioxide emissions (beyond Buildings Regulations Part L 2013) on-site.

- Offset the remaining regulated carbon dioxide emissions (up to **100% improvement** on Part L 2013) through cash in lieu contribution. This is to be secured via Section 106 agreement and is payable upon commencement of the scheme. See section 4.4 of this guidance note for further information on the methodology for calculating cash in lieu contributions.

- Demonstrate, through the submission of a domestic overheating checklist, that the scheme has identified potential vulnerabilities to overheating and included design features to mitigate overheating risk. Proposals should include the overheating checklist as detailed in Appendix 2 of this document (replicated from Appendix 5 of the GLA’s Energy Planning guidance).

4.1.4 **Multi-residential schemes**

All development proposals that include multiple residential units must include a clear explanation of the dwellings that have been modelled (i.e. ground floor, mid floor, top floor units). The approach to calculating the average Target Emissions Rate (TER)\(^7\) must be based on a representative sample of the dwelling types contained within the development, and an explanation of the approach adopted must be provided as part of the planning application, or upon request.

4.1.5 **Domestic refurbishment**

All development proposals that comprise the refurbishment of an existing building or group of buildings should provide an energy assessment demonstrating how the individual elements of the energy hierarchy have been implemented and how reductions in regulated carbon dioxide emissions have been achieved.

For development proposals consisting of a refurbishment with a new build extension, the carbon dioxide savings for the new and refurbished elements **should be presented separately** within the sustainable design and construction statement/strategy. This should clearly detail how the new build element is performing against current standards.

Further guidance on the methodology for demonstrating compliance with the regulated carbon dioxide emissions requirements are detailed in Section 9 of the GLA’s Energy Planning guidance.

4.1.6 **Conversions to create new dwellings**

For applications where an existing building is being converted to create a new dwelling or dwellings, the applicant should include a Sustainable Design and Construction statement within their Design & Access statement outlining how the development will achieve no less than a **19% reduction** in regulated carbon dioxide emissions (beyond Buildings Regulations Part LB 2013 – existing buildings) on-site.

This approach may be applied to alterations to existing dwellings and extensions, and to domestic conversions and change of use projects (e.g. where a new dwelling is formed by change of use from a

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\(^7\) The methodology for calculating the average TER is given in the building regulations Part L1A paragraph 2.7.
building that was not previously used for domestic purpose; the conversion of a single dwelling into multiple dwellings, or where several dwellings are converted into a single dwelling).

4.2 Non-Residential

All new developments comprising the creation of new non-residential floor space should be designed in accordance with Policy CS15 (parts a-d & f) of Merton’s Core Planning Strategy and the policies outlined in Chapter 5 of the London Plan. The development should:

- Achieve a high standard of sustainability and make efficient use of resources and material and minimise water use and carbon dioxide emissions.
- Demonstrate that it has been designed in accordance with the Mayor’s energy hierarchy (be lean; be clean; be green) outlined in Policy 5.2 of the London Plan 2015 and Policy CS15 part b of Merton’s Core Planning Strategy. This advocates a ‘fabric first’ approach to maximising energy efficiency before seeking to address any performance shortfall through the use of renewable technologies.
- Achieve onsite carbon dioxide emissions reduction targets, in accordance with the relevant emissions reduction target (see below). The emissions data should be displayed in accordance with the GLA’s Energy Planning guidance and include:
  a) a breakdown of the percentage reduction in regulated and non-regulated carbon dioxide emissions achieved at each level of the energy hierarchy and;
  b) SBEM/BRUKL output documentation demonstrating that the development has achieved the required on-site regulated carbon dioxide emissions reductions.
- Be designed to withstand the long term impacts of climate change, particularly the risk of overheating.

4.2.1 New build – minor (<500m² GIA)

Minor non-domestic developments in Merton are classified as those with less than 500m² gross internal area (GIA).

Minor development proposals should demonstrate policy compliance with the guidance detailed in section 4.2, above. There are no specific energy requirements for non-domestic minor developments beyond the Building Regulations 2013 requirements, unless the non-domestic development comprises part of a major mixed-use scheme.

For further information please refer to section 4.3 on Mixed Use developments.

4.2.2 New build – major (>500m² GIA)

Major non-domestic developments in Merton are classified as those with gross internal area (GIA) equal to or greater than 500m².

All non-domestic development over 500m² will be expected to be built to a minimum of BREEAM New Construction (2014) ‘Very Good’ standard and meet CO2 reduction targets in line with Policy 5.2 of the London Plan (2016). This equates to a 35% reduction in regulated carbon dioxide emissions (over Buildings Regulations Part L 2013) on-site.

