London Borough of Merton

Explanatory Note: Approaches to Sustainable Design and Construction

Planning Guidance to support the Climate Change Policies in Merton's Local Plan – November 2024

TABLE OF CONTENTS

1. PURPOSE OF THIS EXPLANATORY NOTE

1.1.1.1 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 Policies CC2.1 – CC2.6 (Climate Change) of Merton's Local Plan (2024) and Chapter 9 Sustainable Infrastructure of the Mayor's London Plan (2021).

2. BACKGROUND

2.1.1.1 Merton's Local Plan (2024) is underpinned by a robust evidence base as set out in Merton's climate change policies (CC2.1 - CC2.6) and was the subject of extensive consultation throughout its preparation.

2.1.1.2 Following the adoption of the Climate Change Act 2008 (2050 Target Amendment) Order in 2019, the UK has a statutory requirement to reduce its greenhouse gas emissions by 100% by 2050 (based on 1990 levels). Merton's Climate Change policies were reviewed following the Council's declaration of a Climate Emergency in July 2019 to ensure that they are consistent with Merton's carbon reduction commitment of becoming a carbon neutral borough by 2050 as set out in Merton's Climate Strategy & Action Plan.

2.1.1.3 With some 81% of greenhouse gas emissions in Merton being generated from the energy used to heat and power our buildings, decarbonising our building stock will be a fundamental step in becoming net-zero carbon[1]. All buildings in Merton will need to operate at net zero carbon by 2050. A building which operates at net-zero carbon does not burn fossil fuels, has ultra-high energy efficiency and is 100% powered by renewable energy[2].

2.1.1.4 Any new buildings which are not built to operate at net zero carbon by 2050 will require expensive retrofit in the next 30 years. The costs of achieving higher standards via retrofit are three to five times higher than for new buildings and the carbon impact of delayed action is significant[3]. Merton's Climate Change policies aim to ensure that new development in Merton does not create a legacy of poor performance that will require remedial action in the future and add to Merton's retrofit burden.

2.1.1.5 This guidance sets out Merton's requirements for minor and major residential and non-residential schemes in line with Merton's Local Plan 2024. Major schemes should also review and comply with the GLA's Guidance on Preparing Energy Assessments.

[1] Merton Council (2020) Merton's Climate Strategy and Action Plan (available at: https://www.merton.gov.uk/planning-and-buildings/sustainability-and-climate-change/climate-emergency).
[2] LETI (2020) Climate Emergency Design Guide (https://www.leti.london/cedg).

[3] Currie & Brown, "A Report for the Committee on Climate Change – The costs and benefits of tighter standards for new buildings," 2019. [Online]. Available: https://www.theccc.org.uk/wpcontent/uploads/2019/07/The-costs-and-benefits-of-tighter-standards-for-new-buildings-Currie-B

3. POLICY CONTEXT

3.1 *Merton's Local Plan 2024*

3.1.1.1 Merton's New Local Plan 2024 was adopted on 20th November 2024. Appendix 1 provides an overview of the climate change and design policies in Merton's Local Plan relevant to this guidance. This includes policies CC2.1-CC2.6 and D2.13.

3.1.1.2 Applicants should refer to Merton's Local Plan for the supporting text for these policies. Applicants should also refer to the policies in Chapter 12 and Chapter 15 of Merton's Local Plan for Merton's design and green and blue infrastructure requirements, as well as any supporting guidance.

3.2 *The London Plan 2021*

3.2.1.1 In March 2021, the Mayor of London published the London Plan. Chapter 9 'Sustainable Infrastructure' of the London Plan (2021) introduced a number of changes for development in London which have been reflected in the guidance below, in line with the GLA's latest Energy Planning Guidance[4].

4. APPLICATION OF THE POLICY

4.1 *Overview of the Requirements*

4.1.1.1 All new development comprising the creation of new dwellings and/ or the creation of 500sqm or more non-residential Gross Internal Area (GIA)[5] must include an energy statement that details how the development proposal will comply with policies CC2.1-CC2.6 and D2.13 of Merton's Local Plan 2024, and the policies outlined in Chapter 9 of the London Plan 2021.

4.1.1.2 Variable targets and policy requirements are applied to new development in Merton in accordance with the type and scale of development to be delivered. Section 4.2 and Table 2 below set out the minimum requirements for the main development types. Section 5 provides detailed guidance for each of these requirements.

4.1.1.3 For **both major** and **minor schemes**, the submitted energy statement should detail how the development will:

i. Maximise carbon savings at each stage of the Mayor's energy hierarchy towards achieving net-zero carbon emissions on site, whether the minimum on-site target has already been achieved or not.

ii. Achieve the relevant minimum on-site carbon reduction targets set out in Table 2 below.

iii. Minimise energy demand and embed demand-side response in the proposals.

iv. Use an efficient low carbon heating system.

v. Maximise renewable energy generation on site.

vi. Minimise unregulated emissions and the total energy use intensity.

vii. Minimise mains water use.

viii. Minimise waste and embodied carbon, and promote a circular economy.

ix. Mitigate the risk of overheating and reduce cooling demand.

x. Be future-proofed to achieve zero-carbon emissions on-site by 2050.

4.2 *Minimum Requirements for Different Types and Scales of Development*

4.2.1.1 Depending on the scale of development, the applicant will either need to submit a standalone energy statement in line with the GLA's Energy Assessment Guidance or submit Merton's Energy Assessment Template for Minor Residential Schemes[6], to demonstrate how the proposed development will meet Merton's minimum requirements.

4.2.1.2 All **major development proposals resulting in the creation of 10 or more dwellings or 500sqm or more of non-residential Gross Internal Area (GIA)** should submit a standalone energy statement detailing how the development will demonstrate compliance with Merton's and the Mayor's climate change policies. The statement should be prepared in line with the GLA's Energy Assessment Guidance and this guidance document.

4.2.1.3 All **minor residential development proposals resulting in the creation of 1-9 dwellings** will need to submit Merton's Energy Assessment Template for Minor Residential Schemes (hereafter referred to as Merton's Energy Assessment Template) detailing how the development will demonstrate compliance with Merton's climate change policies.

4.2.1.4 **Minor non-residential developments** in Merton are classified as those with less than 500sqm GIA. There are no specific energy requirements for non-residential minor developments beyond the Building Regulations 2021 requirements, unless the non-residential development comprises part of a major mixed-use scheme. In which case they will need to comply with the requirements for major schemes.

4.2.1.5 **Mixed use developments that comprise either 10 or more residential units or 500sqm or more of non-residential GIA** will be classified as a major mixed-use application. In this case, the respective residential and non-residential elements should both be designed in accordance with the requirements for major development proposals. Carbon dioxide reductions calculations will need to be provided for the residential and non-residential elements of the development, and for the site as a whole, for the application to be deemed compliant. The residential and non-residential emissions should be presented separately within the energy statement.

