Rebuttal and Supplementary Proof of Evidence - Appendicies

Jonathan Owen Davies Murch MATCP MRTPI

Town & Country Planning Act 1990, Section 78

Appeal by Redrow Homes Limited

265 Burlington Road, London Borough of Merton

PINS Reference: **APP/T5720/W/20/3250440**

LPA Reference: **19/P2387**

Appendix 1

CITY PLAN 2019 – 2040

DRAFT WESTMINSTER FIVE YEAR HOUSING LAND SUPPLY STATEMENT

SEPTEMBER 2020

1. Introduction

1.1 This document is Westminster's calculation of deliverable housing land supply for years 2020/21 to 2024/25 in order to support the council's City Plan 2019-40 for examination in public.

1.2 This 5 Year Land Supply Statement has been prepared in accordance with national planning policy and guidance. The National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) set out that local planning authorities should demonstrate a supply of specific deliverable sites sufficient to provide 5 years' worth of housing (and appropriate buffer) against their housing requirement.

1.3 The PPG states that in plan-making, strategic policies should identify a 5-year housing land supply from the intended date of adoption of the plan. This statement sets out Westminster's 5-year deliverable housing land supply from April 2020 onwards, in anticipation of the City Plan's adoption in 2020/21.

2. Housing Requirement

2.1 Following the publication of the London Plan Inspectors' Report on 8th October 2019, Westminster's housing target as set by the London Plan is proposed to reduce to 9,850 homes across 10 years. As it is anticipated that the London Plan will be adopted before the Westminster City Plan has concluded its Examination in Public, we have used the revised London Plan figure as the basis for calculating our housing requirement.

2.2 In accordance with the draft London Plan (intend to publish version) Westminster's housing target is now 985 homes per year. This gives a 10-year requirement of 9,850 homes. The basic five-year requirement is therefore 4,925 homes. In 2019/20 there were 992 completions.

2.3 Paragraph 73 of the NPPF also states that the supply of specific deliverable sites should include a buffer of:

a) 5% to ensure choice and competition in the market for land; or
b) 10% where the local planning authority wishes to demonstrate a five-year supply of deliverable sites through an annual position statement or recently adopted plan, to account for any fluctuations in the market during that year; or
c) 20% where there has been significant under delivery of housing over the previous three years, to improve the prospect of achieving the planned supply.

2.4 As the council is seeking to demonstrate a five year supply of deliverable sites through the examination of its plan, a 10% buffer applies, as confirmed in the PPG, which states that, where they are seeking to confirm their five-year supply

Deliverable Sites Trajectory (2020 – 2025)

Year	2020/21	2021/22	2022/23	2023/24	2024/25
Completions 2020/21	107	-	-	-	-
Sites under construction	1,365	1,294	924	791	245
Sites with planning permission	-	-	-	370	230
Sites with applications submitted or expected	-	-	-	130	333
Totals	**1,472**	**1,294**	**924**	**1,291**	**808**

Appendix 2

The Planning Inspectorate

Report to the London Borough of Hackney

by Yvonne Wright BSc (Hons) Dip TP MSc DMS RTPI
an Inspector appointed by the Secretary of State
Date: 10 June 2020

Planning and Compulsory Purchase Act 2004

(as amended)

Section 20

Report on the Examination of the Hackney Proposed Submission Local Plan

The Plan was submitted for examination on 23 January 2019

The examination hearings were held between 18 and 26 June 2019

File Ref: PINS/U5360/429/13

Issue 4 – Whether the Plan sets out a positively prepared strategy for the provision and delivery of housing development that is justified, effective and consistent with national policy.

Housing requirement

56. Policy LP12 in the Plan sets out Hackney's housing requirement as a minimum of 1,330 dwellings per annum (dpa) to be delivered over the plan period 2018-2033. This housing requirement figure is capacity based and is derived from the *London Strategic Housing Land Availability Assessment 2017* (SHLAA). This is the most recent assessment of capacity within the London Boroughs for the delivery of new housing. It also conforms to the 10 year housing requirement set out in the emerging new London Plan which has now been through examination. This equates to an overall requirement for 19,950 homes to be delivered in Hackney over the plan period.

57. The Hackney Strategic Housing Market Assessment 2015 and its addendum 2018 (collectively referred to as the SHMA), have assessed housing needs for the period 2011-2035. As this covers a longer timescale than the plan period of 2018-2033, relevant data has been suitably extracted.

58. The SHMA identifies Hackney's objectively assessed housing need (OAHN) for the plan period as 26,250 new homes, which equates to an average of 1,750 dpa. This OAHN is clearly identified in the Plan, though it is subject to a main modification as discussed under issue 1.

59. It is clear that the OAHN is higher than the capacity based requirement of 1,330 dpa as set out in Policy LP12. However, the approach in the Plan is justified, based on the assessed capacity to deliver. Furthermore the policy seeks to bridge the gap between capacity and identified need by bringing forward new growth areas during the plan period, to meet the 1,750 dpa need. This is proposed to be implemented through the production of other development plans. I am therefore satisfied that the policy has been positively prepared and would be consistent with the emerging new London Plan.

60. However, the policy title needs amending so that it clearly reflects its purpose in setting out housing needs and the requirement, as well as identifying locations for growth. It is also necessary for the supporting text to provide additional explanation of the housing figures and distribution of housing provision. These changes, as set out in **MM18** are necessary to provide clarity and to ensure that the policy is effective and consistent with national policy.

Housing supply

61. The housing trajectory identifies the expected supply of housing for the plan period from a range of sources, including completions, commitments, windfall and allocations.

62. I have already considered the soundness of the site allocations under Issue 3. As regards windfall sites, these are expected to come forward from year three for the remaining plan period. An allowance of 410 dpa is applied to the housing supply, which is based on evidence of historic windfall delivery rates. I find that the assessment of windfall allowances is robust and as such, I am

Appendix 3

London Borough of Southwark

Five and Fifteen Year Housing Land Supply: 2018-2033

(December, 2019)

3. Southwark's Housing Requirement

3.1 As per the Planning Practice Guidance, the purpose of the five year housing land supply is to provide an indication of whether there are sufficient sites available to meet the housing requirement. The starting point is to identify the housing requirement figure as set out in the strategic policies.

3.2 Following the examination in public and the publication of the Inspector's report on the London Plan, significant weight can be attributed to these revised housing target figures. For the purposes of establishing the five year land supply in Southwark, the target within the Inspector's report has been used.

3.3 As set out in Inspector's Report on the Draft London Plan (October, 2019) the minimum ten year target between 2019/20-2028/29 for Southwark is **23,550 net homes**. This is equivalent to **2,355 net homes per annum**, giving an accumulative total of **11,775 homes net additional homes** for the period 1 April 2018 – 31 March 2023. This is the 5th highest housing target set in London and therefore it represents a significant requirement.

3.4 As Southwark has under delivered against the yearly target in the last three years, as per the NPPF, a 20% buffer has been used in this assessment, equating to an extra 2,355 homes over the five year period. Therefore, the Council needs to demonstrate that it can make provision over the five years from 1 April 2018 – 31 March 2023 for an additional **14,130 net homes**. The six to fifteen year land supply target for Southwark consists of the London Plan target of 2,355 net homes per year rolled forward for the ten year period: **23,550.**

3.5 It must be noted that in the Draft New London Plan and in the Inspector's Report on the Draft London Plan annualised average housing targets have been removed, and instead a 10 year housing target is set for net housing completions. The Mayor has stated that the housing delivery required by these targets may be achieved gradually and boroughs are encouraged to set out a realistic, and where appropriate, stepped housing delivery target over a ten-year period. This is subject to LPAs clearly articulating how these homes will be delivered, and setting out what actions are going to be taken in case of under delivery.

3.6 Southwark has approved a significant number of new homes within hybrid applications, comprising of detailed and outline permissions such as the Canada Water Masterplan, schemes at Malt Street or Southernwood Retail Park as part of the Old Kent Road Regeneration. It must be noted that large occupied sites might take longer to be vacated; and that given the significant quantum of new homes approved and the phasing of these large schemes means that they will be delivered over a longer period of time that needs to be accounted for in the housing delivery.

3.7 The new homes approved under the detailed components of the hybrid applications are expected to be delivered in the first five years, whereas the homes approved within the

Appendix 4

Draft Revised Lambeth Local Plan
Proposed Submission Version
January 2020

Topic Paper 10:

Housing provision statement

August 2020

Lambeth

Contents

1. Introduction

1.1 This topic paper has been produced in response to questions from the Inspector of the Draft Revised Lambeth Local Plan set out in section 5 of his initial letter INS1 dated 13 July 2020 (particularly questions 5.1 to 5.6).

1.2 This paper sets out the housing requirement for Lambeth and the detailed information about the sites contributing to delivery against this requirement over the plan period. The position on five year housing land supply is explained at section 6 and Appendix 5 of this topic paper.

1.3 The Council has taken the opportunity to update the housing trajectory included in Annex 13 of the submitted plan, to reflect the most up-to-date position. The trajectory has also been amended to show the correct start date and buffer for the five year housing land supply, in response to the Inspector's questions. The updated trajectory is included at Appendix 6 of this topic paper.

2. Lambeth's housing requirement and buffer

2.1 Lambeth's housing requirement is established through the new London Plan, which sets a borough-level housing target for ten years from 2019/20 to 2028/29. The target for Lambeth is to deliver at least 13,350 net additional dwellings over the ten years (London Plan Policy H1 and Table 4.1), which results in an annual delivery target of 1,335 dwellings per annum (dpa).

2.2 The ten-year housing targets in London Plan Table 4.1 are based on the 2017 London SHLAA (EB10). This includes an assessment of large housing sites (0.25 hectares and above) undertaken in partnership with boroughs, which provides the most comprehensive study available of the capital's capacity for housing delivery based on a consistent pan-London methodology. In addition, the SHLAA includes an assessment of small site capacity using a combination of trend data for certain types of development and an estimate of potential for intensification in existing residential areas; and an assessment of capacity from non-self-contained housing.

2.3 The small sites figure for Lambeth, identified in London Plan table 4.2, is 4,000 net additional dwellings over ten years or 400 dpa.

2.4 London Plan paragraph 4.1.12 states that "If a target is needed beyond the 10 year period (2019/20 to 2028/29), boroughs should draw on the 2017 SHLAA findings (which cover the plan period to 2041) and any local evidence of identified capacity, in consultation with the GLA, and should take into account any additional capacity that could be delivered as a result of any committed transport infrastructure improvements, and roll forward the housing capacity assumptions applied in the London Plan for small sites".

2.5 The London SHLAA 2017 assessed capacity for large sites over five, five year periods and identified the following notional capacity in Lambeth (see below). The ten year housing target is based on the large site capacity identified for Phases 2 and 3.

Appendix 5

5.2 GROUND LEVEL

1 Gateway : marker tree, ornamental, biodiverse and rain garden planting

2 Link Road

3 Avenue tree planting to create rythm and sense of link road

4 SuDS ornamental and biodiverse planting

5 Block planting of street trees to create rythme and break scale of the elevation.

6 Ornamental and biodiverse planting in raised plantes with integrated seating.

7 Maintenance access

8 Residents gardens : native and biodiverse woodland/riparian planting, with partial clearing of tree cover to create mosaic habitats and nature play trail

9 Viewing platforms to the Pyl Brook with seating elements and railings along boundary

10 Living edge : Patterned climbing plants on treillis against wall, with wildlife elements (birds and bat boxes, insects hotels and loggery).

5.2.3. THE LIVING EDGE

A collection of different climbing plants will infill each of the ‘bays’ created by the articulation of the architecture. A non-climb wire support system will allow climbers to grow up the building giving a diverse, verdant green edge to the adjacent car park. Climbers will be selected to provide food and shelter for birds and insects and where possible integrate bird boxes. Climbers may be selected from a variety of commonwealth counties to reflect the distributed print materials, colours and diversity of the printing work.

A railing fence will delineate the boundary between car park and development with gate access for cyclist entrances and maintenance access.

Figure 21. **Treillis over building facade**

Figure 22. **Birds** feeding box

Figure 19. **Bats** habitats

Figure 18. **Biodiverse**

Figure 17. **Engraving** reference

Figure 20. **Insects** habitats

Appendix 6

ENERGY COMMENT RESPONSE

This report responds to the Planning Inspectorate Appeal reference APP/T5720/W/20/3250440, for the proposed development on 265 Burlington Road New Malden. The specific area considered is the Energy Statement (Appendix 4) and subsequent discussion with the GLA (Appendix 3) and the London Borough of Merton (Appendix 2).

The following will demonstrate how the proposed energy strategy for the development is compliant with current and, further, emerging planning policy. It will further demonstrate how the associated predicted carbon emissions from this development are lower than those disclosed in the energy statement.