Please see Section 6 of the Mayor’s Sustainable Design and Construction SPG for further guidance.

4.3 Mixed Use

Mixed use developments that comprise more than nine residential units or over 500m² of non-domestic floor space (GIA) will be classified as a major mixed-use application. The respective domestic

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and non-domestic elements should therefore be designed in accordance with the requirements for major development proposals, as outlined in section 4.1.2 and 4.2.2 of this document.

Carbon dioxide reductions calculations should therefore be provided for the domestic and non-domestic elements of the development, and for the site as a whole, for the application to be deemed compliant.

4.4 Cash in Lieu Contributions

Cash in lieu contributions may be collected by way of an offset payment for any development that fails to achieve the necessary onsite emission reductions, or in securing zero carbon performance for major residential development proposals, in accordance with the methodology outlined in the Mayor’s Sustainable Design and Construction SPG.

The methodology requires that each tonne of carbon dioxide shortfall is offset at a cost of £60 per tonne for a period of 30 years, as detailed in the below formula:

Carbon shortfall (tonnes of CO₂e) X £60 per tonne CO₂e X 30 years = Offset Payment

The requirement to pay a financial contribution is subject to viability. If it is not viable to provide the required cash in lieu contribution the onus will lie with the applicant to demonstrate, through the submission of a viability appraisal, the level of contribution that is viable. Applicants will be required to submit all of the inputs and assumptions used to assess viability of the proposed scheme through an open book approach.

Where it is deemed appropriate the Council will subject proposals and applicants’ submitted viability assessment(s) to independent examination and may seek payments from applicants for the costs of the independent examination.

4.5 Opportunities for Decentralised Energy Networks

Major development proposals (residential, mixed-use and non-residential) are encouraged to be ‘Multi Utility Service Company’ (MUSCo) ready and explore opportunities for connection to district heat networks, in accordance with Merton’s Core Planning Strategy Policy CS15 (part d); Policy DM EP1 of Merton’s Sites and Policies Plan (2014)⁹, and Policy 5.6 of the London Plan (2016).

Merton has identified broad district heat opportunity areas that provide increased opportunity for developments to connect to nearby current or planned district heat networks, within Merton’s Sites and Policies Plan. Any development occurring within these identified opportunity areas should fully investigate the scope for connection to nearby or planned district heating networks, where viable, and should commit to providing a site wide heating network, suitable for connection to wider district networks now or in the future.

Further information on district heat potential is available via the GLA’s interactive London Heat Map.

5. EVIDENCE REQUIREMENTS

Sustainable design and construction performance requirements will typically be applied through planning condition(s). This is usually applied at the pre-occupation stage (although pre-commencement conditions may also be applied in certain instances) with evidence of performance standard being submitted to the Local Authority for approval before the condition can be discharged. The wording and associated evidence requirements of a condition will vary in accordance with the type of development proposal (e.g. major/minor domestic, non-domestic or mixed-use development).

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The typical sustainable design and construction evidence requirements required have been summarised below for reference.

*Please note:* applicants should refer to the specific condition(s) and informative(s) that have been applied to their development proposal, as detailed in the issued Decision Notice, following planning approval.

### 5.1 Domestic

#### 5.1.1 Carbon emissions

Evidence requirements for domestic post construction stage assessments must provide:

- Detailed documentary evidence confirming the Target Emission Rate (TER), Dwelling Emission Rate (DER) and percentage improvement of DER over TER based on ‘As Built’ SAP outputs. The outputs must be dated and include the accredited energy assessor’s name and registration number, the assessment status, plot number and development address.
  
  OR, where applicable:
  - A copy of revised/final calculations as detailed in the assessment methodology based on ‘As Built’ SAP outputs;
  - AND
  - Confirmation of Fabric Energy Efficiency (FEE) performance where SAP section 16 allowances (i.e. CO2 emissions associated with appliances and cooking, and site-wide electricity generation technologies) have been included in the calculation

#### 5.1.2 Water efficiency

Evidence requirements for domestic post construction stage assessments must provide:

- Water Efficiency Calculator for New Dwellings, representing the dwellings ‘As Built’, demonstrating that the dwelling(s) has achieved internal water consumption rates of no greater than 105 litres per person per day;
  - AND
  - Detailed documentary evidence representing the dwellings ‘As Built’; showing:
    - the location, details and type of appliances/ fittings that use water in the dwelling (including any specific water reduction equipment with the capacity / flow rate of equipment); AND
    - the location, size and details of any rainwater and grey-water collection systems provided for use in the dwelling

### 5.2 Non-domestic

#### 5.2.1 Carbon emissions

Evidence requirements for non-domestic post construction stage assessments must provide:

- A copy of the Building Regulations Output Document from the approved software. The output documents must be based on the ‘as built’ stage of analysis and must account for any changes to the specification during construction;
  - AND
  - Evidence confirming:
    - The total carbon neutral energy generation (kWh/year)
    - Any sources of carbon neutral energy
    - Calculated estimate of energy consumption from unregulated systems/process (kWh/yr) (required only if confirming carbon negative status);
AND, where applicable:

- A final **BREEAM certificate** demonstrating that the development has achieved a BREEAM rating of no less than ‘Very Good’ standard, for development proposals requiring a BREEAM Assessment.