4.2.1.6 Table 2 below sets out the specific minimum requirements for different development types.

---

[4] GLA Energy Planning Guidance https://www.london.gov.uk/what-we-do/planning/planning-applications-and-decisions/pre-planning-application-meeting-service-0

[5] Broadly speaking the whole enclosed area of a building within the external walls taking each floor into account and excluding the thickness of the external walls. Further details available at: https://www.gov.uk/government/publications/measuring-practice-for-voa-property-valuations/code-of-measuring-practice-definitions-for-rating-purposes

[6] Merton's Local Plan guidance and templates are accessible via https://www.merton.gov.uk/planning-and-buildings/planning/local-plan/newlocalplan

Table 1 Minimum requirements for different types and scales of development

Development Type	Threshold	Minimum targets	Evidence requirements at Planning Stage	Pre-occupation evidence requirements
Minor new build residential resulting in the creation of new dwellings	1-9 units	• Mayor's zero carbon target applies (i.e. offset any carbon shortfall at £300/tCO2) • Minimum 35% improvement against Part L 2021 on-site • Benchmark reduction of 50%+ against Part L 2021 • Full Fabric Energy Efficiency Standard (FEES): <39 kWh/m2/yr for blocks of flats and mid-terrace houses and <46 kWh/m2/yr for semi-detached, end of terrace and detached houses • Space Heating Demand Target from 1st January 2025: <15 kWh/m2/yr for blocks of flats and mid-terrace houses and <20 kWh/m2/yr for semi-detached, end of terrace and detached houses. • Internal water usage rates of less than 105 Litres/ person/ day • Whole Life Carbon Assessment[7] (***for demolish and rebuild of a single dwelling only***)	• Energy Assessment Template for Minor Residential Schemes • 'As Designed' Internal Water Use Calculations • Good Homes Alliance Overheating Risk Tool – see guidance here. • Dynamic overheating modelling outputs if modelling is required by the Good Homes Alliance Tool • Plans showing the location of the proposed heating system, any renewable technologies and any thermal and/ or battery storage • 'As Designed' SAP outputs– including compliance reports and TER/DER[8] worksheets • Whole Life Carbon Assessment (***for demolish and rebuild of a single dwelling only***)	• Updated Energy Assessment Template (see 'As Built Stage' tab) • 'As Built' Internal Water Use Calculations • 'As Built' SAP outputs • MCS[9] certificates and photos of all installed renewable energy technologies (e.g. solar PV, heat pumps, etc.) • Updated Whole Life Carbon Assessment (***for demolish and rebuild of a single dwelling only***)

[7] Whole Life Carbon (WLC) emissions are the carbon emissions resulting from the materials, construction and the use of a building over its entire life, including its demolition and disposal. A Whole Life Carbon Assessment (WLCA) provides a true picture of a building's carbon impact on the environment.
[8] Target Emission Rate (TER) and Dwelling Emission Rate (DER) measured through the Standard Assessment Procedure (SAP). The Standard Assessment Procedure (SAP) is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings. https://www.gov.uk/guidance/standard-assessment-procedure.
[9] Microgeneration Certification Scheme (MCS) https://mcscertified.com/

Development Type	Threshold	Minimum targets	Evidence requirements at Planning Stage	Pre-occupation evidence requirements
Minor change of use or conversions resulting in the creation of new dwellings	1-9 units	• Minimum 35% improvement against Part L 2021 on site • Internal water usage rates of less than 105 Litres/ person/ day	• Energy Assessment Template for Minor Residential Schemes • As Designed Internal Water Use Calculations • Good Homes Alliance Overheating Risk Tool – see guidance here. • Dynamic overheating modelling outputs if modelling is required by the Good Homes Alliance Tool • Plans showing the location of the proposed heating system, any renewable technologies and any thermal and/ or battery storage • Plan showing any retained, refurbished and new build elements as appropriate • 'As Designed' SAP outputs– including as designed DER Worksheet, and baseline SAP outputs for the existing building prior to works	• Updated Energy Assessment Template (see 'As Built Stage' tab) • 'As Built' Internal Water Use Calculations • 'As Built' SAP outputs and 'As Designed' baseline outputs for the existing building prior to works • MCS certificates and photos of all installed renewable energy technologies (e.g. solar PV, heat pumps, etc.)
Major residential	10 or more units	• Mayor's zero carbon target applies (i.e. offset any carbon shortfall at £300/tCO2) • Minimum 35% improvement against Part L 2021 • Benchmark reduction of 50%+ against Part L 2021 • Minimum 10% improvement against Part L 2021 through energy efficiency alone (Mayor's Be Lean target)	• Standalone Energy Statement in line with GLA's Guidance • As Designed Internal Water Use Calculations • Good Homes Alliance Overheating Risk Tool – see guidance here. • Dynamic overheating modelling outputs • Plans showing the location of the proposed heating system, any renewable technologies and any thermal and/ or battery storage	• 'As Built' Internal Water Use Calculations • 'As Built' SAP outputs • Updated GLA carbon reporting spreadsheet based on the 'As Built' SAP outputs • MCS certificates and photos of all installed renewable energy technologies (e.g. solar PV, heat pumps, etc.) • BREEAM Certificate (***for major refurbishment only***) • Updated Whole Life Carbon Assessment (***for 30 dwellings or more only***)

Development Type	Threshold	Minimum targets	Evidence requirements at Planning Stage	Pre-occupation evidence requirements
		• Full Fabric Energy Efficiency Standard (FEES): <39 kWh/m2/yr for blocks of flats and mid-terrace houses and <46 kWh/m2/yr for semi-detached, end of terrace and detached houses • Space Heating Demand Target from 1st January 2025: <15 kWh/m2/yr for blocks of flats and mid-terrace houses and <20 kWh/m2/yr for semi-detached, end of terrace and detached houses. • Internal water usage rates of less than 105 Litres/ person/ day • Mayor's Be Seen policy applies • BREEAM Excellent (***for major refurbishment only***) • Whole Life Carbon Assessment ***(for 30 dwellings or more only)***	• 'As Designed' SAP outputs for all stages of the energy hierarchy – including compliance reports and TER/DER worksheets • CIBSE TM54, PHPP or equivalent outputs to confirm the Energy Use Intensity • GLA carbon emissions reporting spreadsheet – template available here • BREEAM Pre-Assessment (***for major refurbishment only***) • Whole Life Carbon Assessment ***(for 30 dwellings or more only)***	

Major non-residential	500sqm or more GIA	• Mayor's zero carbon target applies (i.e. offset any carbon shortfall at £300/tCO2)
		• Minimum improvement against Part L 2021:
		  ○ Office: 25%
		  ○ School: 35%
		  ○ Industrial: 35%
		  ○ Hotel: 10%
		  ○ Other: 35%
		• Minimum 15% improvement against Part L 2021 through energy
			• Standalone Energy Statement in line with GLA's Guidance
			• Dynamic overheating modelling outputs
			• Plans showing the location of the proposed heating system, any renewable technologies and any thermal and/ or battery storage
			• CIBSE TM54, PHPP or equivalent outputs to confirm the Energy Use Intensity
				• 'As Built' BRUKL outputs
				• Updated GLA carbon reporting spreadsheet based on the 'As Built' BRUKL outputs
				• MCS certificates and photos of all installed renewable energy technologies (e.g. solar PV, heat pumps, etc.)
				• BREEAM Certificate ***(for 1,000sqm or more only)***
				• Updated Whole Life Carbon Assessment ***(for 1,000sqm or more only)***

Development Type	Threshold	Minimum targets	Evidence requirements at Planning Stage	Pre-occupation evidence requirements
		efficiency alone (Mayor's Be Lean target) • Space Heating Demand Target from 1st January 2025: <15 kWh/m2/yr • Mayor's Be Seen policy applies • BREEAM Excellent ***(for 1,000sqm or more only)*** • Whole Life Carbon Assessment ***(for 1,000sqm or more only)***	• 'As Designed' BRUKL outputs for all stages of the energy hierarchy[10] • GLA carbon emissions reporting spreadsheet – template available here • BREEAM Pre-Assessment ***(for 1,000sqm or more only)*** • Whole Life Carbon Assessment ***(for 1,000sqm or more only)***	
Minor non-residential	<500sqm GIA	• No specific targets beyond current Building Regulations compliance	• N/A	• N/A

[10] The Simplified Building Energy Model (SBEM) tool is currently used to determine CO2 emission rates for new non-residential buildings in compliance with Part L of the Building Regulations (England and Wales). A design stage SBEM assessment should be completed before the construction starts, and then an as-built SBEM when construction is completed, which includes the results of air permeability tests and demonstrates the building has been constructed in accordance with the design. The outputs of these assessment are referred to as a Building Regulation UK Part L (BRUKL) reports. https://www.bre.co.uk/page.jsp?id=706

5. DETAILED REQUIREMENTS

5.1 *Carbon Reduction on Site*

5.1.1 *Maximising Carbon Savings at all Stages of the Mayor's Energy Hierarchy*

5.1.1.1 **All development** proposals must make the fullest contribution to minimising carbon dioxide emissions on-site in accordance with the Mayor's energy hierarchy set out below towards achieving zero carbon emissions on-site. This advocates a 'fabric first' approach by maximising energy efficiency before seeking to address any shortfall in performance with renewable technologies.

i) Be Lean – use less energy and manage demand during operation.

ii) Be Clean – exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly through communal and district heat networks when appropriate.

iii) Be Green – maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.

iv) Be Seen - monitor, verify and report on energy performance during the operation of the scheme.