Table 1 Planning Policy Summary

Policy	Requirements	How this is addressed
London Plan Policy 5.1	Achieved through the application of Policy 5.2.	See below.
London Plan Policy 5.2 London Plan Sustainable Design and Construction SPG (2014) LB Merton's Policy CS 15	Onsite regulated carbon dioxide reduction of 35% beyond Part L 2013 Overall requirement of zero carbon emissions. Shortfalls not fulfilled onsite may be offset through a cash in lieu contribution to the borough to secure delivery of carbon dioxide savings elsewhere.	**Be Lean – Demand Reduction** measures provides savings of 11% for dwellings and 15% for non-domestic units. (See Energy Statement) **Be Clean – Heating infrastructure** produced savings of 36% using a renewable technology, Air Source Heat Pump (ASHP), led on site heating strategy. (See Energy Statement) **Be Green - Renewables** have been considered for this development. ASHP is the primary renewable technology. (See Energy Statement) The development goes further than the requirements of Policy 5.2 by introducing 27.5 kW_p of Photovoltaic (PV). (See Stage 1 GLA Responses) **Zero Carbon** cash in lieu payment has been proposed. (See Email from LB Merton)
London Plan Policy 5.3	Follow London Plan Sustainable Design and Construction SPG (2014)	See Policy 5.2

London Plan Policy 5.5 London Plan Policy 5.6	Consider the feasibility of decentralised energy networks prioritising connecting to wide area heat networks, followed by onsite networks.	See Energy Statement chapter Be Clean
London Plan Policy 5.7	Application of renewables within the framework described in London Plan Policy 5.2.	See Policy 5.2
Emerging London Plan Policy SI 2	CO_2 reductions through the application of the energy hierarchy. Introduction of "Be Seen" which intends to monitor, verify, and report on carbon emissions. Achieve a 10% and 15% reduction in carbon emissions for residential and non-residential developments, respectively, through energy efficiency measures. Maximise onsite renewable energy. Achieve a minimum onsite reduction in carbon emissions of 35% beyond the Part L baseline. Offset shortfalls between the onsite improvements and zero carbon emissions. Determine the carbon emissions from other elements of the development by conducting a whole life-cycle carbon assessment.	All the listed elements except Be Seen and Whole Life Cycle Carbon Emissions considered (See Stage 1 GLA Responses and Appendix 4 - Energy Statement). Be Seen is still in consultation so can not be fully considered however in spirit of the requirements the Energy Centres gas and electricity, block level heating, and final customer's electricity and heat will be metered. The applicant has committed to complete a whole life cycle carbon assessment to demonstrate the embodied carbon of the development.
Emerging London Plan Policy SI 3	Developments within a Heat Network Priority Areas should have communal low-temperature heating systems, with heat sources from communal systems following the prescribed heating hierarchy.	See London Plan Policy 5.5. ASHP prioritised over CHP.

Carbon emissions

Planning policy requires assessments to be carried out using prescribed carbon factors. The factors utilised in the Energy Statement use outdated carbon factors which have been superseded. The result of updating the calculation would demonstrate a further reduction in carbon emissions by 117 TCO_2. See Appendix 1.

APPENDIX 1 – SAP 10.1 CARBON EMISSION CALCULATION

SAP 10.1 summary of emission factor changes				
	SAP 2012	SAP 10.0	SAP 10.1	Change between SAP 2012 and SAP 10.1
Gas Emission factor (kg CO2/kWh)	0.216	0.210	0.210	3% reduction
Electricity Emission factor (kg CO2/kWh)	0.519	0.233	0.136	74% reduction

By updating the calculations presented in the Energy Statement with the latest SAP 10.1 calculations the following carbon savings can be attained.

Site Wide Carbon Dioxide Emissions and Cumulative Savings using SAP 10.1			
	Regulated Carbon Dioxide Emissions (Tonnes CO_2 per Annum)	Regulated Carbon Dioxide Savings	
		Tonnes CO_2 per Annum	Percentage
Baseline: Part L 2013 Compliant Development	552.7	0.0	
After *Be Lean* Measures	485.5	67.3	12.2%
After *Be Clean* Measures	570.2	-84.7	-15.3%
After *Be Green* Measures	249.2	321.0	58.1%
Cumulative On-Site Savings (SAP 10.1)		**303.5**	**54.9%**

After *Be Green* Measures (SAP 10.0)	After *Be Green* Measures (SAP 10.1)	Additional saving
366 TCO_2	249 TCO_2	117 TCO_2

HODKINSON

APPENDIX 2 – EMAIL FROM LB MERTON (19/12/2020)

Nikhil Doshi

From: Dominique Hill <Dominique.Hill@merton.gov.uk>
Sent: 20 December 2019 14:17
To: Tim Lipscomb
Cc: Nikhil Doshi; 'Jonathan Murch'
Subject: FW: 19/P2387 Tesco Site - Sustainability Comments
Attachments: SAP10_co2v2.pdf; SAP2012_co2V2.pdf; Residents Facilities Be Lean.pdf; 265 Burlington Road - Energy Statement - v6 16.10.2019 planning_compressed.pdf; Gla_carbon_emission_reporting_spreadsheet_v1.3.xlsx

Hi Tim,

As discussed, this can be progressed as it is, but please note that the heat losses and PV will need to be integrated within the SAP and BRUKL outputs in order to discharge the pre-occupation condition below. Please can you ensure that the latest outputs attached are uploaded to the planning portal.

The submitted energy statement (dated 16th October 2019) indicates that the proposed development has been designed to achieve a 35.7% improvement in CO2 emissions on Part L 2013 with the installation of 27.5kWp of solar PV across the site. This meets/exceeds the minimum sustainability requirements of Merton's Core Planning Strategy Policy CS15 (2011) and Policy 5.2 of the London Plan.

A carbon offset contribution of £651,060 will be required for the carbon shortfall of 361.7tCO2/ year at £60/ t over 30 years.

I am therefore content that the proposed energy approach to the development is policy compliant and recommend that the following conditions are included:

CONDITION: ASHPs

'Prior to commencement of the main works contract, details of the proposed Air Sourced Heat Pumps (ASHP) shall be submitted to and approved in writing by the Local Planning Authority.'

Reason – To ensure that the development achieves a high standard of sustainability and makes efficient use of resources and complies with policy 5.2 of the London Plan 2016 and policy CS15 of Merton's Core Planning Strategy 2011.

CONDITION: District Heat Networks – London Heat Networks Manual

'No development shall commence until the applicant submits to, and has secured written approval from, the Local Planning Authority evidence demonstrating that the development has been designed to enable connection of the site to an existing or future district heating network, in accordance with the Technical Standards of the London Heat Network Manual (2014).'

REASON:

To demonstrate that the site heat network has been designed to link all building uses on site (domestic and non-domestic), and to demonstrate that sufficient space has been allocated in the plant room for future connection to wider district heating, in accordance with London Plan policies 5.5 and 5.6.

CONDITION: Carbon Reduction and Internal Water Consumption

'No part of the development hereby approved shall be occupied until evidence has been submitted to the Local Planning Authority confirming that the development has achieved CO2 reductions in accordance with those outlined in the Energy Statement (dated 16th October 2019), and wholesome water consumption rates of no greater than 105 litres per person per day.

INFORMATIVE:

Carbon emissions evidence requirements for 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 (i.e. dated outputs with accredited energy assessor name and registration number, 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

Water efficiency evidence requirements for Post Construction Stage assessments must provide:

- Documentary evidence representing the dwellings 'As Built'; detailing:
- the type of appliances/ fittings that use water in the dwelling (including any specific water reduction equipment with the capacity / flow rate of equipment);
- the size and details of any rainwater and grey-water collection systems provided for use in the dwelling; **AND**:
- Water Efficiency Calculator for New Dwellings; **OR**
- Where different from design stage, provide revised Water Efficiency Calculator for New Dwellings and detailed documentary evidence (as listed above) representing the dwellings 'As Built'

REASON:

To ensure that the development achieves a high standard of sustainability and makes efficient use of resources and to comply with the following Development Plan policies for Merton: Policy 5.2 of the London Plan 2016 and Policy CS15 of Merton's Core Planning Strategy 2011.

Kind regards,

Dominique

From: Jonathan Murch <jonmurch@daviesmurch.co.uk>
Sent: 20 December 2019 11:08
To: Nikhil Doshi <nikhil@hodkinsonconsultancy.com>
Cc: Dominique Hill <Dominique.Hill@merton.gov.uk>; Tim Lipscomb <Tim.Lipscomb@merton.gov.uk>
Subject: Re: 19/P2387 Tesco Site - Sustainability Comments

Thanks Nikhil.

Dominique - on the basis of the below can we finalise the carbon offset payment which is critical from Tim to finalise his report.

Many thanks for your help.

Jon Murch

APPENDIX 3 – STAGE 1 GLA RESPONSES (17/09/2019)

Version: 2
Date: 23 November 2020
Author: ND
Checked by: MB
Approved by Project Manager: MB

HODKINSON

GLA ENERGY COMMENT RESPONSE UPDATE

This report responds to the comments from the Greater London Authority (GLA) Senior Strategic Planner, dated 15/08/2019, regarding the Energy Memo: Stage 1 consultation for 265 Burlington Road New Malden case number 4830.

The final Energy Statement was produced on 30th May 2019. The Energy Statement was written in line with the requirements stated in the GLA Energy Assessment Guidance (October 2018). This was applicable at the time of reporting. This report will respond to each point raised by the GLA:

Comment 1

Initial GLA comment: "*1. The Energy Hierarchy has broadly been followed; however, the applicant is required to review their energy proposals to ensure compliance with the London Plan policies*."

Hodkinson response: The Energy Statement is considered to comply with GLA policy. This is on the basis that:

- GLA Policy 5.2 Minimising Carbon Dioxide Emissions is demonstrated following the required hierarchal approach to achieve the required target. This is demonstrated by the Energy Statement where:
    - Sections 4, 5, 6, and 7 of the Energy Statement describe how carbon emissions have been reduced following the Be Lean, Be Clean and Be Green hierarchy;
    - Carbon reductions described in the Executive Summary of 35.7% for the dwellings are achieved in line with the definition provided in the GLA Energy Assessment Guidance (October 2018), where:

      "*In the case of the zero-carbon target for homes, a minimum of 35% carbon savings are expected to be delivered on site. The remaining savings to reach zero carbon can be achieved either on site or via a cash in lieu contribution, although savings on site are preferable."*
- GLA Policy 5.5 decentralised energy networks and Policy 5.6 decentralised energy in development proposal are discussed in section 6. As discussed in the Energy Statement, the development is not in the vicinity of an existing or proposed area wide heat network. This means that it cannot connect to a wider area network. A site wide network is feasible and has been designed to be in place.;
- GLA Policy 5.7 renewable energy refers to achieving GLA Policy 5.2, which is detailed in paragraph 5.16 in The London Plan:

  "*Carbon dioxide emissions from new development should be reduced by sustainable use of energy in accordance with the Mayor's energy hierarchy. The first step in the hierarchy, to reduce energy demand, should be met through adopting sustainable design principles outlined in Policy 5.3. The second step, to supply energy efficiently, should be met by prioritising decentralised energy, as outlined in Policies 5.5 and 5.6. The third step, to use renewable energy, is outlined in Policy 5.7*."

In keeping with this description, renewables were considered to deliver decentralised energy by means of a heat pump.

We welcome the GLA comment 26 which confirms that the Energy Statement has appropriately met the 35% target at Be Green following the appropriate hierarchical approach and therefore meets the requirements of the London Plan.

Comment 2

Initial GLA comment: "*2. The applicant is encouraged to use the GLA's Carbon Emission Reporting spreadsheet, which has been developed to allow the use of the updated SAP 10 emission factors alongside the SAP 2012 emission factors. The link to the spreadsheet can be found here: https://www.london.gov.uk/what-we-do/planning/planning-applications-and-decisions/pre-planning-application-meeting-service-0. This is encouraged to be submitted for review.*

Hodkinson response: We note the GLA has requested the spreadsheet is utilised. Considering good practice, we have copied the tables from the spreadsheet in Appendix A.

Comment 14

Initial GLA comment: "*14. The results show that the design proposals are not anticipated to meet the CIBSE recommendations for comfort. Furthermore, the results produced for the development assume that up to 21.5 nights across the year, windows are required to remain open for longer than the base case assumption of outside of sleeping hours to mitigate overheating when external temperatures are high. The applicant should demonstrate that both noise and air quality studies indicate this is an acceptable strategy or they are required to investigate and adopt further passive measures (in line with the Cooling Hierarchy) to avoid the risk of overheating now and in future climate.*

Hodkinson response: We can confirm that both noise and air quality were considered in the analysis. The details were provided in the separate Hodkinson overheating assessment.

Comment 17

Initial GLA comment: "*17. The applicant should provide a commitment to ensure that the development is designed to allow future connection to a district heating network. Drawings demonstrating how the site is to be future-proofed for a connection to a district heating network should be provided; these should include space provision for heat exchangers in the plant room, isolation valves, safe-guarded pipe route to the site boundary etc. The applicant should note that the current drawing provided indicates the safeguarded area as being occupied by gas boiler plant. This would act a barrier should a future connection be established as the gas boilers would have to be removed prior to the connection being established and is expected to cause issues with continuity of supply for the development*

Hodkinson response: Please see paragraph 6.12 of the energy statement, which highlights the developer's commitment for allowing a future connection. We thank the GLA for highlighting the co-ordination issues

highlighted on the drawing. Given there is sufficient space, during detail design this will be corrected to ensure all the equipment can be provided.

Comment 19

Initial GLA comment: "*19. The information provided indicates that the proposed flow and return temperatures are 70°C and 40°C respectively and that detailed information on the anticipated distribution heat losses have been provided. It is noted that the Be Green DER worksheets provided assume the DLF of 1.05 which is not consistent with the 20% losses anticipated. The Be Green emissions should be recalculated to represent the anticipated distribution losses.*"

Hodkinson response: We can confirm that though the worksheets do not highlight the 20% losses which would be represented by a DLF of 1.25, these were accounted for in the carbon calculation. This was carried out manually and outside of the SAP calculation, please see table 10 of the energy statement. This can be seen between the carbon emissions calculated for Be Lean and Be Clean. Given the final solution, only boilers were considered at the Be Clean stage, as required by the GLA guidance. The significant increase in carbon emissions is directly related to losses in pipework.