### 5.3 **Decentralised energy design considerations**

Any development proposing to utilise large scale decentralised energy, whether through the use of on-site combined heat and power (CHP) or by connection to large-scale district heat network, should demonstrate that they have referred and adhered to the technical design principles and concepts outlined in the GLA’s London Heat Network Manual\(^\text{10}\) by submitting:

- The proposed heating system capacity and a scale drawing of the proposed plant room and layout
- The specification of the proposed plant room, including space requirements for heat exchangers, in accordance with the minimum plant room specification requirements detailed in the GLA’s London Heat Network Manual (see Appendix 3).

### 6. **FURTHER INFORMATION AND GUIDANCE**

**GLA guidance:**


**Merton guidance:**

- Merton Core Planning Strategy (2011) – Policy CS15 (Climate Change)
- Merton Sites and Policies Plan (2014): Policy DM EP1 Opportunities for Decentralised Heat Networks - [https://www2.merton.gov.uk/merton_sites_and_policies__part_1_policies_jul14.pdf](https://www2.merton.gov.uk/merton_sites_and_policies__part_1_policies_jul14.pdf)

**Other guidance:**

- **BRREAM UK** – [www.breeam.co.uk](http://www.breeam.co.uk)

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7. APPENDICES

Appendix 1: Major Residential Development Checklist

Applicants submitting planning applications for major residential developments must ensure that their planning application submission includes the following information:

- **Energy strategy**
  - Carbon emissions reductions detailed at each stage of the energy hierarchy
  - Information on climate change mitigation (responding to London Plan policies 5.1 – 5.2)
  - Information on climate change adaptation (responding to London Plan Policies 5.9 – 5.15)

- **Calculated carbon emissions shortfall and associated carbon offset payment**

- **Draft SAP outputs for ‘as designed’ dwellings with DER/TER figures clearly highlighted**

- **A copy of the Mayor of London’s overheating checklist**

- **A copy of the Mayor of London’s overheating checklist**
## Appendix 2: Domestic Overheating Checklist

The Domestic Overheating Checklist is available in Appendix 5 of the GLA’s guidance on preparing energy statements.

Table 1 of the checklist should be completed at the start of the design process and included in any pre-application submissions. Tables 1 and 2 should be reviewed as the design progresses and the full checklist should be completed and included within the submitted energy strategy or assessment.

<table>
<thead>
<tr>
<th>Table 1 – Site Features affecting vulnerability to overheating</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site location</strong></td>
<td></td>
</tr>
<tr>
<td>Urban – within central London(^{11}) or in a high density conurbation</td>
<td></td>
</tr>
<tr>
<td>Peri-urban – on the suburban fringes of London(^{12})</td>
<td></td>
</tr>
<tr>
<td><strong>Air Quality and/or Noise Sensitivity – are any of the following in the vicinity of buildings?</strong></td>
<td></td>
</tr>
<tr>
<td>Busy roads / A roads</td>
<td></td>
</tr>
<tr>
<td>Railways / Overground / DLR</td>
<td></td>
</tr>
<tr>
<td>Airport / Flight path</td>
<td></td>
</tr>
<tr>
<td>Industrial uses / waste facility</td>
<td></td>
</tr>
<tr>
<td><strong>Proposed building use</strong></td>
<td></td>
</tr>
<tr>
<td>Will any buildings be occupied by vulnerable people (e.g. elderly, disabled, young children)?</td>
<td></td>
</tr>
<tr>
<td>Are residents likely to be at home during the day (e.g. students)?</td>
<td></td>
</tr>
<tr>
<td><strong>Dwelling aspect</strong></td>
<td></td>
</tr>
<tr>
<td>Are there any single aspect units?</td>
<td></td>
</tr>
<tr>
<td><strong>Glazing Ratio</strong></td>
<td></td>
</tr>
<tr>
<td>Is the glazing ratio (glazing: internal floor area) greater than 25%?</td>
<td></td>
</tr>
<tr>
<td>If yes, is this to allow acceptable levels of daylighting?</td>
<td></td>
</tr>
<tr>
<td><strong>Security – Are there any security issues that could limit opening of windows for ventilation?</strong></td>
<td></td>
</tr>
<tr>
<td>Single storey ground floor units</td>
<td></td>
</tr>
<tr>
<td>Vulnerable areas identified by the Police</td>
<td></td>
</tr>
<tr>
<td>Architectural Liaison Officer</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