5.1.1.2 For **major schemes**, the Energy Statement should: summarise all the measures proposed at each stage of the energy hierarchy; and provide a breakdown of the anticipated carbon dioxide emissions in tonnes and the percentage reduction in regulated carbon dioxide emissions achieved at each level of the energy hierarchy.

5.1.1.3 For **minor schemes resulting in the creation of 1-9 dwellings**, the Energy Assessment (using Merton's Energy Assessment Template) should: summarise the measures proposed at all stages of the energy hierarchy; and confirm the anticipated carbon dioxide emissions in tonnes and the percentage reduction in regulated carbon dioxide emissions at the Be Green stage only.

5.1.1.4 Table 2 above sets out the minimum on-site carbon savings against Part L that must be achieved depending on the type and scale of development. Please note, applicants will be expected to demonstrate that on-site savings have been maximised at all stages of the energy hierarchy whether the relevant minimum targets have already been achieved or not.

5.1.1.5 Applicants will be expected to adopt the highest possible standards of fabric and ventilation and heating plant to maximise carbon savings on site. Any development that fails to achieve the necessary on-site performance targets or to demonstrate that carbon savings have been maximised, must provide robust evidence and justification as to why the scheme is unable to comply. Where the applicant contends the policy requirements in relation to the viability of a particular proposal, the onus would lie with the applicant to demonstrate what can viably be achieved through the submission of a viability assessment. We may seek payments from applications for the cost of independent viability assessment(s).

5.1.2 *The Mayor's Zero Carbon Target and Carbon Offsetting*

5.1.2.1 All development should look to maximise carbon savings on site towards the Mayor's Zero Carbon Target which represents a 100% improvement against the Part L 2021 baseline.

5.1.2.2 All **new build development** resulting in the creation of 1 or more dwellings or 500sqm or more non-residential GIA must meet the Mayor's Zero Carbon Target.

5.1.2.3 Once the applicant has demonstrated that carbon savings have been maximised at all stages of the energy hierarchy beyond the minimum requirements, any remaining regulated carbon emissions (up to 100% improvement on Part L 2021) will need to be offset. These can be offset either through a cash in lieu contribution to Merton's carbon offset fund or off-site provided an alternative proposal which offers Additionality is identified, that delivery is certain, and subject to agreement with the council.

5.1.2.4 Cash in lieu contributions will only be accepted where the Council is satisfied that on-site savings have been maximised and no further savings can be achieved on-site. Provisional carbon offset contributions will be secured at planning stage via Section 106 agreement[11] based on the as designed calculations. The final carbon offset contributions will be confirmed and payable prior to occupation following the review of the development's as built performance in order to discharge the pre-occupation planning condition. For phased schemes the Council will look to review the carbon offset requirements at appropriate stages of development when as-built calculations are available, and clawback additional sums payable following the conclusion of those reviews.

5.1.2.5 Each tonne of carbon dioxide shortfall will be offset at a cost of £300[12] per tonne for a period of 30 years, as detailed in the below formula:

Carbon shortfall (tonnes of CO2e) X £300 per tonne CO2e X 30 years = Carbon Offset Payment

5.1.2.6 The price for offsetting carbon is regularly reviewed. Any changes to Merton's suggested carbon offset price will be updated in future guidance.

5.1.2.7 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.

5.1.2.8 Where an applicant is proposing to directly offset any shortfall in carbon dioxide emissions from the proposed development by installing carbon dioxide saving measures off-site (e.g. photovoltaic panels on a local school), this will need to comply with the GLA's Carbon Offset Fund Guidance, and any relevant local guidance. Any offsite proposals will need to be agreed with the council's Climate Change team and confirmed in the Energy Statement.

[11] For minor new build residential schemes, the Council will publish simple template Section 106 agreements on its website which will be used to secure the sum total carbon offset contribution payable.
[12] See Policy CC2.2 of Merton's Local Plan for more details on this figure.

5.1.2.9 **Any development involving the change of use, conversion or refurbishment of an existing building** will not be required to offset the carbon shortfall. This is to encourage the refurbishment of existing buildings and disincentivize the demolition of retrofittable buildings, to minimise embodied carbon emissions from development. However, all development will be expected to maximise carbon savings on site towards the Mayor's Zero Carbon Target.

5.2 *Calculating the Improvement against Part L*

5.2.1.1 All development resulting in the creation of 1 or more new dwellings or 500sqm non-residential GIA, will need to calculate the carbon savings at the appropriate stages of the energy hierarchy and provide supporting SAP and BRUKL outputs for any residential and non-residential elements respectively.

5.2.1.2 For **minor residential schemes resulting in the creation of 1-9 dwellings** this includes: the Baseline and Be Green stages. For **major residential and non-residential schemes** this is includes: the Baseline, Be Lean, Be Clean and Be Green stages.

5.2.2 *New build development*

5.2.2.1 **All new build development** should be assessed against the relevant notional design specifications set out in Part L1 (residential) or Part L2 (non-residential) of Building Regulations.

5.2.3 *Minor new build residential development (1-9 dwellings)*

5.2.3.1 The applicant should model the final proposed building specification, including all energy efficiency measures, low carbon heating and renewable energy technologies, against Part L1 2021, to generate the 'As Designed' SAP output. The baseline CO2 emissions should be calculated using the Target Emissions Rate (TER) on the 'As Designed SAP outputs. The as designed emissions should be calculated using the Dwelling Emissions Rate (DER) on the 'As Designed' SAP outputs.

5.2.4 *Major new build development*

5.2.4.1 All major development schemes of 10 or more residential units and 500sqm or more non-residential GIA are required to complete and provide a copy of the GLA's Carbon Reporting Spreadsheet (in Excel format) to confirm the Be Lean, Be Clean and Be Green emissions provided in the Energy Statement. In line with the GLA's Energy Planning Guidance and Technical Frequently Asked Questions document, the following methodology should be used when completing the GLA's Carbon Reporting Spreadsheet.

5.2.4.2 Baseline

STEP 1 - Model the final proposed building specification (including all proposed measures from all stages of the Mayor's energy hierarchy) to obtain the TER and DER (Part L1)/BER (Part L2) results.

STEP 2 - Add the TER outputted in Step 1 into the 'Part L Outputs' tab under the baseline column (column E) of the GLA Carbon Emissions Reporting spreadsheet from the final proposed building specification.

STEP 3 - If applicable, add the TER PV output into (Column F) using the following format: Part L1 (residential), use the kgCO2/year figure taken from the SAP full calculation worksheets (Rows 269 or 380). Part L2 (non-residential), use the kWh/m2/year figure taken from the BRUKL document.

5.2.4.3 Be Lean

STEP 4 - Model the 'Be Lean' specification and add DER/BER results into the 'Be Lean' results column (Column G). See section 7 of the 2022 GLA Energy Assessment Guidance which sets out what measures are to be included in the 'Be Lean' model. Please also note Paragraphs 7.9 - 7.11 of the GLA's Energy Planning Guidance for assumptions on heating and hot water systems. Note that where solar PV is included in the baseline tab this will automatically be added into the 'Be Lean' and 'Be Clean' columns.

5.2.4.4 Be Clean

STEP 5 - Model the 'Be Clean' specification in Part L 2021 and input DER/BER results into the 'Be Clean' column (Column H). See section 9 of the GLA's Energy Planning Guidance which sets out what measures are to be included in the 'Be Clean' model.

5.2.4.5 Be Green

STEP 6 - Input DER/BER results from Step 1 into the 'Be Green' column (Column I). See section 10 of the guidance which sets out what measures are to be included in the 'Be Green' model.