Comment 23

Initial GLA comment: "*23. Centralised heat pumps are being proposed in the form of ASHP. Further information on the heat pumps should be provided including:*

a. The heat pump's total capacity (kWth).

b. An estimate of the heating and/or cooling energy (MWh/annum) the heat pumps would provide to the development and the percentage of contribution to the site's heat loads.

c. Details of how the Seasonal Coefficient of Performance (SCOP) and Seasonal Energy Efficiency ratio (SEER) has been calculated for the energy modelling. This should be based on a dynamic calculation of the system boundaries over the course of a year i.e. incorporating variations in source temperatures and the design sink temperatures (for space heat and hot water).

d. Manufacturer datasheets showing performance under test conditions for the specific source and sink temperatures of the proposed development and assumptions for hours spent under changing source temperatures. Whether any additional technology is required for hot water top up and how this has been incorporated into the energy modelling assumptions.

e. An estimate of the expected heating costs to occupants, demonstrating that the costs have been minimised through energy efficient design. – It is noted that information on the expected annual fuel costs have been provided; however, the applicant should also include the anticipated service costs (operation, maintenance and replacement costs) for the proposed system.

f. 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.

g. A commitment to monitor the performance of the heat pump system post-construction to ensure it is achieving the expected performance approved during planning. (It is recommended that boroughs condition this)."

Hodkinson response: With regards to the Heat Pump details:

a) Please see table 11 of the energy statement;

b) Please see grid electricity in table 12 of the energy statement;

c) Please see table 11 of the energy statement;

d) Please see paragraph 6.11 of the energy statement, there is full boiler capacity to act as top up;

e) Please see table 14 of the energy statement;

f) As highlighted by the GLA in comment 19, operational temperatures will be 70°C flow and 40°C return. Please also see paragraph 6.13 of the energy statement which describes how heat will be distributed efficiently;

g) Please see paragraphs 6.18 and 6.19 of the energy statement.

Comment 24

Initial GLA comment: "*24. The applicant has not proposed PVs on the development roof areas due to many areas being used for green roofs or due to access issues. It should be noted that cases of PV being deployed on green roofs are being delivered without negative impacts on the green roof; as such, it is not accepted that green roofs are a reason for not proposing PV. The applicant is required to maximise the on-site savings from renewable energy technologies, regardless of the London Plan targets having been met, and therefore the PV proposals should be reviewed. A detailed roof layout indicating all uses of roof space should be submitted.*"

Hodkinson response: We acknowledge that the GLA agree with us that access issues are a fair concern for not installing PV. Please find appended to this note an updated roof place which highlights the areas that could potentially be utilised for PV. Table 1 summarises the energy produced, and the associated carbon emissions offset across the development. Given the pitched roofs the south-west facing portion of these were considered appropriate for PV, there were some flat roof areas that could also contain PV.

Table 1 Impact of PV

PV	Pitched	Flat	Total
Capacity	20 kWp	7.5 kWp	27.5 kWp
Energy produced	14,820 kWh	5,133 kWh	19,954 kWh
Carbon emission offset (based on SAP10 carbon emissions)	3,201 $kgCO_2$	1,109 $kgCO_2$	4,310 $kgCO_2$

As a result of these results there is a small impact on the overall reduction in carbon emissions and associated carbon offset requirement.

Table 2 Site Wide Carbon Dioxide Emissions and Cumulative Savings			
Stage	Regulated Carbon Dioxide Emissions (Tonnes CO_2 per Annum)	Regulated Carbon Dioxide Savings	
		Tonnes CO_2 per Annum	Percentage
Baseline: Part L 2013 Compliant Development	576.1	0.0	
After Be Lean Measures	513.8	62.3	10.8%
After Be Clean Measures	598.9	-85.1	-14.8%
After Be Green Measures	366.1	232.8	40.4%
Cumulative On-Site Savings		**210.0**	**36.5%**

Table 3 Regulated Carbon dioxide emissions savings (TCO_2)		
	Annual	Over 30 years
Domestic shortfall to Zero Carbon	361.7	
Non-Domestic shortfall to 35% improvement	0	
Shortfall	361.7	10,851
Cash in lieu contribution (£60/TCO2)		£651,060

Comment 25

Initial GLA comment: "*25. An on-site reduction of 203 tonnes of CO2 per year in regulated emissions compared to a 2013 Building Regulations compliant development is expected for the domestic buildings, equivalent to an overall saving of 35%.*"

Hodkinson response: We acknowledge that the GLA agree with us that the development has achieved the required carbon emission reduction. We would highlight as recognised in comment 3, the development was assessed using SAP 10 carbon factors.

Appendix A

GLA SAP10 Performance tables

Table 1: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for domestic buildings

	Carbon Dioxide Emissions for domestic buildings (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	569	180
After energy demand reduction	508	180
After heat network / CHP	592	180
After renewable energy	365	180

Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for domestic buildings

	Regulated domestic carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Savings from energy demand reduction	61	11%
Savings from heat network / CHP	-84	-15%
Savings from renewable energy	227	40%
Cumulative on site savings	**204**	**36%**
Annual savings from off-set payment	365	-
	(Tonnes CO_2)	
Cumulative savings for off-set payment	**10,962**	-
Cash in-lieu contribution (£)	**657,738**	

Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-domestic buildings

	Carbon Dioxide Emissions for non-domestic buildings (Tonnes CO2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	7	32
After energy demand reduction	6	32
After heat network / CHP	6	32
After renewable energy	4	32

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-domestic buildings

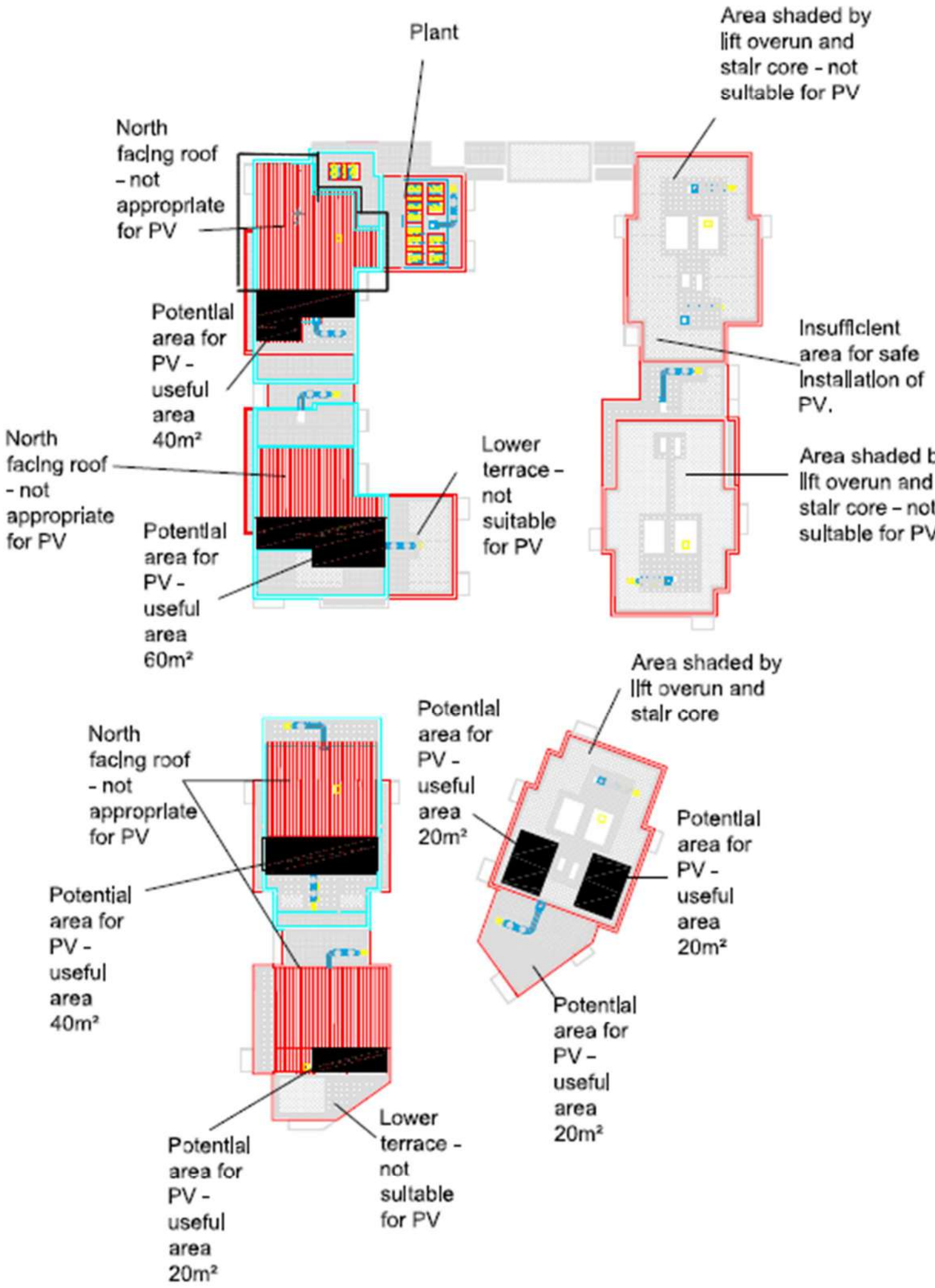
	Regulated non-domestic carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Savings from energy demand reduction	1	16%
Savings from heat network / CHP	0	-3%
Savings from renewable energy	2	26%
Total Cumulative Savings	**3**	**39%**

Table 5: Shortfall in regulated carbon dioxide savings

	Annual Shortfall (Tonnes CO_2)	Cumulative Shortfall (Tonnes CO_2)
Total Target Savings	3	-
Shortfall	0	-9
Cash in-lieu contribution (£)	**-525**	-

	Total regulated emissions (Tonnes CO2 / year)	CO2 savings (Tonnes CO2 / year)	Percentage savings (%)
Part L 2013 baseline	576		
Be lean	514	62	11%
Be clean	598	-84	-15%
Be green	370	228	40%
	-	**CO2 savings off-set (Tonnes CO2)**	-
Off-set	-	**10,954**	-

Appendix B – PV assessment



APPENDIX 4 – ENERGY STATEMENT (16/10/2019)

Version: 2
Date: 23 November 2020
Author: ND
Checked by: MB
Approved by Project Manager: MB

HODKINSON

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Redrow Homes Limited

265 Burlington Road

Energy Statement

Final

Nikhil Doshi
CEng MIMechE

16th October 2019

DOCUMENT CONTROL RECORD
REPORT STATUS: FINAL

Version	Date	Reason for issue	Author	Checked by	Approved for Issue by Project Manager
v.1	22.11.2018	DRAFT	ND	DS	ND
v.2	28.11.2018	FINAL	ND	DS	ND
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v.5	30.05.2019	FINAL – change od description	ND	MB	ND
v.6	16.10.2019	Update following planning	ND	DS	ND

ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

HODKINSON

Executive Summary

The purpose of this Energy Statement is to demonstrate the commitments, key measures and CO_2 reductions identified at each stage of the energy strategy for the proposed 265 Burlington Road development in the London Borough of Merton.

This energy strategy has been formulated following the London Plan Energy Hierarchy: ***Be Lean***, ***Be Clean*** and ***Be Green***. The objective in the formulation of the strategy is to maximise the reductions in CO_2 emissions through the application of this Hierarchy with a cost-effective approach that is technically appropriate.

The development summarised in this application concerns 456 new dwellings, and 499 m^2 of new non-domestic development. The development has been assessed under Approved Document Part L 1A(2013) and Part L 2A(2013) in this Energy Statement.

Following an examination of both local and national policy requirements, it has been determined that the proposed development is to target a reduction in CO_2 emissions of 35% beyond a determined Part L 2013 baseline case on site. This is equivalent to 40% reduction against a 2010 baseline as discussed in Merton's CS15 Energy policy. For the purposes of this Energy Statement the SAP10 carbon factors are to be utilised.

A range of ***Be Lean*** energy efficiency measures are proposed for the dwellings and Non-residential areas. This is in line with the London Plan Energy Hierarchy. They enable the proposed elements to meet or exceed the baseline cases through energy efficiency alone.

In accordance with the Energy Hierarchy, the feasibility of decentralised energy production as a ***Be Clean*** measure has also been carefully examined. Following a site analysis, a site wide heating network with a plant room located at the base of Block A. In line with GLA guidance gas boilers were used for the Be Clean assessment. There is an increase in carbon emissions due to the heat losses from the heat network.

In accordance with the Energy Hierarchy, the relevant **Be Green** renewable energy generating technologies have been evaluated. Heat pumps will be providing heat to the development using a site wide heating network. This achieves the carbon reductions required in line with Policy 5.2 of the London Plan. In line with Policy 5.9 renewables were maximised by introducing PV and heat pumps therefore no further technologies were required to be applied for supplying energy to meet improvement targets for the dwellings.

The proposed design for the development will enable it to reduce its CO_2 emissions in line with London Plan requirements (35%) over the overall baseline case. This represents a high level of sustainable design.

The onsite carbon emission reductions required by the London Plan have been achieved. The remaining carbon emissions of 361.7 TCO_2 every year for 30 years are required to be offset. This is completed by a cash in lieu contribution offsetting circa 10,851 TCO_2. This equates to a contribution of £651,060 based on a contribution of £60/TCO_2. The tables below demonstrate the reduction in Regulated and Total CO_2 reductions after each stage of the Energy Hierarchy showing energy policy requirements have been achieved. They are based on SAP10 carbon factors.