\(^{11}\) Urban - as defined in CIBSE Guide TM49. Broadly equivalent to Central Activities Zone and Inner London areas in Map 2.2 of the London Plan

\(^{12}\) Peri-urban – as defined in CIBSE Guise TM49. Broadly equivalent to Outer London areas in Map 2.2 of the London Plan
| **Landscaping** | Will deciduous trees be provided for summer shading (to windows and pedestrian routes)?  
| | Will green roofs be provided?  
| | Will other green or blue infrastructure be provided around buildings for evaporative cooling? | **Please respond** |
| **Materials** | Has high albedo (light colour) materials been specified? | **Please respond** |
| **Dwelling aspect** | % of total units that are single aspect  
| | % single aspect with N / NE / NW orientation  
| | % single aspect with E orientation  
| | % single aspect with S / SE / SW orientation  
| | % single aspect with W orientation | **Please respond** |
| **Glazing ratio – What is the glazing ratio (glazing internal floor area) on each façade?** | N / NE / NW  
| | E  
| | S / SE / SW  
| | W | **Please respond** |
| **Daylighting** | What is the average daylight factor range? | **Please respond** |
| **Window opening** | Are windows openable? | **Please respond** |
| | What is the average percentage of openable area for the windows? | **Please respond** |
| **Window opening – What is the extent of the opening** | Fully openable | **Please respond** |
| | Limited (e.g. for security, safety, wind loading reasons) | **Please respond** |
| **Security** | Where there are security issues (e.g. ground floor flats) has an alternative night time natural ventilation method been provided (e.g. ventilation grates)? | **Please respond** |
| **Shading** | Is there any external shading? | **Please respond** |
| | Is there any internal shading? | **Please respond** |
| **Glazing specification** | Is there any solar control glazing? | **Please respond** |
| **Ventilation – What is the ventilation strategy?** | Natural – background  
| | Natural – purge  
| | Mechanical – background (e.g. MVHR)  
| | Mechanical – purge  
| | What is the average design air change rate | **Please respond** |
| **Heating system** | Is communal heating present? | **Please respond** |
| | What is the flow/return temperature? | **Please respond** |
| | Have horizontal pipe runs been minimised? | **Please respond** |
| | Do the specifications include insulation levels in line with the London Heat Network Manual? | **Please respond** |

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Appendix 3: District Heating - Recommended Plant Room Specification

The Plant Room Specification detailed in Table 3, below, is available in Appendix 1 of the Mayor of London’s London Heat Network Manual (2014).

The checklist in Table 3 should be reviewed as the design progresses and the development’s specification should be completed and included within the submitted energy strategy of the planning application. Where the plant room design has deviated from the GLA’s recommended specification, commentary must be provided on the alternative specification and reasons for deviating from the recommended approach.

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification Requirements</th>
<th>Applicant’s Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Illumination</td>
<td>Minimum light level: 150 lux</td>
<td></td>
</tr>
<tr>
<td>Electrical Conversion</td>
<td>III 380 V to earth / 32 A (See Note 1 below)</td>
<td></td>
</tr>
<tr>
<td>Electrical Supply</td>
<td>220 V AC (+/- 5%), 50 Hz (+/- 3%) Thermo-magnetic protection recommended 16 A curve C (the box incorporates a thermomagnetic protection of 10 A curve C in the supply)</td>
<td></td>
</tr>
<tr>
<td>Water Supply</td>
<td>DN 25</td>
<td></td>
</tr>
<tr>
<td>Water Discharge</td>
<td>Provide wastewater discharge line in the plant room and a sump to collect condensation from heat exchangers</td>
<td></td>
</tr>
<tr>
<td>Concrete Bases</td>
<td>Provide concrete bases for heat exchangers and pumps (if present)</td>
<td></td>
</tr>
<tr>
<td>Ventilation</td>
<td>Mechanical and continuous, with a minimum of 3 air changes per hour</td>
<td></td>
</tr>
<tr>
<td>Health and Safety</td>
<td>Plan showing evacuation route in case of fire, located in a visible place. The plant room should not have elements of risk to health and safety (sharp metallic objects, holes in roof or floor without protection, ...)</td>
<td></td>
</tr>
<tr>
<td>Layout and Dimension</td>
<td>As described for the relevant packaged substation unit</td>
<td></td>
</tr>
</tbody>
</table>