5.2.5 *Change of use, conversion and refurbishment of existing buildings*

5.2.5.1 For development proposals consisting of the **refurbishment, change of use or conversion of an existing building**, the applicant will need to clearly set out how the different elements of the development have been assessed against Part L (i.e. existing vs new thermal elements).

5.2.5.2 For refurbishment works where the existing buildings will be gutted and redone, the development should comply with the requirements for new build developments as set out in section 5.2.2.

5.2.5.3 In cases where existing buildings cannot achieve the new build standards, existing elements should be assessed against the notional specifications for existing buildings set out in Appendix 3 of the GLA's Energy Planning Guidance, which are based on Part L1 and L2. This will provide a consistent baseline across all refurbishments and clearly distinguish the improvements in CO2 emissions that are over and above what would ordinarily be undertaken through meeting Building Regulation requirements.

5.2.5.4 There will be instances where the energy performance of existing elements is more efficient than the Notional Specification for Existing Buildings. In this case the actual energy performance of the building element should be used rather than the Notional Specification for Existing Buildings with supporting evidence i.e. a building condition survey, Energy Performance Certificate (EPC) conventions etc.

5.2.5.5 For change of use applications, the Part L model for estimating CO2 emissions should use the same building Use Class for the baseline as for the proposed development. In some circumstances, most frequently in change of use applications, it is possible that the existing building does not include certain building elements that should be included in the baseline. In this case it is expected that the estimate of the performance of the building element would meet the notional specification for existing buildings shown in Appendix 3 of the GLA's Energy Planning Guidance.

5.2.5.6 Any new thermal elements within an existing building should be assessed against the specification set out in Table 4.2 of Part L1 for residential schemes and Table 4.1 of Part L2 for non-residential schemes. The energy statement should confirm what specifications have been used to determine the baseline emissions for any new and existing thermal elements.

5.2.5.7 Once the baseline has been established, applicants will be expected to demonstrate that they have incorporated improvement measures that maximise performance at each stage of the energy hierarchy. The DER/ BER of the refurbished building should be determined following improvements at the relevant stages of the energy hierarchy (depending on the scale of development as set out in Section 5.1 above) using Building Regulations compliance software.

5.2.5.8 The performance values used to calculate the CO2 emission improvements should also be outlined. In addition, confirmation should be provided of the source of the assumptions for the improvements in building elements or services, including specific U-value calculations for proposed build-ups, manufacturer's datasheet etc.

5.2.6 *Major multi-residential schemes*

5.2.6.1 All major development proposals that include multiple residential units must include a clear explanation of the dwellings that have been modelled for both energy assessments and overheating assessments. If the applicant proposes to use a sub-sample of units, the emissions for the development as a whole must be calculated using a representative sample of the dwelling types contained within the development (i.e. ground floor, mid floor, top floor units), and a clear explanation of the approach adopted must be provided as part of the planning application.

5.2.6.2 The Energy Statement will need to clearly set out how the emissions for the sample units have been scaled up to calculate the emissions for the development as a whole (using the GLA's Carbon Reporting Spreadsheet). The SAP outputs for all the sample units will need to be provided.

5.2.6.3 Minor multi-residential schemes of 9 or less units are expected to model all the residential units.

5.3 *Minimising Energy Use (Be Lean & Be Seen)*

5.3.1.1 The Mayor's energy hierarchy advocates a 'fabric first' approach to maximising energy efficiency before seeking to address any shortfall in performance through the use of renewable technologies.

5.3.1.2 The fabric energy efficiency of a building is affected by the thickness of insulation as well as the area of external envelope and its complexity. Building form therefore has a direct influence on fabric energy efficiency and should be considered alongside the detailed specification of fabric, materials and systems. Development should prioritise passive design measures, including optimising orientation, site layout, form factor[13], natural ventilation and lighting, thermal mass, glazing ratios and solar shading[14].

5.3.1.3 Table 2 above sets out the minimum energy and fabric efficiency targets for different development types and paragraphs 5.3.2 – 5.3.5 below provide guidance for each of these standards. Any development that fails to achieve the necessary on-site fabric efficiency performance and emissions reductions targets must provide robust evidence and justification as to why the scheme is unable to comply.

5.3.1.4 The Energy Statement (for major schemes) and Energy Assessment Template (for minor residential schemes) must set out the demand reduction measures which will be put in place to achieve these targets. Measures typically include both architectural and building fabric measures (passive design measures such as optimising orientation, natural ventilation and lighting, thermal mass and solar shading) and energy efficient services (active design measures such as high efficiency lighting, efficient mechanical ventilation with heat recovery and waste water heat recovery). Demand reduction features should be introduced at the earliest design stage of a development.

5.3.2 *The Mayor's energy efficiency target*

5.3.2.1 All major development resulting in the creation of 10 or more dwellings or 500sqm or more non-residential GIA will need to demonstrate compliance with the Mayor's minimum energy efficiency targets:

5.3.2.2 Residential developments should achieve at least a 10% improvement against Part L through energy efficiency alone (i.e. at the Be Lean stage of the energy hierarchy);

5.3.2.3 Non-residential developments should achieve at least a 15% improvement against Part L through energy efficiency alone (i.e. at the Be Lean stage of the energy hierarchy).

5.3.2.4 These targets are applicable to major new build development, change of use, conversions and major refurbishments.

[13] The ratio of external surface area to the internal floor area - the greater the ratio, the less efficient the building and the greater the energy demand.
[14] LETI (2020) Climate Emergency Design Guide (https://www.leti.london/cedg).

5.3.3 *Fabric Energy Efficiency Standards*

5.3.3.1 Improved fabric energy efficiency will ensure that buildings use low and zero carbon energy in the most efficient way. As well as reducing greenhouse gas emissions, using ultra-high levels of fabric efficiency alongside heat pumps and Mechanical Ventilation and Heat Recovery (MVHR) systems can help reduce annual and peak electricity demand, provide comfort and health benefits to occupants, and reduce energy bills. This will also help 'future proof' developments and reduce the likelihood of buildings needing difficult and expensive refurbishment at a later date.

5.3.3.2 The Fabric Energy Efficiency Standard (FEES), measured in kWh/m2/yr and available through the Government's Standard Assessment Procedure (SAP), covers space heating and space cooling energy demand in residential buildings. The FEES allows design flexibility, takes into account building form, promotes innovation and delivers a specific level of dwelling performance.

5.3.3.3 **All development resulting in the creation of 1 or more dwellings** will need to report the baseline and proposed fabric energy efficiency for each unit. For new build developments, these should be based on the Target Fabric Energy Efficiency (TFEE) and the Dwelling Fabric Energy Efficiency (DFEE) from the 'As Designed' SAP outputs. For dwellings resulting from the conversion or change of use of an existing building, these should be based on the DFEE from the baseline SAP outputs and the DFEE from the 'As Designed' SAP outputs.

5.3.3.4 Merton requires **all new build residential development** to comply with the following Fabric Energy Efficiency Standard (FEES) – proposals should aim to exceed these targets wherever possible:

i. Flats and mid-terrace houses: <39 kW/m2/yr

ii. Semi-detached, end of terrace and detached houses: <46 kWh/m2/yr

5.3.3.5 These targets align with the Zero Carbon Hub's Full FEES. Any development that fails to achieve the necessary on-site fabric efficiency performance and emissions reductions targets must provide robust evidence and justification as to why the scheme is unable to comply.

5.3.4 *Space Heating Demand*

5.3.4.1 Space Heating Demand is the active heat input required to heat a building. It is influenced by factors such as passive design, fabric performance, internal gains, and heat recovery on the ventilation system[15]. It is independent of the heating system type and efficiency which meets that demand. The Space Heating Demand can be found on the SAP and BRUKL outputs.

[15] CIBSE-LETI-FAQ-Rev1.pptx

5.3.4.2 In order to improve our understanding of energy demand and drive more energy efficient design of buildings, Merton Council requires **all developments resulting in the creation of 1 or more dwellings or 500sqm or more non-residential GIA** to report their anticipated Space Heating Demand, at planning and pre-occupation stage[16]. All residential and non-residential schemes should aim to achieve a Space Heating Demand of 15 kWh/m^2/yr.