Table 1 Domestic Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy		
Stage	**Carbon Dioxide Emissions (Tonnes CO_2 per Annum)**	
	Regulated	**Unregulated**
Baseline: Part L 2013 Compliant Development	568.9	179.5
After *Be Lean* Measures	507.8	179.5
After *Be Clean* Measures	592.9	179.5
After *Be Green* Measures	361.9	179.5
Stage	**Regulated Carbon Dioxide Savings**	
	Tonnes CO_2 per Annum	**Percentage**
Savings from *Be Lean* Measures	61.2	10.7%
Savings from *Be Clean* Measures	-85.1	-15.0%
Savings from *Be Green* Measures	226.6	39.8%
Cumulative On-Site Savings	**202.7**	**35.6%**

Table 2 Non-Domestic Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy		
Stage	**Carbon Dioxide Emissions (Tonnes CO_2 per Annum)**	
	Regulated	**Unregulated**
Baseline: Part L 2013 Compliant Development	7.2	32.2
After *Be Lean* Measures	6.1	32.2
After *Be Clean* Measures	6.1	32.2
After *Be Green* Measures	4.2	32.2
Stage	**Regulated Carbon Dioxide Savings**	
	Tonnes CO_2 per Annum	**Percentage**
Savings from *Be Lean* Measures	1.1	15.4%
Savings from *Be Clean* Measures	0.0	0.0%
Savings from *Be Green* Measures	1.8	25.8%
Cumulative On-Site Savings	**2.9**	**41.2%**

Table 3 Site Wide Carbon Dioxide Emissions and Cumulative Savings			
	Regulated Carbon Dioxide Emissions (Tonnes CO_2 per Annum)	Regulated Carbon Dioxide Savings	
		Tonnes CO_2 per Annum	Percentage
Baseline: Part L 2013 Compliant Development	576.1	0.0	
After *Be Lean* Measures	513.8	62.3	10.8%
After *Be Clean* Measures	598.9	-85.1	-14.8%
After *Be Green* Measures	366.1	228.5	39.7%
Cumulative On-Site Savings		**205.6**	**35.7%**

Table 4 Regulated Carbon dioxide emissions savings (TCO_2)		
	Annual	Over 30 years
Domestic shortfall to Zero Carbon	361.7	
Non-Domestic shortfall to 35% improvement	0	
Shortfall	361.7	10,851
Cash in lieu contribution (£60/TCO2)		£651,060

CONTENTS

1. INTRODUCTION

1.1 This Energy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Redrow Homes Limited. This statement is in support of the planning application for the proposed 265 Burlington Road development, in the London Borough of Merton.

1.2 The application consists of 456 new dwellings, 499 m^2 of office space and 78 m^2 residential amenities.

1.3 The formulation of the energy statement is on the basis that it targets a viable reduction in carbon dioxide (CO_2) emissions through the application of the London Plan Energy Hierarchy with an affordable, deliverable and technically appropriate strategy.

1.4 This statement establishes a baseline assessment of the energy demands and associated CO_2 emissions for 265 Burlington Road. It reflects the Approved Document Part L 1A (2013) and Part L 2A (2013) baseline for new build dwellings and non-domestic construction respectively.

1.5 The report will then follow The London Plan Energy Hierarchy approach of ***Be Lean***, ***Be Clean*** and ***Be Green*** to enable the maximum viable reductions in Regulated and Total CO_2 emissions over these baselines.

2. DEVELOPMENT OVERVIEW

2.1 The proposed development of 265 Burlington Road is to take place within the London Borough of Merton.

Development description

2.2 Demolition of the existing buildings and erection of two blocks of development ranging in height between seven and 15 storeys and comprising 456 new homes, of which 114 will be one beds, 290 will be two beds and 52 will be three beds. 499 m^2 of B1(a) office space will be accommodated at ground floor level along with 220 car parking spaces, 830 cycle parking spaces, a realigned junction onto Burlington Road, hard and soft landscaping and associated residential facilities. The application also includes minor changes to the layout and configuration of the retained Tesco car park.

2.3 Figure 1 describes the proposed development. It should be noted that the non-domestic components will be designed to be shell and core only.

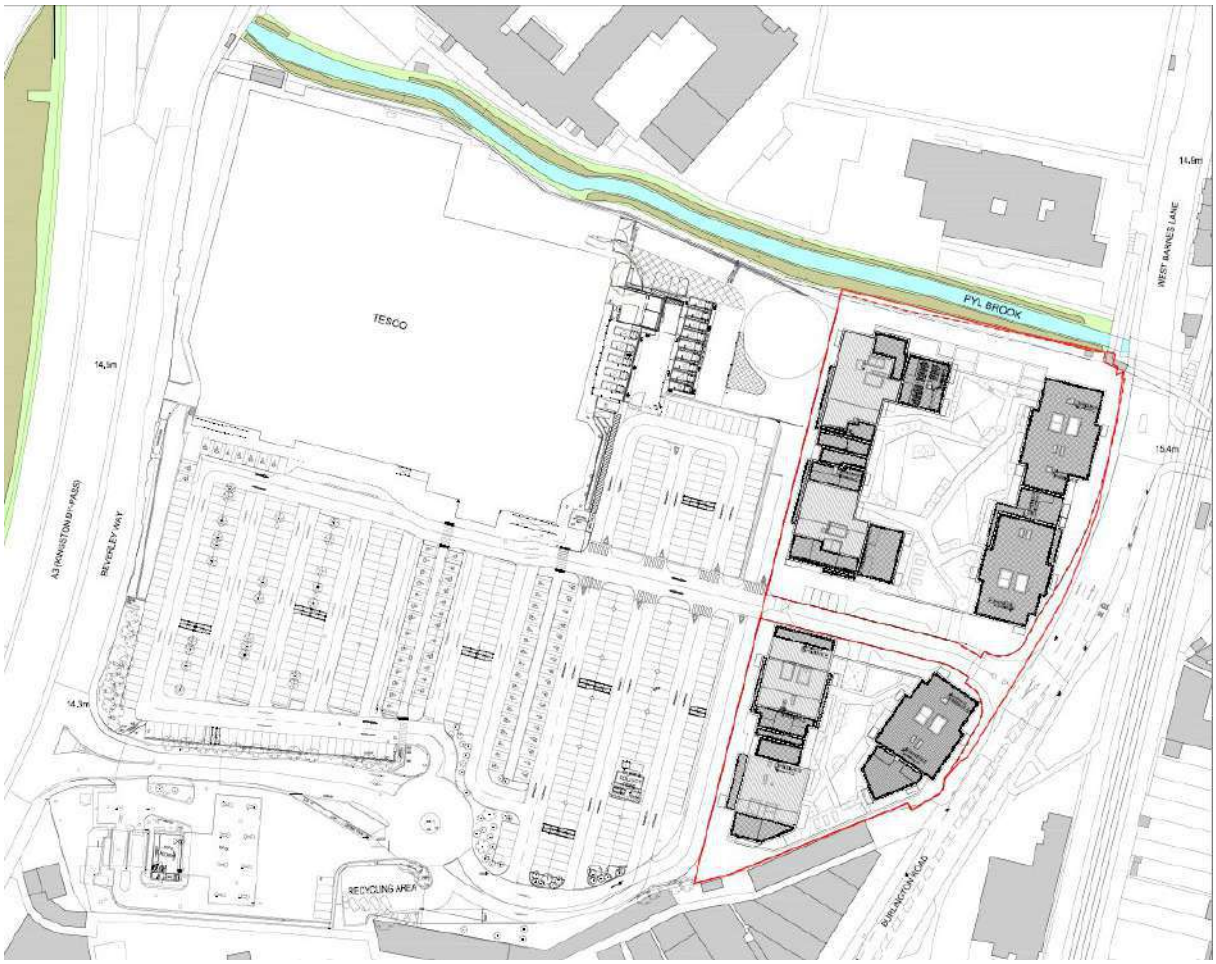


Figure 1: 265 Burlington Road proposed development

2.4 At this stage of the design it is intended that the proposed structure will be a concrete frame.

3. PLANNING POLICY

3.1 The following planning policies and requirements have informed the sustainable design of the proposed development.

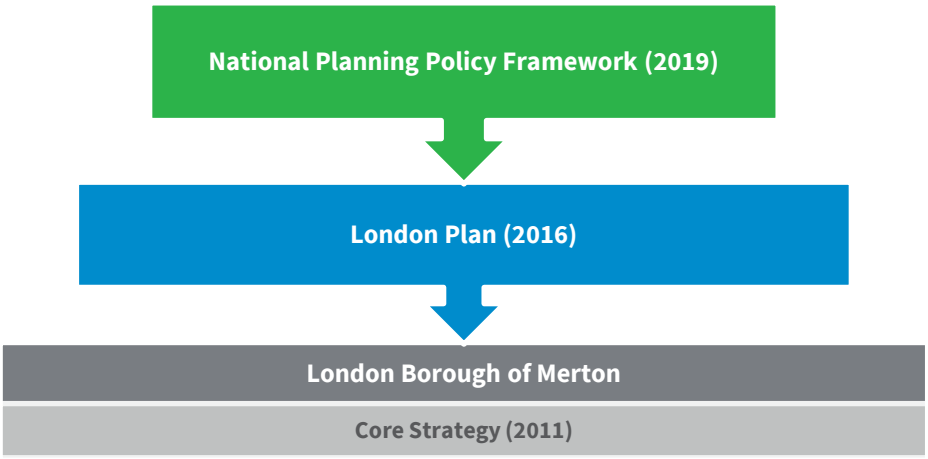


Figure 3: Relevant Planning Policy Documents

National Policy: NPPF

3.2 The revised National Planning Policy Framework (NPPF) was published on the 19th February 2019 and sets out the Government's planning policies for England.

3.3 The NPPF provides a framework for achieving sustainable development, which has been summarised as "*meeting the needs of the present without compromising the ability of future generations to meet their own needs*" (Resolution 42/187 of the United National General Assembly). At the heart of the framework is a **presumption in favour of sustainable development**.

3.4 The document states that the planning system has three overarching objectives which are interdependent and need to be pursued in mutually supportive ways:

a) **An economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) **A social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with

accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) **An environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

Regional Policy: The London Plan (2016)

3.5 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20 - 25 years.

3.6 The Draft London Plan was published for consultation on 1st December 2017, and consultation took place on this document up to 2nd March 2018. The Greater London Authority is now reviewing consultation feedback, with a view to formally publishing the document towards the end of 2019/beginning of 2020.

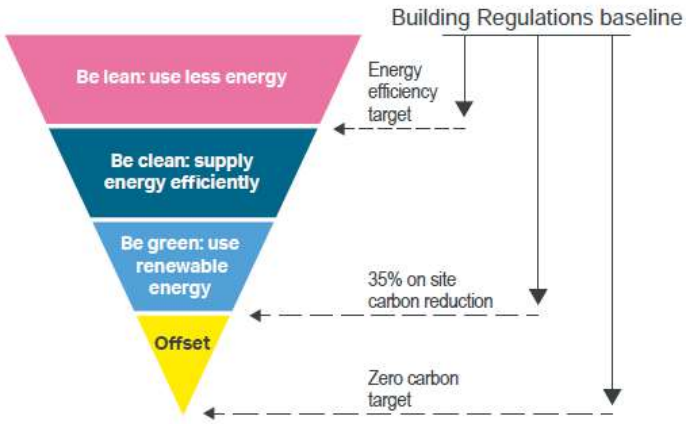


Figure 2: London Plan Energy Hierarchy (GLA)

3.7 The following outlines key policies set out in the current London Plan which are relevant to the proposed development and this Energy Statement.

3.8 **Policy 5.2 – Minimising Carbon Dioxide Emissions** requires that all residential and non-residential major developments to achieve a specific improvement. This is shown in Figure 2. The London Plan Sustainable Design and Construction SPG (2014) updates this target stating that the Mayor will adopt an onsite carbon dioxide improvement target beyond Part L 2013 of 35%. The Policy also states that all residential buildings built after 2016 have to be zero carbon.

3.9 Where zero carbon cannot be demonstrated on-site, any shortfall may be provided offsite or through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere. The calculation would be based on a cash-in-lieu contribution of £60/TCO_2.

3.10 **Policy 5.3 – Sustainable Design and Construction** states that the highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments. Major development should meet the minimum standards

outlined in the London Plan Supplementary Planning Guidance and this should be clearly demonstrated.

3.11 **Policy 5.5 – Decentralised Energy Networks** states that the Mayor expects 25 per cent of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025. The Mayor will prioritise the development of decentralised heating and cooling networks at the development and area wide levels, including larger scale heat transmission networks.

3.12 **Policy 5.6 – Decentralised Energy** requires that all developments should evaluate the feasibility of Combined Heat and Power (CHP) systems and examine the opportunities to extend the system beyond the site boundary to adjacent sites.

3.13 **Policy 5.7 – Renewable Energy** states that within the framework of the Energy Hierarchy, major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible. No specific target is provided in the policy.

3.14 **Policy 5.8 – Innovative Energy Technologies** encourages the more widespread use of innovative energy technologies to reduce use of fossil fuels and carbon dioxide emissions.

3.15 **Policy 5.9 – Overheating and cooling** encourages the design of places and spaces to avoid overheating and excessive heat generation, and to reduce overheating due to the impacts of climate change and the urban heat island effect on an area wide basis.

Sustainable Design and Construction Supplementary Planning Guidance (2014)

3.16 The London Plan Sustainable Design and Construction SPG was adopted in April 2014 and provides detail and best practice guidance on how to implement the sustainable design and construction and wider environmental sustainability London Plan policies.