5.3.5 *Energy Use Intensity*

5.3.5.1 Energy Use Intensity (EUI) is an annual measure of total energy consumed in a building which can be estimated at design stage and easily monitored in-use as energy bills are based on kWh of energy used by the building. It includes regulated (heating, hot water, cooling, ventilation and lighting) and unregulated (plug loads and equipment) energy.

5.3.5.2 In order to improve our understanding of energy demand and drive more energy efficient design of buildings, Merton Council requires **all developments resulting in the creation of 1 or more dwellings or 500sqm or more non-residential GIA** to report their anticipated EUI, at planning and pre-occupation stage.

5.3.5.3 **All major developments** will need to calculate the anticipated regulated and unregulated energy demand, and combined EUI, using the Chartered Institute of Building Service Engineers (CIBSE) TM54 methodology, Passive House Planning Package (PHPP) methodology or equivalent, or successor methodologies[17]. Applicants should also confirm the anticipated energy demand (in MWh/year) for each building use. Major developments are also required to monitor and report actual operational energy performance for at least five years post-occupancy in line with policy SI 2 in the London Plan 2021 and the GLA's 'Be Seen' Energy Monitoring Guidance 2020, or equivalent.

5.3.5.4 **Minor residential schemes resulting in the creation of one or more dwellings** will need to estimate the expected regulated and unregulated energy demand, and combined EUI[18], for all dwellings using the Part L methodology or equivalent, or successor methodologies. As set out in Merton's Energy Assessment Template, the predicted regulated energy use for minor residential schemes should be based on the 'As Designed' SAP outputs using the Part L methodology[19]. The applicant will also need to provide an estimate of the predicted unregulated energy demand in order to provide a more accurate estimate of the building's total energy demand. The applicant will need to provide any assumptions regarding the unregulated energy use in the energy statement. The same methodology will need to be used at the 'As Built' stage to confirm the predicted energy use for the 'As Built' development. Please see the Guidance Tab of Merton's Energy Assessment Template for Minor Schemes for more details.

---

[16] The predicted Space Heating Demand figure should be based on line 99 of the DER worksheet.

[17] These methodologies enable more accurate determination of the anticipated energy demand and carbon emissions by considering factors which impact on a building's energy performance including expected occupancy and use, and calculate unregulated loads. These methodologies can also be used to verify the performance of the constructed building in operation, which is not possible with Building Regulation Part L percentage reductions.

[18] The Total Predicted Annual Energy Use is calculated by adding up the Predicted Regulated and Unregulated Annual Energy Use. The Energy Use Intensity is then calculated by dividing the Total Predicted Annual Energy Use by the floor area for a given unit.

[19] The Predicted Regulated Annual Energy Use of a given unit is calculated by adding up lines 467, 472, 478 and 479 of the DER worksheet for that unit.

5.3.5.5 Merton Council expects **all new build development** to make reasonable endeavours to achieve the following EUI and space heating demand targets to future-proof their development and demonstrate that it has made the fullest contribution to minimising energy use in according with Policy CC2.3:

i. Residential – reducing EUI to 35 kWh/m2/yr

ii. Student or key worker accommodation, care homes, extra care homes - reducing EUI to 35 kWh/m2/yr

iii. Warehouses and light industrial units – reducing EUI to 35 kWh/m2/yr

iv. Schools – reducing EUI to 65 kWh/m2/yr

v. Offices, Retail, Higher Education teaching facilities, GP surgeries – reducing EUI to 70 kWh/m2/yr

vi. Hotels - reducing EUI to 160 kWh/m2/yr

5.3.5.6 Developments are also encouraged to adopt recognised and successful fabric first approaches such as Passivhaus[20] which is seen as the most stringent low 'energy in use' standard and is consistent with LETI's Climate Emergency Design Guide[21]. This standard also relies on a more accurate energy demand assessment methodology using the Passive House Planning Package (PHPP).

5.4 *Low Carbon Energy (Be Clean & Be Green)*

5.4.1.1 **All development** will need to provide an overview in the energy statement of the proposed heating strategy and renewable energy technologies, and how the development will ensure efficient generation of low carbon energy.

5.4.2 *Heating Strategy*

5.4.2.1 **All development** will need to demonstrate how the proposal has ensured efficient generation of low carbon energy on site, and specify what technologies will provide space heating and hot water for the development and if a communal heating system will be used.

5.4.2.2 Given the drive for decarbonisation, applicants will be expected to use a low carbon heating system (e.g. efficient heat pumps[22]) to avoid the need for expensive retrofit before 2050. Alongside good fabric efficiency, an efficient electric heating system such as a heat pump should offer more carbon savings whilst future-proofing the development.

[20] Passivhaus Trust – What is Passivhaus? https://www.passivhaustrust.org.uk/what_is_passivhaus.php
[21] LETI (2020) Climate Emergency Design Guide (https://www.leti.london/cedg).
[22] A heat pump uses electricity to increase the temperature of a low temperature heat source (e.g. air, water or ground).

5.4.2.3 Any development that proposes to use gas-powered systems will need to provide robust justification to satisfy Merton Council that low or zero carbon systems cannot be used, to set out how the development has been future-proofed to achieve net-zero carbon by 2050, and to demonstrate that the gas-powered system is credibly being used as a stepping stone towards this objective.

Heat Pumps

5.4.2.4 Heat pumps are likely to play a growing role in the delivery of low carbon heat in London, as part of both low carbon heat networks and individual building heating systems. Well designed, installed and maintained heat pumps can be very energy efficient and a way of harnessing waste heat. Heat pumps typically achieve efficiencies between 260 and 320%, whereas direct electric systems and gas boilers typically operate between 80 and 100% efficiency. In addition, heat pumps use low flow temperature and large emitters to spread heating throughout the day, resulting in reduced peak heating demand compared to gas boilers and direct electric systems which operate when heat is desired.

5.4.2.5 Heat pumps are already a lower carbon system than gas boilers, and the carbon factor for grid electricity is expected to decrease further as more renewable energy is produced, while the carbon content of gas is likely to remain the same unless low carbon gasses are introduced to the gas grid. Heat pumps also provide air quality benefits given that they do not produce any direct emissions on site. Heat pumps also have the benefit of being smart grid ready which could enable demand-side response.

5.4.2.6 However, inappropriate design, installation or operation of heat pumps can result in high energy costs and increased peak electricity demand. In order to mitigate impacts on the electricity grid and operating costs, electrical heating systems must be highly efficient and paired with high fabric efficiency; high performance building fabric is critical to enable the electrification of heat while keeping costs low for future residents. All new development should also be designed to harness heat at low temperatures given that heat pumps tend to operate significantly more efficiently at lower temperatures and waste heat sources are also typically at lower temperatures.

5.4.2.7 **Where heat pumps are proposed**, developments will need to demonstrate that these are good quality and that efficiencies have been maximised through the proposed technology and heating system. A high specification of energy efficiency (coefficient of performance) will be expected to ensure the system works efficiently and reduces running costs and peak electricity demand. UKPN has indicated that they will actively plan for additional demand due to heat pumps, provided they have early visibility of any deployment plans, and are notified of installations on their networks.

5.4.2.8 Applicants proposing to use **refrigerant-based systems** will also need to demonstrate that they have adopted best practice to minimise whole-life carbon emissions associated with refrigerant leakage and end of life recovery. Applicants should refer to best practice guidance early in the design process to make well-informed decisions in the design of refrigerant-based systems[23].

[23] Elementa (2020) Refrigerants + Environmental Impacts – A Best Practice Guide (Refrigerants & Environmental Impacts: A Best Practice Guide - Elementa Consulting).

5.4.2.9 Where a heat pump is proposed, the following information will need to be provided in the energy statement:

i. Details of the proposed heat pump system (i.e. type of heat pump, capacity, model reference, etc.);

ii. Details of the Seasonal Coefficient of Performance (SCOP), Seasonal Energy Efficiency ratio (SEER) and Seasonal Performance Factor (SPF). Details of the assumptions should be included in the energy assessment, including manufacturer datasheets;

iii. Whether any additional technology is required for top up or during peak loads (e.g. confirming the approach to generating hot water and the integration of thermal storage) and how this has been incorporated into the energy modelling assumptions;

iv. Plans showing the proposed location of the heat pump system and associated condenser units. Where condenser units are installed internally there should be adequate access to air flow.

v. An estimate of the heating and/or cooling energy the heat pump would provide to the development and the electricity the heat pump would require for this purpose;

vi. An estimate of the expected heating costs to occupants, demonstrating that the costs have been minimised through energy efficient design;

vii. Confirmation that end-users will be supplied with information to control and operate the system;

viii. For Air Source Heat Pumps (ASHPs), evidence that the heat pump complies with the minimum performance standards as set out in the Enhanced Capital Allowances (ECA) product criteria for the relevant heat pump technology;

ix. For ASHPs, evidence that the heat pump complies with other relevant issues as outlined in the Microgeneration Certification Scheme Heat Pump Product Certification Requirements document at: http://www.microgenerationcertification.org;

x. For Ground Source Heat Pumps (GSHPs), confirmation that the site geology is suitable for the installation of the proposed GSHP;

xi. For GSHPs, evidence of the likelihood of a permit being granted by the Environment Agency;

xii. Clarification as to how the heat pump will operate alongside any other heating/cooling technologies being specified for the development (e.g. how the heat pump will operate alongside communal heating systems, and/or solar thermal, etc. if they are also being proposed by the applicant);

xiii. For communal heating systems, the expected heat source temperature and the heat distribution system temperature with an explanation of how the difference will be minimised to ensure the system runs efficiently. The energy statement should clarify how heat losses have been factored into the energy modelling; AND

xiv. For major schemes, a commitment to monitor the performance of the heat pump system post-construction to ensure it is achieving the expected performance approved during planning;

xv. For developments in Heat Network Priority Areas using communal heat pump systems, the diagram should include the pipework which will be installed for future connection to a heat network.

5.4.2.10 Other solutions, such as hybrid heat pumps may also have a role to play in existing buildings on the gas grid. These may be appropriate in certain circumstances, where the majority of heat demand would be met by heat pump and peak demand met by hydrogen, biomethane or some natural gas. This will be assessed on a case-by-case basis.

Direct Electric Heating

5.4.2.11 Proposals using direct electric heat will only be deemed acceptable if the applicant can demonstrate, through Passivhaus certification or equivalent, that energy use has been significantly reduced by achieving ultra-high fabric efficiency [12]. This is to ensure that direct electric heating systems do not result in high energy bills for future residents, and to mitigate the risk of fuel poverty.

Decentralised Energy

5.4.2.12 **All major development proposals** will be expected to comply with London Plan policies on decentralised energy networks and decentralised energy. All major schemes within any identified heat network opportunity areas should explore and utilise decentralised energy, subject to technical and financial viability. Heat-mapping and feasibility studies undertaken by AECOM in 2017[24]/2018[25] identified two district heat network opportunity areas in Merton linked to two major regeneration schemes: Morden town centre and South Wimbledon (High Path estate). Further information on district heat potential is available via the GLA's interactive London Heat Map.

5.4.2.13 All proposals for connection to communal heating systems will need to demonstrate compliance with all Merton's climate change policies, that heat losses have been minimised, that the cost to occupier and risk of overheating have been mitigated, and that the development will be future-proofed to be net-zero carbon by 2050. Given that the carbon savings from gas engine combined heat and power (CHP) systems are declining due to the decarbonisation of the national electricity grid, and increasing evidence of adverse air quality impacts, applicants will be required to use low and zero carbon heat sources and existing heat networks will need to be decarbonised.

5.4.2.14 Any development proposing to utilise large scale decentralised energy, whether through the use of a communal heat pump or by connection to a district heat network, will need to demonstrate that they have referred to and adhered to the technical design principles and concepts outlined in the GLA's London Heat Network Manual II, to enable connection to a current or future district heating network.

[24] AECOM (2017) District Heating Feasibility – Phase 1: Heat Mapping and Energy Masterplanning (https://www.merton.gov.uk/assets/Documents/www2/merton_heatmapping_study_fullreport.pdf).
[25] AECOM (2018) District Heating Feasibility – Phase 2: Developments and Financial Modelling (https://www.merton.gov.uk/assets/Documents/www2/Merton%20DH%20Financial%20Modelling%20Report%20FINAL.pdf)

5.4.2.15 The London Heat Network Manual II provides guidance for applicants and designers and should be consulted on matters associated with:

i. information on designing developments to allow connection to District Heat Networks (DHNs); and

ii. key design considerations for the generation, transmission, and consumption equipment for DHNs such as:

- various heat sources including hybrid systems;
- primary and secondary heat distribution network design and key characteristics (e.g., flow and return temperatures) to optimise operation and reduce losses and overheating risk;
- the approach to be taken when specifying pipework insulation;
- and thermal storage provision.

5.4.2.16 The following evidence will need to be provided:

i. Information on the proposed heating system, including datasheets and plans confirming the proposed heating system specification;

ii. A scale drawing of the proposed plant room and layout, including space requirements for heat exchangers, in accordance with the minimum plant room specification requirements detailed in Table 6 'General indicative space requirements for heat exchange substation equipment for building plant rooms' in the London Heat Network Manual II;

iii. Information on the proposed heat distribution system and its operating temperatures, as well as any heat sources or sinks. Developments will need to demonstrate how return temperatures have been minimised.

iv. Confirmation of the proposed heat network parameters in line with Table 8 'Heat network parameters' in the London Heat Network Manual II.

5.4.3 *Maximising renewable energy generation*

5.4.3.1 **All development** will need to demonstrate how the proposal has made the best potential use of roof space to maximise local renewable and low carbon electricity and/or heat generation whilst delivering multi-functional benefits (e.g. co-location of renewable energy and green, brown or blue infrastructure). Applicants will need to provide roof plans to demonstrate how the space is being utilised in an efficient manner, including sizing and co-location of renewable energy and low carbon heating plant, access for maintenance and appropriate screening for plants.

5.4.3.2 Applicants will need to demonstrate that on-site renewable energy generation has been maximised and that 100% of energy demand is met through on-site renewable energy generation wherever possible. Applicants will need to compare their anticipated Energy Use Intensity (EUI) to the amount of renewable energy expected to be generated on-site annually, and these will be expected to match where practicable.

5.4.3.3 Applicants will need to provide all relevant supplementary evidence requirements for any proposed technologies. Any development proposing the use of solar PV must provide a roof plan showing the proposed layout of solar PV, and confirm the roof area proposed for solar PV, the proposed solar PV capacity, and an estimate of the electricity that the photovoltaic modules will generate.

5.4.3.4 Development proposals in conservation areas or involving heritage assets, need to provide careful consideration of how sustainable energy measures may be incorporated without adversely impacting on the significance, character, function and preservation of a specific area or asset, in accordance with the policies on design in this Local Plan. In such circumstances, development proposals should not presume that a viable sustainable solution cannot be provided. Early engagement with Merton Council for the consideration of appropriate solutions is encouraged.

5.4.4 *Demand-side response*

5.4.4.1 Demand Side Flexibility refers to the ability of a system to reduce or increase energy consumption for a period of time in response to an external driver (e.g. energy price or carbon signal change, grid availability). This provides the capability to lower developer and occupier costs in the context of predicted future energy cost rises. It can also enable some buildings to earn income by providing grid and network support services. Reducing peak energy consumption could also allow a developer to negotiate lower connection fees to the electricity grid Distribution Network Operator (DNO). Similarly, buildings that are enabled to modify when they draw energy from networks in real time through the use of Demand Side Management (DSM) and storage systems increasingly have the potential to take advantage of dynamic pricing in the electricity market, providing opportunities to reduce occupants' energy bills.