3.17 The SPG provides guidance on topics such as energy efficient design; meeting carbon dioxide reduction targets; decentralised energy; how to off-set carbon dioxide where the targets set out in the London Plan are not met; retro-fitting measures; monitoring energy use during occupation; air quality; resilience to flooding; urban greening; pollution control; basements and local food growing.

Energy Assessment Guidance (October 2018)

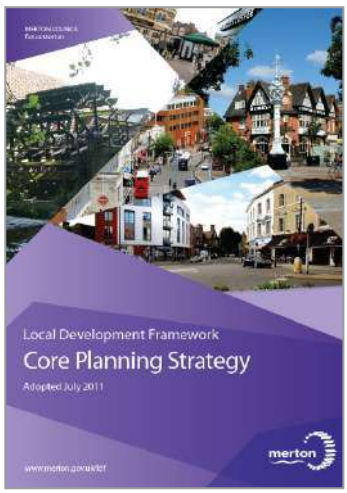
3.18 The Greater London Authority (GLA) have published their Energy Assessment Guidance. It provides advise on how the energy statement can demonstrate compliance with the London Plan Policy 5.2. The following are key points taken from the document:

- It provides guidance on the approach on how to complete the assessment for various planning application types. For instance, Reserved Matters applications should conform to the requirements set out in the Outline Planning Consent;
- From January 2019, the GLA encourage, but do not mandate, the use of SAP 10 carbon factors;
- The GLA signal future policy changes in the draft London Plan. It highlights the policy, which is not in place now, will require carbon emissions improvement as a result of energy efficiency, Be Lean, of 10% and 15% for domestic and non-domestic developments respectively;
- There are requirements to report energy demands and improvements in carbon emissions;
- Areas not considered as shells are required to complete cooling and overheating assessments under Be Lean;
- Greater detail on selecting energy systems with requirements to provide data for assessing air quality and limiting the impacts of combustion plant in terms of NO_X and PM_{10}.

3.19 This application, though a full planning application and will aim to achieve the GLA CO_2 targets by utilising the SAP10 carbon emission factors.

Local Policy: London Borough of Merton

Core Strategy (2011)



3.20 The London Borough of Merton's Core Strategy document was adopted in July 2011. The following policies are considered relevant to this Statement:

3.21 **Policy CS 14 – Design**: High quality sustainable design must meet urban design and climate change objectives. All residential development must comply with the most appropriate minimum space standards.

3.22 **Policy CS 15 – Climate Change**: 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:

- How it makes effective use of resources and materials, minimises water use and CO_2 emissions;
- How development proposals are making the fullest contribution to minimising carbon dioxide emissions in accordance with Be Lean, Be Clean, Be Green;

> 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;

> All non-domestic development over 500 m^2 will be expected to be built to a minimum of BREEAM (Building Research Establishment Assessment Method) Very Good standard and meet CO_2 reduction targets in line with the requirements of the London Plan or national policy, whichever is the greater. The non-domestic area is considered to be less than 500 m^2, therefore BREEAM is not required.

London Borough of Merton Local Plan (2020)

3.23 Consultation on Stage 1 of Merton's Local Plan 2020 took place between October 2017 and January 2018. A draft Local Plan is due to be released in October 2018 and will be adopted in 2020. This has been released and now in consultation until January 2019.

Summary of Policy Targets

3.24 London Plan and the London Borough of Merton requirement for **35% Regulated CO_2 reduction over Part L 2013.**

3.25 In accordance with the London Plan, CO_2 reductions are to be achieved in accordance with the **Energy Hierarchy**: *Be Lean* (energy efficiency); *Be Clean* (heating infrastructure); *Be Green* (renewable energy technologies); and

3.26 The SAP10 carbon factors are to be utilised for this development, while ensuring compliance with Part L 2013.

3.27 The **GLA Zero Carbon Homes** policy will apply to the residential units.

3.28 The cash-in-lieu sum based on Merton's £60 current cost per tonne of CO_2 (over 30 years) applies to meet unachievable reductions in carbon emissions.

4. BASELINE EMISSIONS ASSESSMENT

Methodology

4.1 This statement first establishes a baseline assessment of the energy demands and associated CO_2 emissions for the build types.

4.2 The report will then follow The London Plan Energy Hierarchy approach of ***Be Lean***, ***Be Clean*** and ***Be Green***, as described by Figure 2, to enable the maximum viable reductions in Regulated and Total CO_2 emissions over the baselines.

4.3 The estimated annual energy demands have been calculated using the accredited SAP tool NHER Plan Assessor 6.3.4 for domestic assessment and SBEM tool Design Builder for the non-domestic assessment. This software is a registered calculation tool to determine regulated energy demands associated with hot water, space heating and fixed electrical items alongside the unregulated energy demands.

4.4 The baseline emissions are based on the target emission rate which is determined by the NCM modelling guide.

4.5 A representative sample of apartments were selected that account for the entire development and included all the occupancy types. These accounted for the floor level, number of bedrooms, orientation and repetition of apartment type.

4.6 The Building Regulations Part L documentation provided in the appendix have been completed to meet current Part L assessment requirements. This statement however takes into account the GLA requests such as considering SAP10 carbon factors and additional calculations for district heating.

CO_2 Baselines for Building Types

4.7 Table 5 shows the Regulated and Total CO_2 baseline cases based on the SAP10 carbon emissions.

Table 5: Regulated CO_2 Baseline Cases

	Carbon dioxide emissions TCO_2.a					
	Domestic		**Non-domestic**		**Total**	
	Regulated	Unregulated	Regulated	Unregulated	Regulated	Unregulated
Baseline	569	180	7	32	576	212

5. ‘BE LEAN’: DEMAND REDUCTION

5.1 In line with the London Plan Energy Hierarchy, the following ***Be Lean*** measures (demand reduction) are proposed. 265 Burlington Road to achieve the calculated baseline.

Building Fabric

5.2 Following an iterative approach, the following thermal envelope average area weighted U values, were determined to meet the policy requirements. These values, or similar, will be applied to meet the required standards:

- External wall U-value of 0.15 W/m^2.K, which is based on wall thickness of at least 500 mm;
- Ground floor U-value of 0.10 W/m^2.K;
- Exposed floor U-value of 0.15 W/m^2.K;
- Roof U-value of 0.10 W/m^2.K;
- Double-glazed windows with a U-value of 1.30 W/m^2.K;
- Corridor walls U-value of 0.18 W/m^2.K, assuming it is sheltered by an unheated corridor;
- Fully filled and sealed partitions to prevent thermal bypass;
- Door U-value in sheltered spaces (into corridors) of 1.00 W/m^2.K, based on a wood frame, draught proofing and a perforated lintel.

5.3 These values represent a good level of sustainable design and construction which surpasses the notional building.

Lighting

5.4 Energy efficient lighting is proposed to be installed on the site. This will help reduce the occupant’s electrical energy bills. The lighting will be well designed and utilise luminaires which are LED or equivalently efficient.

5.5 It would be expected that non-domestic lighting will be provided with energy efficient lighting design, with a lighting power density of no more than 1.60 W/m^2/100lux. This will also be accompanied with various automatic, manual and photoelectric dimming lighting controls, with a low parasitic power. These will help to reduce the energy consumption associated with lighting.

Ventilation & Air Permeability

5.6 It is proposed that the dwellings will be provided with mechanical ventilation units with heat recovery (MVHR). Figure 3 describes how MVHR typically operates.

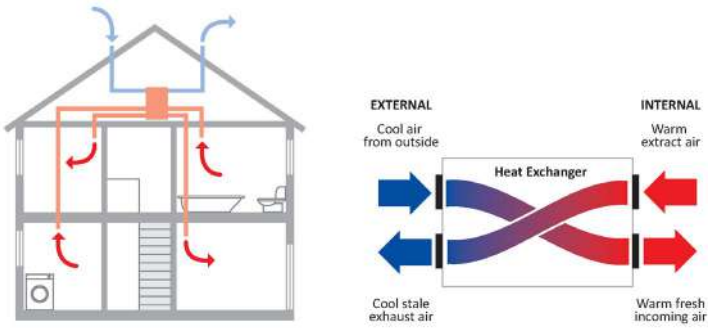


Figure 3: MVHR operation

5.7 The dwelling MVHR units will be based on a system with a specific fan power (SFP) of 0.52 W/l/s for a unit with a bathroom and kitchen extract. Dwellings with more than one bathroom would be expected to have an SFP of 0.55 W/l/s. The MVHR unit should have a heat recovery in excess of 94%.

5.8 Non-domestic areas are considered as shells for this application. We have considered that they can reasonably be provided with a balanced supply and extract mechanical ventilation system with a heat exchanger. This system would have a central air handling unit which would require a specific fan power (SFP) of 1.40 W/l/s and a heat recovery efficiency of at least 85%, any terminal units such as fan coil units would be expected to have a specific fan power of 0.16 W/l/s.

5.9 The development will be based on an air permeability rate of 3.00 $m^3/hr.m^2$ achieved for the dwellings and a maximum of 5.00 $m^3/hr.m^2$, with.

Thermal Bridging

5.10 In well insulated buildings, as much as 30% of heat loss can occur through thermal bridges, which occur when highly conductive elements (e.g. metal studs) in the wall construction enable a low resistance escape route for heat.

5.11 Part L1A now places increased importance on addressing heat losses through thermal bridging. As such, the Applicant is committed to developing a building fabric where these are minimised as far as practicable. The results of these improvements are shown in Figure 4.

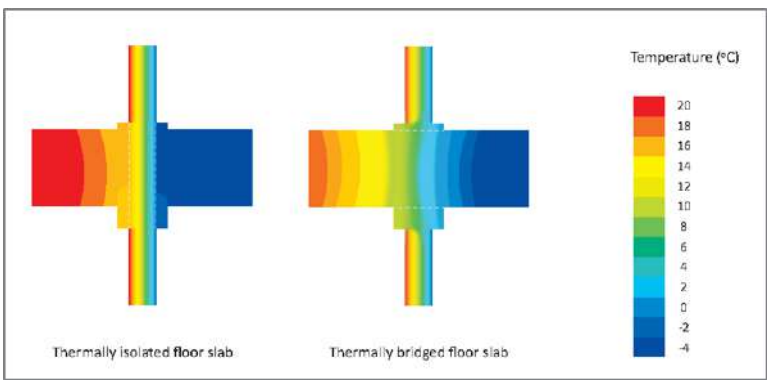


Figure 4: Thermal bridging

5.12 It is proposed that for this development, on the basis of a concrete frame, a mix of default, accredited and bespoke thermal bridges would be targeted. This is based on our experience and availability to alter constructions accordingly.

5.13 The following thermal bridge junctions between various elements have been assumed to be bespoke on the basis they can economically and technically be targeted. These go beyond standard practice and help to ensure a lean building design. These include between:

- Window surrounds, sill and jambs;
- Intermediate dwellings floors;
- The dwelling and roof parapet;
- The dwelling and balcony.

5.14 A number of thermal bridge junctions, such as dwelling corners where economical and technical feasibility can be proven, have been targeted as accredited constructions details (ACD).

5.15 The targeted thermal bridge psi values will be fully determined during detail design.

Space Heating & Hot Water

5.16 The space heating requirement of all build elements will be reduced by the fabric, air tightness and ventilation measures detailed above.

5.17 All the dwellings will be connected to the energy centre. This is discussed further with relation to decentralised energy in Be Clean.

5.18 The boiler gross seasonal efficiency for the energy centre has been assessed to have an efficiency of 89%.

5.19 The office units are considered as shell but will be supplied using individual air source heat pumps, discussed in Be Green, the SCOP for the proposed plant is 4.10.

Limiting the Risk of Summer Overheating

5.20 Minimising the risk of summer overheating is important so as to ensure that homes are adapted to climate change and remain comfortable to occupy in the future. An illustrative strategy is presented in Figure 5 that enables any risk to be mitigated. The Applicant commits to ensuring that all dwellings will not have a high risk of summer overheating and will adopt appropriate measures to ensure this is delivered.

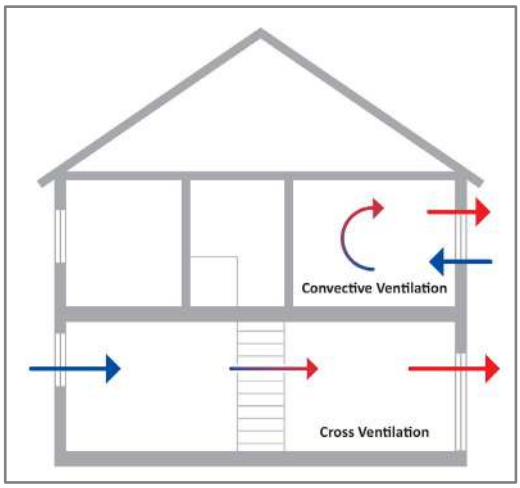


Figure 5: Natural ventilation

5.21 Open-able windows will be used across the development and will enable convective-ventilation and night purging. Most units also benefit from cross ventilation. These concepts are illustrated on the left and will reduce the build-up of heat within homes.

5.22 Some units benefit from overhangs and balcony shading. These act effectively in mitigating any overheating risk while maintaining good levels of daylight.

5.23 A detailed analysis has been conducted and discussed in Hodkinson's overheating report. This report also contains the GLA domestic overheating checklist This study considered dwellings and communal corridors. A result of this analysis highlighted a glazing g value of 0.35 is expected to be required for part of the scheme, with other areas requiring a g-value of at least 0.42.

5.24 In line with GLA Policy 5.9, the cooling hierarchy, has considered a range of passive and active mitigation measures to respond to climate change.

5.25 Figure 6 describes the cooling hierarchy.

5.26 The design has already discussed the use of efficient equipment such as LED lighting to efficiency reduce heat gains.

5.27 A number of passive design changes have been considered and applied to the development. The items considered were reducing the glazing area, utilising solar control glazing and considering shading devices.

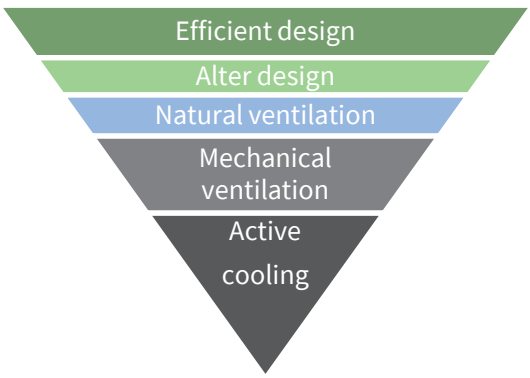


Figure 6: Cooling hierarchy

5.28 Following the active reduction in heat gains a natural ventilation study was conducted. This was conducted with details from specialist air quality and acoustic consultants. As mentioned earlier Hodkinson's overheating report highlights how overheating can be avoided in the dwellings.

5.29 The commissioned acoustic report highlighted that the site will experience higher levels of noise. This means controlling window openings.

5.30 The commercial areas are shell and core. As such the final fit-out specification requirements are not known. This means that the density and utilisation of the space is not known at this stage. In line with the Energy Assessment Guidance, it has been assumed that the non-domestic spaces will be cooled.

Cooling

5.31 Cooling is only considered for the non-domestic areas where there is a significant need as a result of the space use. The spaces are considered as shells

5.32 Where required cooling will be designed to maximise natural cooling before using energy. The cooling will be expected to be delivered with a seasonal efficiency (SEER) of 6.00. and a peak efficiency (EER) of 3.23. Table 6 shows the cooling demand calculated using the National Calculation Methodology.

Table 6: Non-domestic cooling demand – area weighted

	Cooling demand (MJ/m^2)
Actual	87.2
Notional	105

CO_2 Emissions Following *Be Lean* Measures

5.33 Table 7 describes the energy demand for the development, based on the Building Regulations approved methodologies for domestic and non-domestic assessment.

Table 7: Energy demand for development after demand reduction measures

Energy demand for site by building use		
Energy demand use	**Residential**	**Offices**
	MWh/yr	**MWh/yr**
Space heating	798	12
Hot water	988	2
Lighting	178	5
Auxiliary	84	2
Cooling	-	17
Unregulated electricity	1,484	36
Unregulated gas	-	-

5.34 In achieving energy efficiency savings, the dwellings in the development, as a whole, also demonstrate compliance with the target fabric energy efficiency (TFEE). This is a mandatory requirement to demonstrate compliance with Approved Document Part L 1A and is demonstrated in Table 8 below.

Table 8: Summary table reporting on FEE for dwellings

Summary report on FEE			
Energy demand use	**Target Fabric Energy Efficiency**	**Design Fabric Energy Efficiency**	**Improvement**
	MWh/yr	MWh/yr	%
Space heating	1,705	1,531	10%

5.35 Table 9 below outlines the reduction in CO_2 emissions following the inclusion of all the above energy efficiency measures for each of the energy strategies. It can be seen that all build types achieve or exceed the baseline assessment through ***Be Lean*** measures alone.

5.36 The Draft New London Plan, August 2018 version, discusses that an improvement should be sought at the Be Lean stage of a development. The reduction in carbon emissions presented in Table 9 goes beyond current policy and positively responds to emerging policy.

Table 9: CO_2 reductions following Be Lean measures

	Carbon dioxide emissions (TCO_2.a)			
	Domestic regulated	**Non-domestic regulated**	**Total**	**Improvement**
New Builds – Baseline	569	7	576	11%
After Be Lean	508	6	514	
Development Total Reduction over *Base* case	**62**			**11%**

6. BE CLEAN: HEATING INFRASTRUCTURE

6.1 In line with Policy 5.6 of the London Plan, the feasibility of decentralised heating networks as a Be Clean measure has been evaluated. This is the next step in the Energy Hierarchy after ***Be Lean***. The London Plan outlines the following order of preference: -

> Connection to existing heating or cooling networks

> Site wide CHP network

> Communal heating and cooling

Connection to Existing Heat Networks

6.2 The proposed development is marked in Figure 7. Based on the London Heat Map, there are no existing or proposed heat networks close to the site.

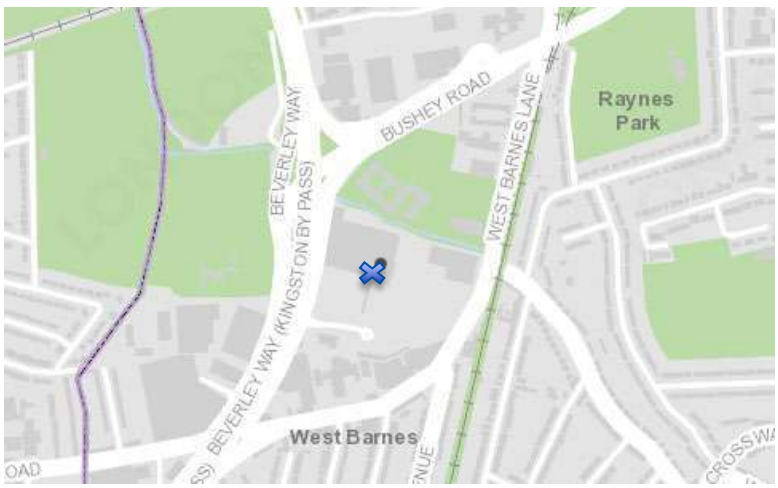


Figure 7: London heat map (https://maps.london.gov.uk/heatmap/) for proposed development

6.3 An additional check was conducted after checking the London heat map.

6.4 The London Borough of Merton have produced a District Heating Feasibility report. It highlights that the development is not within the areas considered for the development of their heat masterplan.

6.5 As a result of the check described above, connecting to an existing network is not possible.

Site wide heat network

6.6 The heat load associated with this development are sufficient to consider an onsite heat network.

6.7 Through use of centralised heat generation, the development would be able a response to the need to future—proof against a likely wider use of district heating on a regional and national scale in the long-term as fossil fuel use declines and utilities are decarbonised.

6.8 In small to medium scale development such as this, CHP led systems tend to be uneconomical due to lower electrical efficiencies. As a result, CHP has not been considered appropriate for this development.

6.9 The development's central energy centre is currently proposed to be installed at the base of the tallest building, Block A. It is proposed that a raised height, 5.6 m, energy centre of 180 m^2 is designed to include thermal stores.

6.10 Figure 8 demonstrates an indicative pipe layout from the energy centre to each block, where risers will house the pipework for distribution across each floor.

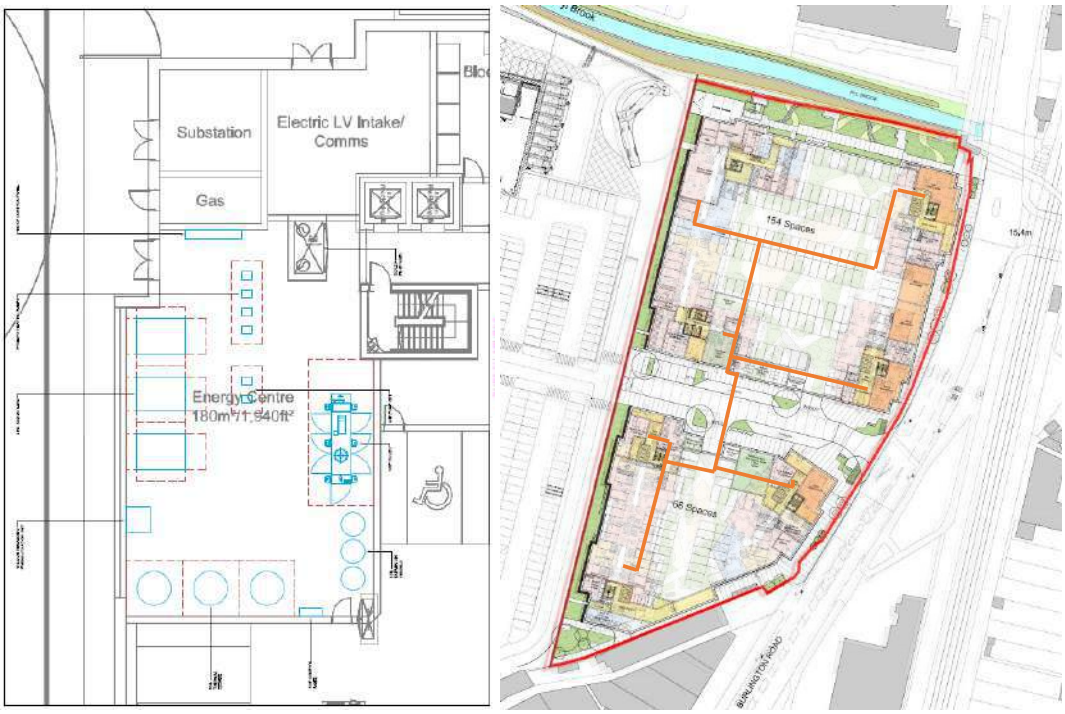


Figure 8: Indicative energy centre and pipework layout from energy centre to blocks courtesy of Silcock Dawson & Partners

6.11 The proposed energy centre will be led by heat pumps and backed up by gas boilers. The boilers will be operated for peak heat demands. It is proposed, therefore that at least 85% of the annual heat load will be supplied by the heat pumps and the remaining 15% by gas boilers. For avoidance of doubt the dwellings will all be connected to a network. Further details of the heat pumps is provided in Be Green.

6.12 The developers are committed to connecting to an area wide heat network in the longer term. This will be facilitated through a removable wall panel and plant replacement as demonstrated in Figure 9.

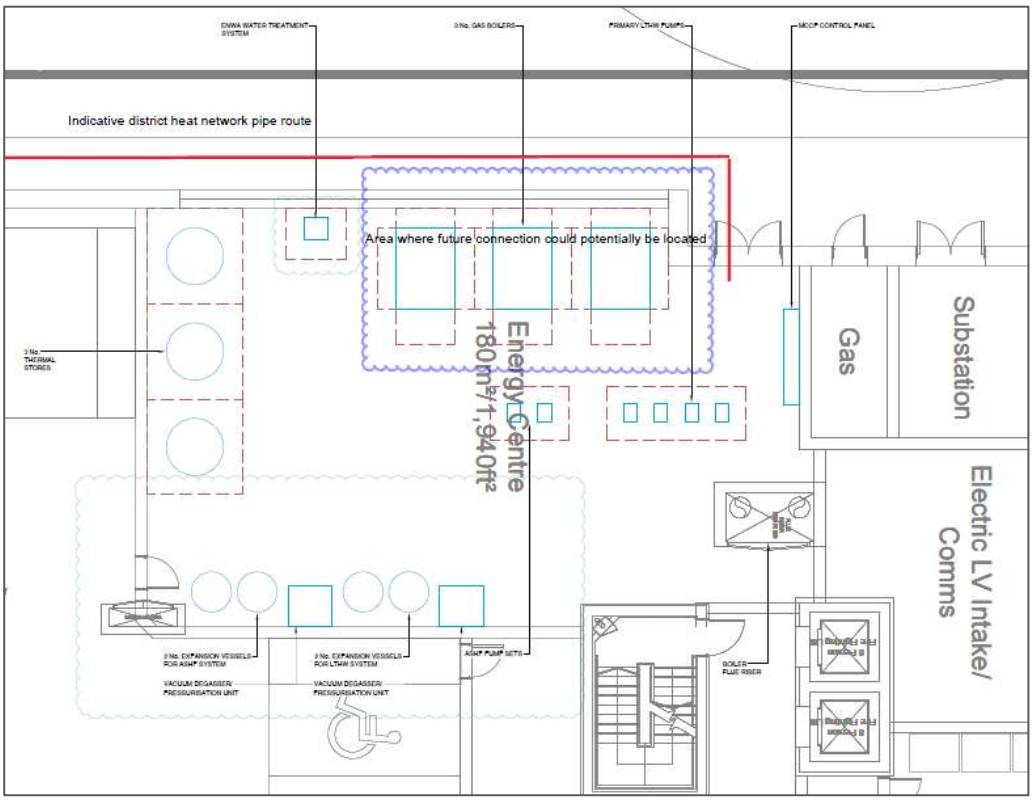


Figure 9: Indicative route and plant replacement drawing courtesy of Silcock Dawson & Partners

6.13 The heat network will be designed and installed in line with industry best practice considering documentation such as CIBSE Heat Networks Code of Practice CP01 2015. For instance, this includes multiple risers to reduce pipe heat losses, and insulated district heat pipe network for low heat losses.

6.14 The SAP 2012 methodology presumes a default district heating heat loss factor of 1.05. This is unlikely to be achievable in reality for a district heating scheme. As a result, for the purposes of this energy statement a factor that represents 20% heat losses from the heat network has been considered as a part of the calculation.

6.15 Table demonstrates the impact of the additional network losses on the annual carbon emissions associated with this development.

Table 10: Additional carbon emissions resulting from heat network heat losses

Part L calculated typical heat loss (MWh/annum)	101
Additional calculated heat loss (MWh/annum)	405
Additional resultant carbon emissions (TCO_2/annum)	85

6.16 Table 11 provides a technical description required for this energy strategy. The proposed plant will be developed further during detailed design to ensure similar improvements are achieved.