5.4.4.2 **All development** should demonstrate how demand-side response has been considered and maximised alongside renewable energy generation. Energy storage (thermal and battery storage) and flexibility will need to be maximised to reduce energy use and pressure on the national grid at peak times. Advancements in energy storage technology have meant that energy storage is now practicable at individual residential level, and costs are predicted to continue to fall.

5.4.4.3 Specifically, applicants should consider the installation of smart meters, minimising peak energy demand and promoting short term energy storage. The energy statement should specify the capacity of any proposed energy storage (thermal and battery).

5.4.4.4 Major schemes should report the calculations of peak demands for the entire development, demonstrate engagement with DNOs and district heating operators to establish the local capacity (including consideration given to future phases) and set out proposals for flexibility to reduce peak demand across the site in line with Section 11 of the GLA's Energy Planning Guidance.

5.5 *Overheating*

5.5.1.1 **All development** will need to provide an overview of the proposed ventilation strategy and demonstrate how the risk of overheating has been minimised in accordance with the following cooling hierarchy:

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

ii) Minimise internal heat generation through energy efficient design

iii) Manage the heat within buildings through exposed internal thermal mass and high ceilings

iv) Provide passive ventilation

v) Provide mechanical ventilation

vi) Provide active cooling systems

5.5.1.2 **All development** proposals will need to be designed to mitigate the impacts of overheating by incorporating passive cooling measures such as passive ventilation and internal and external shading for example, or mechanical measures such as Mechanical Ventilation Heat Recovery (MVHR) where appropriate. Where Mechanical Ventilation is proposed, the applicant will need to confirm the specification and efficiency of the proposed ventilation system. The applicant will also need to demonstrate how air quality, security and noise have been considered in developing the proposed ventilation strategy.

5.5.1.3 Single aspect dwellings should be avoided given that these are more difficult to ventilate naturally and are more likely to overheat. The design of single aspect dwellings must demonstrate that all habitable rooms and the kitchen are provided with adequate passive ventilation, privacy and daylight, and that the orientation enhances amenity, including views. It must also demonstrate how they will avoid overheating without reliance on energy intensive mechanical cooling systems.

5.5.1.4 **All development resulting in the creation of one or more new dwellings** will need to complete and submit the Good Homes Alliance Overheating Risk Tool[26] at the planning stage. **All major development** will need to carry out dynamic overheating modelling in line with the GLA's Energy Assessment Guidance. Dynamic overheating modelling may also be required for **minor residential schemes resulting in the creation of 1-9 dwellings** depending on the outcome of the Good Homes Alliance Overheating Risk Tool. If dynamic overheating modelling is required by the Good Homes Alliance Overheating Risk Tool, this should be carried out in line with the GLA's Energy Assessment Guidance.

5.5.1.5 If dynamic overheating modelling is required please submit the original overheating modelling results and confirm what measures will be implemented to mitigate the risk of overheating.

[26] Good Homes Alliance Overheating in New Homes Guidance (2019) - https://goodhomes.org.uk/wp-content/uploads/2019/07/GHA-Overheating-in-New-Homes-Tool-and-Guidance.pdf

5.6 *Whole Life Carbon and the Circular Economy*

5.6.1.1 All development should:

i. Prioritise the reuse and retrofit of existing buildings wherever possible before considering the design of new buildings.

ii. Be designed for durability and flexibility as well as easy disassembly and reuse to minimise waste during the 'in-use' and 'end of life' phases of the development. Building shape and form should be designed to minimise embodied carbon and limit the need for repair and replacement.

iii. Ensure resource efficiency and reduce embodied carbon emissions by sourcing and prioritising materials that can easily be maintained, repaired and renewed across the development lifetime.

iv. Minimise the environmental impact of materials by specifying sustainably-sourced, low impact and re-used or recycled materials; this should include identifying opportunities for the retention and reuse of existing materials on site (e.g. re-using demolition material on site). Materials should be locally-sourced wherever possible to minimise transport emissions.

5.6.1.2 **All development resulting in the creation of 30 or more dwellings or 1,000sqm or more non-residential GIA** will be required to undertake a Whole Life Carbon Assessment (WLCA) in line with the GLA's guidance, and demonstrate that whole life carbon savings have been maximised.

5.6.1.3 All **development proposing to demolish and rebuild a single dwelling** will be required to undertake a Whole Life Carbon Assessment in line with Merton's Whole Life Carbon Assessment Guidance[27].

5.6.1.4 Any development which is not proposing to demolish and rebuild can still provide a WLCA and is encouraged to consider embodied carbon early in the design process.

5.6.1.5 **Circular Economy Statements** that have been prepared in accordance with the GLA's guidance[28] should be submitted with **all applications that are referable to the Mayor of London**.

5.7 *Water Use*

5.7.1.1 **All development resulting in the creation of 1 or more dwellings** will need to demonstrate that the development achieves internal water usage rates of less than 105 litres per person per day by submitting water use calculations and specifications for any proposed water fittings.

[27] Available via: https://www.merton.gov.uk/planning-and-buildings/planning/local-plan/newlocalplan

5.7.1.2 **All major development and high water-use developments** will need to demonstrate that mains water use has been minimised through the use of water saving measures such as rainwater harvesting and greywater recycling including retrofitting to reduce mains water consumption. The energy statement should confirm the location, size and details of any rainwater and grey-water collection systems provided.

5.7.1.3 **All non-residential development of 500sqm or more GIA** should achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent. This equates to achieving at least a 12.5% improvement over the defined baseline performance standard.

5.8 *BREEAM*

5.8.1.1 **All development of 1,000sqm or more non-residential GIA** (new build[29], conversions and change of use[30] to non-residential uses) will need to achieve BREEAM 'Excellent' standard or equivalent.

5.8.1.2 **All conversions and change of use developments resulting in the creation of 10 or more new dwellings** will need to achieve BREEAM 'Excellent' standard or equivalent[31].

5.8.1.3 Where the BREEAM standards apply, applicants will need to submit a BREEAM Design Stage Assessment at the planning stage and a BREEAM Final Certificate at the pre-occupation stage.

[29] BREEAM UK New Construction 2018 https://www.breeam.com/NC2018/
[30] BREEAM UK Refurbishment and Fit-out 2014 – Non-domestic buildings (https://www.breeam.com/ndrefurb2014manual/
[31] BREEAM Refurbishment Domestic Buildings Technical Manual https://www.breeam.com/domrefurb2014manual/

Chapter	Policy	Policy Name	Summary	Key Requirements
Climate Change	CC2.1	Promoting sustainable design to mitigate and adapt to climate change	This Strategic Policy sets out the overall aims of Merton's climate change policies to make Merton a more environmentally sustainable place and net-zero carbon by 2050, by reducing greenhouse gas emissions and increasing local resilience to the impacts of a changing climate through sustainable design.	**All development to:** a) Minimise greenhouse gas emissions and support the transition to a low carbon society by maximising energy efficiency, low carbon heat and local renewable energy generation; b) Support the principles of the circular economy and promote more effective resource use, to ensure that resources are kept in use for as long as possible and to minimise waste; c) Recognise and adapt to Merton's changing climate and ensure that development mitigates the risk of overheating and flooding, and maximises comfort and wellbeing in a changing climate; d) Maximise opportunities to enhance green infrastructure and tree planting to deliver multifunctional benefits such as minimising the urban heat effect, enhancing natural carbon sinks and improving air quality; and e) Promote healthy and sustainable lifestyles in line with Merton's net-zero carbon target.
Climate Change	CC2.2	Minimising greenhouse gas emissions	All development within the borough should seek to minimise greenhouse gas emissions on site.	**All development resulting in the creation of 1 or more dwellings or 500sqm or more non-residential GIA:**

a) To reduce greenhouse gas emissions on-site and minimise both annual and peak energy demand in accordance with the Mayor of London's Energy Hierarchy below:

   i. Be lean: use less energy and manage demand during operation

   ii. Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly

   iii. Be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on site

   iv. Be seen: monitor, verify and report on energy performance

b) To provide an energy statement demonstrating how emissions savings have been maximised at each stage of the energy hierarchy towards achieving net-zero carbon emissions on site.