Table 11: Energy centre plant capacity

	ASHP	Boiler
Performance standards		
Proportion of annual heat demand provided	Up to 85%	15%
Heat efficiency	~ 200%	89% (based on SAP methodology)
NO_X emissions	0 mg/ Nm^3	40 mg/kWh
Indicative plant		
Heat output (kW)	Up to 730	Up to 2400

Air quality

6.17 Table 12 describes the information that was provided to the air quality consultants for this development to demonstrate the impact of the proposed energy strategy. The information follows the requirements described by the GLA as a part of the energy assessment guidance.

Table 12: Air quality impacts

Total fuel consumption			
Energy Source	**Residential MWh/yr**	**Non-Residential MWh/yr**	**Notes**
Grid Electricity	1,233	41	Accounting for heat pump led energy centre
Communal Gas Boilers	544	0	
Connection to existing DH network	N/a	N/a	No connection available
Other gas uses (e.g. cooking)	N/a	N/a	Cooking is completed using Electricity

Be Seen – monitoring

6.18 Monitoring energy use helps to reduce overall consumption in the longer term. It will assist with highlighting faults and understanding general trends.

6.19 This information can be used as a part of the preventative maintenance programme prolonging equipment life.

6.20 This development will benefit from monitoring with meters installed measuring heat use across the site. Each dwelling will have their own meter providing information on energy use for the end user.

CO_2 Emissions Following *Be Clean* Measures

6.21 Table 13, below, outlines the reduction in CO_2 emissions following connection to the energy centre. In line with GLA guidance the following table presumes heat is provided by gas fired boilers.

Table 13: Regulated CO_2 reductions showing improvements of Be Clean over Be Lean measures

	Carbon dioxide emissions (TCO_2.a)			
	Domestic regulated	**Non-domestic regulated**	**Total**	**Improvement**
New Builds – Baseline	569	7	576	-4%
After Be Lean	508	6	514	
After *Be Clean*	593	6	599	
Development Total Reduction over *Be Lean* case	**-85**			**-17%**

7. BE GREEN: RENEWABLE ENERGY TECHNOLOGIES

7.1 The final part of the London Plan Energy Hierarchy is ***Be Green*** which examines the feasibility of renewable energy technologies for 265 Burlington Road.

7.2 Policy 5.7 highlights that renewable technologies should be considered as the third step of the energy hierarchy. As a result, renewable technologies are not required for the purposes of the energy strategy to meet policy.

7.3 This section does however provide details to demonstrates the feasibility of renewable energy technologies. For technologies to be feasible, they must be complementary for the heating infrastructure specified at 'Be Clean' stage.

Biomass Boiler

7.4 Biomass boilers generate heat on a renewable basis as they are run on biomass fuel which is virtually carbon neutral. It does, however, produce significant particulate matter (PM). This would have to be mitigated through selection of appropriate additional filtration systems.

7.5 Biomass boilers also requires many delivery trucks to supply fuel to the site. It would be likely that these would be HGV trucks. This would increase the local pollution level and congestion. This would increase the traffic in the area. As a result of these factors, this option has not been taken forward.

Heat Pumps

7.6 Whilst reducing energy consumption, heat pumps replace gas as the heating fuel with electricity. The electricity grid is expected to decarbonise and therefore the emissions associated with this technology are likely to drop.

7.7 Ground Source Heat Pump (GSHP) can provide reductions in energy. However, they are generally limited to sites with large amounts of space. The proposed development is located on a brownfield site. This increases the complexity and subsequent costs for applying the technology. As a result GSHP have not been selected for this development.

7.8 Air Source Heat Pumps (ASHP) are a more economical alternative to GSHPs as they do not require ground works. However, the performance of ASHPs can be lower than for GSHPs. Given GSHP are not appropriate for this development ASHP have been considered further.

7.9 ASHP have been selected as the plant to provide heat for the proposed heat network. The design was reviewed by the mechanical and electrical engineers and in consultation with heat pump

manufacturers. The heat pump manufacturers confirmed that the following properties were the most efficient given the various technical requirements to supply heat to the dwellings by for the heat network:

> SCOP of up to 2.00;

> Production of up to 85% of the heat load with the remaining load provided by gas fired boilers.

7.10 The ASHP have been required to be placed on the roof of the development. Figure 10 describes where they are positioned on the highest blocks. This roof plan is provided in the appendix.

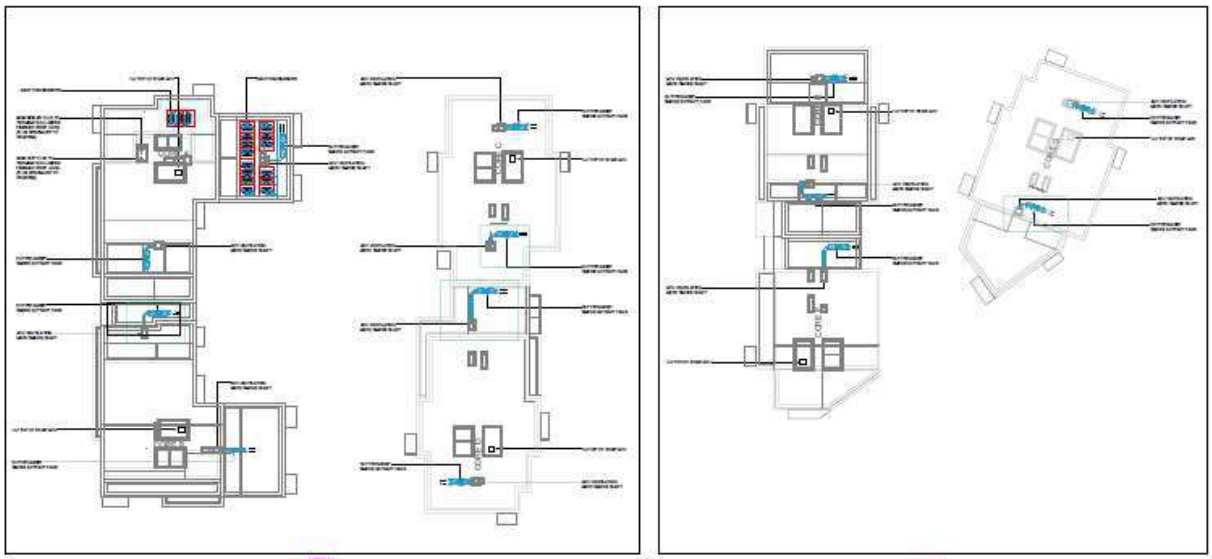


Figure 10: Indicative roof plan highlighting plant location

7.11 Given the commercial units are shell only; they will be fitted out by their subsequent owners. The commercial units will not be connecting to the communal heat network. It has been assumed that a reversable heat pump solution will be used for the commercial areas. This will provide both carbon efficient heating and cooling to the shell. As a result, it is proposed that during fit out, they would likely use an air source heat pump with a heating SCOP of 4.10.

7.12 Space has been allocated for the external condensing units to be positioned in the car park. This is a space which is sheltered, though has been designed to have enough ventilation to meet requirements for car parks.

7.13 Table 14 predicts the energy savings and subsequent energy cost from utilising air source heat pumps.

Table 14: ASHP energy saving

ASHP energy savings		
	Base case (Be Lean)	**Be Green**
Domestic heating energy kWh/dwelling		
Heating by gas	5,452	818
Heating by electric	-	2,062
Commercial heating energy kWh/m²		
Heating by gas	-	-
Heating by electric	23	5
Fuel cost £/kWh*		
Heating by gas	£0.03	£0.03
Heating by electric	£0.15	£0.15
Total cost		
Dwellings (£/dwelling)	£164	£334
Commercial (£/m²)	£4	£1
* Based on BEIS Gas and electricity prices in the non-domestic sector Table 3.4.2 (inc CCL) 28/03/2019, Gas prices based on small annual consumption and electricity consumption considered as small/medium.		

7.14 The impact of utilising heat pumps across the development is a 206 TCO_2/annum site wide reduction in carbon emissions over the base case. This equates to savings greater than 35% and therefore meeting GLA Policy 5.2.

7.15 Given the reduction in carbon emissions and requirements for low carbon heating technology, Air Source Heat Pumps have been selected for this development.

Wind Turbines

7.16 Urban rooftop wind turbines do not generally perform sufficiently to well to warrant their installation, due to the low and turbulent wind conditions present. They are therefore likely to remain technically unfeasible.

7.17 It has therefore been concluded that wind turbines are not a suitable technology for this site.

Solar Thermal Panels

7.18 Solar thermal panels generate heat for hot water.

7.19 The benefits of solar thermal panels are constrained by the seasonal variation in solar radiation. This means that solar thermal panels can only deliver a maximum of 60% of the annual hot water

demand. This would still require all the proposed conventional fuel heating infrastructure to be in place to meet times when DHW generation is not possible using this technology.

7.20 This technology would be in direct competition with the proposed heat infrastructure. It has therefore been concluded that solar thermal panels are not a suitable technology for this site.

Photovoltaic (PV) Panels

7.21 PV panels generate electricity from solar radiation. The generating potential of PV panels is not dependent on development demand, but on available roof space for installation and ensuring that they are not overshadowed.

7.22 The generated energy can be used on site, in the locality or sold back to the national grid. This means that the technology will directly offset the energy that would otherwise be drawn from the national grid.

7.23 This technology is technically feasible however must consider that parts of the roof area has been allocated for amenity and plant space. These uses mean that PV cannot safely and securely be situated on these parts of the roof. This is demonstrated in Figure 10, and in greater detail in the appendix. The image in appendix C demonstrates feasible areas for PV. This drawing highlights 160 m^2 of available pitched roof and 60 m^2 of available flat roof for PV.

7.24 Table 15 highlights the total PV that was feasible to be added to the roof and the total carbon emissions offset as a result. This calculation has been conducted in line with the SAP methodology.

Table 15 Impact of PV

PV	Pitched	Flat	Total
Capacity	20 kWp	7.5 kWp	27.5 kWp
Energy produced	14,820 kWh	5,133 kWh	19,954 kWh
Carbon emission offset (based on SAP10 carbon emissions)	3,201 $kgCO_2$	1,109 $kgCO_2$	4,310 $kgCO_2$

CO_2 Emissions Following *Be Green* Measures

7.25 It should be noted that the combination of ***Be Lean*** and ***Be Clean*** measures enable the development to meet the requirements of London Plan Policy 5.2 and 5.9. Table 16 below demonstrates this.

Table 16: Regulated CO_2 reductions following Be Green measures over Be Lean and Clean measures

	Carbon dioxide emissions (TCO_2.a)			
	Domestic regulated	**Non-domestic regulated**	**Total**	**Improvement**
New Builds – Baseline	569	7	576	40.4%
After Be Lean	508	6	514	
After *Be Clean*	593	6	599	
After *Be Green*	362	4	366	
Development Total Reduction over *Be Clean* case	**233**			**38.9%**

8. ZERO CARBON

8.1 The London Plan requires residential developments to be zero carbon. Where this cannot be achieved on site, the shortfall has to be made up offsite or through a cash in lieu contribution to the relevant borough.

8.2 The contribution is based on offsetting the excess carbon over a 30-year period. Table 17 shows the requirements for the proposed development.

Table 17: Regulated CO_2 reductions required to be offset to meet zero carbon

Regulated Carbon dioxide emissions savings (TCO_2)		
	Annual	**Over 30 years**
Domestic shortfall to Zero Carbon	361.7	
Non-Domestic shortfall to 35% improvement	0	
Shortfall	361.7	10,851
Cash in lieu contribution (£60/TCO2)		£651,060

9. SUMMARY

9.1 The purpose of this Energy Statement is to demonstrate the commitments, key measures and CO_2 reductions identified at each stage of the energy strategy for the proposed 265 Burlington Road development in the London Borough of Merton.

9.2 This energy strategy has been formulated following the London Plan Energy Hierarchy: Be Lean, Be Clean and Be Green. The objective in the formulation of the strategy is to maximise the reductions in CO2 emissions through the application of this Hierarchy with a cost-effective approach that is technically appropriate.

9.3 The development summarised in this application concerns 456 new dwellings, and 499 m^2 of new non-domestic development. The development has been assessed under Approved Document Part L 1A(2013) and Part L 2A(2013) in this Energy Statement.

9.4 Following an examination of both local and national policy requirements, it has been determined that the proposed development is to target a reduction in CO_2 emissions of 35% beyond a determined Part L 2013 baseline case on site. This is equivalent to 40% reduction against a 2010 baseline as discussed in Merton's CS15 Energy policy. For the purposes of this Energy Statement the SAP10 carbon factors are to be utilised.

9.5 A range of Be Lean energy efficiency measures are proposed for the dwellings and Non-residential areas. This is in line with the London Plan Energy Hierarchy. They enable the proposed elements to meet or exceed the baseline cases through energy efficiency alone.

9.6 In accordance with the Energy Hierarchy, the feasibility of decentralised energy production as a Be Clean measure has also been carefully examined. Following a site analysis, a site wide heating network with a plant room located at the base of Block A. In line with GLA guidance gas boilers were used for the Be Clean assessment. There is an increase in carbon emissions due to the heat losses from the heat network.

9.7 In accordance with the Energy Hierarchy, the relevant Be Green renewable energy generating technologies have been evaluated. Heat pumps will be providing heat to the development using a site wide heating network. This achieves the carbon reductions required in line with Policy 5.2 of the London Plan. In line with Policy 5.9 renewables were maximised by introducing PV and heat pumps therefore no further technologies were required to be applied for supplying energy to meet improvement targets for the dwellings.

9.8 The proposed design for the development will enable it to reduce its CO_2 emissions in line with London Plan requirements (35%) over the overall baseline case. This represents a high level of sustainable design.