c) To achieve the relevant minimum carbon reduction targets as set out in the table below:

Development Type	**Minimum on-site total reduction in CO2 beyond Part L 2021**	**Benchmark total reduction in CO2**
Major residential development of 10 or more dwellings (including new build, change of use, conversions and major refurbishments)	35%	50%+

		Minor new build residential development of 1 or more dwellings	35%	50%
		Minor residential change of use and conversions resulting in the creation of 1 or more dwellings	35%	
		Office buildings of 500sqm GIA or more (including new build, change of use and major refurbishments)	25%	
		School buildings of 500sqm GIA or more (including new build, change of use and major refurbishments)	35%	
		Industrial buildings of 500sqm GIA or more (including new build, change of use and major refurbishments)	35%	

				Hotel of 500sqm GIA or more (including new build, change of use and major refurbishments)	10%
				All other non-residential development of 500sqm GIA or more (including new build, change of use and major refurbishments)	35%
				All new build development resulting in the creation of 1 or more dwellings or 500sqm or more non-residential GIA: d) To demonstrate compliance with the Mayor's net-zero carbon target. e) Where it is clearly demonstrated that the net-zero carbon target cannot be fully achieved on site beyond the minimum requirements, any carbon shortfall to be provided, either: i. through a cash in lieu contribution to Merton's carbon offset fund, or ii. off-site provided that an alternative proposal which offers Additionality is identified, delivery is certain and subject to agreement with the council.	
Climate Change	CC2.3	Minimising energy use	All proposed development within the borough to demonstrate that they have made the fullest contribution to minimising energy use	**All development resulting in the creation of 1 or more dwellings or 500sqm or more non-residential GIA:**	

through energy efficiency on site.

a) To demonstrate how energy demand, including regulated and unregulated uses, has been minimised on site through passive measures and by maximising the efficiency of building form, fabric and systems.

b) To disclose the anticipated Energy Use Intensity at design and pre-occupation stage.

All new build development resulting in the creation of 1 or more residential unit or 500sqm or more non-residential GIA:

c) To demonstrate compliance with the following relevant fabric efficiency targets:

Type of Development Zero Carbon Hub	Interim FEES until 31 December 2022	Zero Carbon Hub Full FEES from 01 January 2023 to 31 December 2024	Space Heating Demand Target from 01 January 2025
Blocks of flats and midterrace houses	<43 kWh/m2/yr	<39kWh/m2/yr	<15kWh/m2/yr
Semi-detached, end of terrace and detached houses	<52 kWh/m2/yr	<46 kWh/m2/yr	<20kWh/m2/yr
Non-residential development	-	-	<15kWh/m2/yr

All major development

d) To monitor and report on energy use for 5 years post-occupancy

Climate Change	CC2.4	Low carbon energy	All proposed developments within the borough must demonstrate that they have made the fullest contribution to supplying energy efficiently and cleanly, and maximising renewable and low carbon energy generation, storage and use, through the deployment of appropriately selected, sized and sited technologies.	a) All new development to use low carbon heat. b) All development proposals to demonstrate in the energy statement: i. How the proposal has made the best potential use of roof space to maximise local renewable and low carbon electricity and/or heat generation – 100% of energy demand should be met by renewable energy generation on site wherever possible; ii. How appropriate roof spaces have been utilised to maximise the delivery of multifunctional benefits (e.g. co-location of renewable energy and green, brown or blue infrastructure); iii. How demand-side response has been incorporated, specifically through the installation of smart meters, minimising peak energy demand and promoting short term energy storage; iv. How the proposal has ensured efficient generation of low carbon energy on site; any developments proposing to use heat pumps to demonstrate that these are good quality and achieve a minimum standard of efficiency; and v. How all major development proposals located within identified heat network opportunity areas have utilised decentralised energy, or are enabled for connection to current or future district heat networks, unless it is demonstrated that it is not technically feasible to do so.
Climate Change	CC2.5	Minimising waste and promoting a circular economy	All proposed development in the borough should adopt a circular economy approach to building design and construction, and be designed for durability, flexibility and easy disassembly, to reduce waste, to keep materials and products in use for as long as	**All development:**

			possible, and to minimise embodied carbon.	a) Where existing buildings are on site, to prioritise their reuse and retrofit wherever possible before considering the design of new buildings. b) To ensure resource efficiency and reduce embodied carbon emissions by sourcing and prioritising materials, and designing building shapes and forms, that can easily be maintained, repaired and renewed across the development lifetime. c) To minimise the environmental impact of materials by specifying sustainably-sourced, low impact and re-used or recycled materials; this should include identifying opportunities for the retention and reuse of existing materials on site (e.g. re-using demolition material on site). Materials should be locally-sourced wherever possible to minimise transport emissions. **All development resulting in the creation of 30 or more dwellings or 1000sqm or more non-residential GIA, and all development proposing to demolish and rebuild a single dwelling:** d) To undertake a Whole Life-Cycle Carbon assessment proportionate to the scale of development and demonstrate actions taken to reduce life-cycle emissions.

Climate Change	CC2.6	Sustainable design standards	Merton Council will seek high standards of sustainable design and construction from new development, change of use, conversions and refurbishments to ensure that all development makes effective use of resources and materials, minimises water use, and assists in meeting local and national carbon reduction targets.	a) Requiring **all development** to demonstrate that the use of mains water has been minimised by incorporating measures such as smart metering, water saving and recycling measures, including retrofitting where appropriate. b) Requiring **all major developments and high water use developments** to include water saving measures such as rainwater harvesting and greywater recycling to reduce mains water consumption. c) Requiring **all residential development** to meet a minimum internal water efficiency standard of 105 litres per person per day, as set out in Building Regulations Part G or equivalent. d) Requiring all conversions and changes to the use of existing buildings resulting in the creation of 10 or more new dwelling(s) to achieve a minimum BREEAM Domestic Refurbishment rating of 'Excellent' or equivalent. e) Requiring **all new build non-residential development of 1,000sqm GIA and above** to achieve a minimum of BREEAM Non-domestic New Construction 'Excellent' standard or equivalent. f) Requiring **all conversions and changes of use to non-residential uses of 1,000sqm GIA** and above to achieve a minimum of BREEAM Non-domestic Refurbishment and Fit-out 'Excellent' standard or equivalent.
Design	D12.3	Ensuring high quality design for all developments	All proposed development in the borough to demonstrate how it has been designed to help tackle the Climate Emergency.	**Proposals for all development should:** w. Incorporate sustainable design principles early in the design process to make effective use of resources and materials, and minimise water use and CO2 emissions during the construction and operation of the development as set out in the chapter on 'Climate Change'. x. Ensure resilience to the impacts of climate change by mitigating the risk of flooding, subsidence, overheating and adverse impacts on the urban heat island, through appropriate design, orientation, layout, materials and use of green and blue infrastructure as set out in the chapter on 'Green & Blue Infrastructure".

				y. Mitigate overheating through good design, such as orientation, shading, high albedo materials, fenestration, insulation, appropriate ventilation systems and the provision of green infrastructure. z. In residential developments, maximise the provision of dual aspect homes. Single aspect homes are strongly discouraged and will only be accepted where they demonstrate they have adequate passive ventilation, daylight and privacy and avoid overheating and are necessary to optimise site capacity through a design led approach, in line with the London Plan. aa. Minimise construction waste and promote sustainable management of construction waste on-site by managing each type of waste as high up the waste hierarchy as practically possible as set out in the chapter on waste management in this plan. bb. Provide appropriate energy efficient external lighting that provides safe and secure environments while not causing light pollution that adversely affects neighbouring occupiers or biodiversity. cc. Conserve and enhance the natural environment, particularly in relation to biodiversity, wildlife habitats and gardens as set out in chapter on green and blue infrastructure in this plan. dd. In addition to Tree Preservation Orders, retain and protect mature trees and vegetation where applicable as set out in chapter on Green & Blue Infrastructure.