9.9 The onsite carbon emission reductions required by the London Plan have been achieved. The remaining carbon emissions of 361.7 TCO_2 every year for 30 years are required to be offset. This is completed by a cash in lieu contribution offsetting circa 10,851 TCO_2. This equates to a contribution of £651,060 based on a contribution of £60/TCO_2.

9.10 The tables below demonstrate the reduction in Regulated and Total CO_2 reductions after each stage of the Energy Hierarchy showing energy policy requirements have been achieved. They are based on SAP10 carbon factors.

Table 18 Domestic Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy		
Stage	**Carbon Dioxide Emissions (Tonnes CO_2 per Annum)**	
	Regulated	**Unregulated**
Baseline: Part L 2013 Compliant Development	568.9	179.5
After *Be Lean* Measures	507.8	179.5
After *Be Clean* Measures	592.9	179.5
After *Be Green* Measures	361.9	179.5
Stage	**Regulated Carbon Dioxide Savings**	
	Tonnes CO_2 per Annum	**Percentage**
Savings from *Be Lean* Measures	61.2	10.7%
Savings from *Be Clean* Measures	-85.1	-15.0%
Savings from *Be Green* Measures	226.6	39.8%
Cumulative On-Site Savings	**202.7**	**35.6%**

Table 19 Non-Domestic Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy		
Stage	**Carbon Dioxide Emissions (Tonnes CO_2 per Annum)**	
	Regulated	**Unregulated**
Baseline: Part L 2013 Compliant Development	7.2	32.2
After *Be Lean* Measures	6.1	32.2
After *Be Clean* Measures	6.1	32.2
After *Be Green* Measures	4.2	32.2
Stage	**Regulated Carbon Dioxide Savings**	
	Tonnes CO_2 per Annum	**Percentage**
Savings from *Be Lean* Measures	1.1	15.4%
Savings from *Be Clean* Measures	0.0	0.0%
Savings from *Be Green* Measures	1.8	25.8%
Cumulative On-Site Savings	**2.9**	**41.2%**

Table 20 Site Wide Carbon Dioxide Emissions and Cumulative Savings			
	Regulated Carbon Dioxide Emissions (Tonnes CO_2 per Annum)	Regulated Carbon Dioxide Savings	
		Tonnes CO_2 per Annum	Percentage
Baseline: Part L 2013 Compliant Development	576.1	0.0	
After *Be Lean* Measures	513.8	62.3	10.8%
After *Be Clean* Measures	598.9	-85.1	-14.8%
After *Be Green* Measures	366.1	228.5	39.7%
Cumulative On-Site Savings		**205.6**	**35.7%**

Table 21 Regulated Carbon dioxide emissions savings (TCO_2)		
	Annual	Over 30 years
Domestic shortfall to Zero Carbon	361.7	
Non-Domestic shortfall to 35% improvement	0	
Shortfall	361.7	10,851
Cash in lieu contribution (£60/TCO2)		£651,060

Appendix 7

WHOLE LIFE CARBON AND CIRCULAR ECONOMY SCOPING NOTE

Introduction

This scoping note outlines the proposed approach to the Whole Life Cycle Carbon Emissions (WLCCE) assessment and circular economy principles for the proposed development at 265 Burlington Road. This is in response to the Proof of Evidence document submitted by Raynes Park and West Barnes Residents Association: Planning Inspectorate Appeal Reference *APP/T5720/W/20/3250440* in October 2020.

Section 8.2 of that document states:

"Within the context of climate change, the Application neither assesses the embodied carbon footprint nor seeks to mitigate its effects. A high-rise development, such as the one proposed, inevitably will require large quantities of cement, concrete and steel, all which generate large amounts of carbon dioxide during manufacture. Even assuming the most optimistic carbon efficiency for such construction materials and methods, we estimate that the amount of embodied carbon for this development would exceed, 11,000 tonnes of CO_2. This would be impossible for the London Borough of Merton to offset."

Whole Life Cycle Carbon Emissions Assessment

Undertaking WLCCE assessments is a way to fully understand and minimise the carbon emissions associated with building designs over the entire life cycle of the building. This will be done for the proposed development at 265 Burlington Road in order to quantify the carbon dioxide emissions that will be released from the proposed development, considering not only operational and embodied emissions but also demolition, construction, and refurbishment/replacement cycles.

The Greater London Authority (GLA) released guidance in April 2020 on how to conduct WLCCE assessments. Planning applicants are required to completed and submit an assessment as the following stages:

> Pre application;

> Stage 1 submission (RIBA 2/3);

> Post construction (RIBA 6).

As planning has already been submitted to the London Borough of Merton for the proposed development a WLCCE assessment will be undertaken to meet the requirements of a Stage 1 submission, as noted above.

The following life cycle stages will be included within the assessment as standard:

- **A1 - A3 –** This includes all construction materials;
- **A4 –** This includes all construction related transportation to site;
- **A5 –** This includes all construction site impacts;
- **B3 – B5 –** This includes the repair, refurbishment, and replacement of building elements;
- **B6 - B7 –** This includes the operational use of energy, and water;
- **C1 - C4 –** This includes the end of life scenarios for building elements

Two sets of emission figures are required for both the Stage 1 submission and the post construction submission, the first set based on the current status of the electricity grid and the second set based on the expected decarbonisation of the electricity grid.

The Stage 1 submission of the assessment will be completed for the proposed development using the building model provided by TP Bennett and energy calculations from the Energy Statement produced by Hodkinson Consultancy for the planning submission. Following completion of the assessment an overview of the expected carbon emissions (over a 60-year period) will be reported by life cycle stage.

A comparison to the GLA baseline outlined in the guidance recently released by the GLA, which is undergoing consultation, will also be made. An overview of this baseline target has been set out in Table 1.

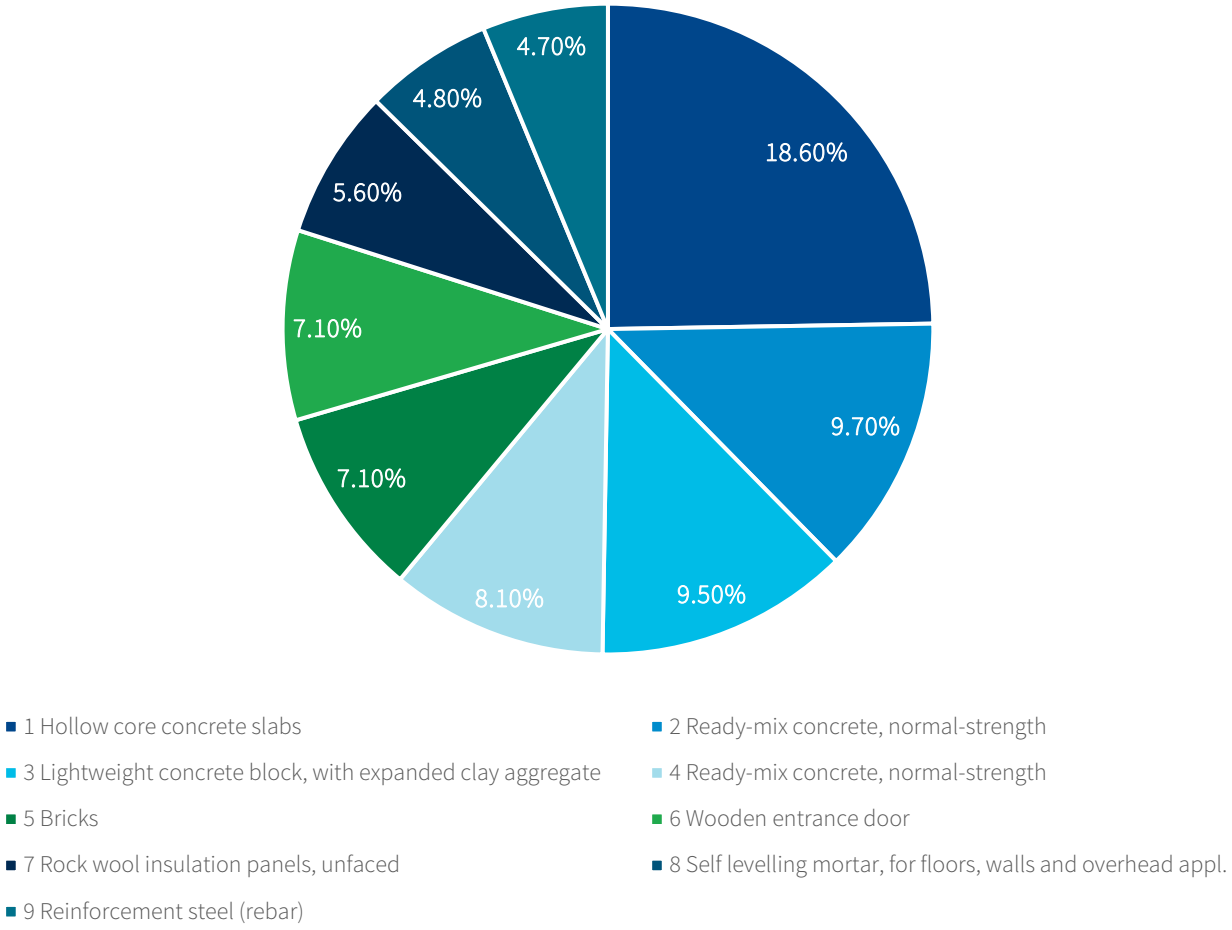
Table 1: Whole Life Carbon Baseline (GLA Guidance)

	Benchmark	Aspirational Benchmark
Modules A1 – A5	750 - 850 kg CO_2e/ m^2 GIA	450 - 500 kg CO_2e/ m^2 GIA
Modules B – C *(excluding B6 and B7)*	300 - 400 kg CO_2e/ m^2 GIA	180 - 240 kg CO_2e/ m^2 GIA

The benchmarks noted are used as a guide and provide a range to work towards rather than a set value. If the proposed development does not meet the above 'benchmark' targets the design team will seek to reduce emissions further, and this will be reflected in the post construction submission of the assessment. A further set of 'aspirational benchmarks' have been developed which are based on a 40% reduction in WLCCE on the first set of benchmarks. This is based on the World Green Building Council's target to achieve a 40% reduction in carbon emissions by 2030. Applicants who wish to go further are encouraged to consider how they can achieve reductions in line with the 'aspirational benchmarks'.

Once the above has been undertaken, the top ten products that are contributing to the embodied emissions will be identified, an example of this is shown in Figure 1 below. Once these are identified, specific recommendations will be made that will facilitate a reduction in the overall emissions, if undertaken.

Figure 1: Example of Most Contributing Materials - total $kgCO_2e$



OneClick LCA is the software that will be used to conduct the WLCCE Assessment. This is an industry approved piece of software for buildings and infrastructure and is compliant with the requirements set out in the guidance document produced by the GLA.

Circular Economy

A circular economy is defined in the Intend to Publish London Plan Policy SI7 'Reducing Waste and Supporting the Circular Economy' as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste.

Applying circular economy thinking to the built environment is complex, with many overlapping issues and trade-offs to consider. However, there are some core guiding principles that promote a regenerative and restorative whole systems approach that should be applied on every project. These are as follows:

Conserve resources and source ethically;

> Minimise the quantities of materials used

> Minimise the quantities of other resources used

> Specify and source materials and other resources responsibly and sustainably

Design to eliminate waste (and for ease of maintenance);

> Design for longevity, adaptability or flexibility and reusability or recoverability

> Design out construction, demolition, excavation, and municipal waste arising

Manage waste sustainably and at the highest value;

> Manage demolition waste

> Manage excavation waste

> Manage construction waste

> Manage municipal waste

Adoption of these three core principles on developments typically reduce the amount of raw and new materials required. Alongside this, a reduction in vehicle movements, air pollution, noise and greenhouse gas emissions would also be beneficial. There are also benefits from cost savings through the reduction in materials required.

The following principles are to be explored in more detail as the design at 265 Burlington Road progresses:

> Work towards <5% 'special' components across standardised and/or modular designs;

- Monitor energy, water, and waste during construction to reduce wastage during construction;
- Use of steel with at least a 20% recycled content to be considered where feasible;
- 100% of timber used on site, including timber used in the construction phase, will be sourced from sustainable forestry sources (e.g. PEFC and FSC) where possible;
- Internal wall constructions to be designed with future disassembly in mind;
- Aim to specify at least 20 products with Environmental Product Declarations;
- A target of at least 30% of the building is to be designed and constructed via off site manufacture;
- The site should meet the Greater London Authority target of 95% reuse/recycling/recovery during demolition;
- 100% of dwellings to be provided with adequate space for both recycling and refuse;
- All homes to be provided with a user guide to promote the principles of circular economy.

Appendix 8

FAO Raynes Park and West Barnes Residents Association

Planning Inspectorate Appeal Reference APP/T5720/W/20/3250440

Ambiental Environmental Assessment
Sussex Innovation Centre
Science Park Square
Falmer
Sussex
BN1 9SB

Dated: 19/11/2020

Dear Raynes Park and West Barnes Residents Association

Site Address: **265 Burlington Road, London, London Borough of Merton, KT3 4NE**

Ambiental have produced a Flood Risk Assessment (FRA) and Surface Water Drainage Strategy SWDS), report reference #4003, dated 22/05/2019. The report is specific to the proposed development at 265 Burlington Road. Post submission we have received the proof of evidence of The Raynes Park and West Barnes Residents Association, October 2020, which discusses the Associations views of the development.

Of the Letter, Section 9 Flood Risk, has been reviewed by Ambiental. Below are our responses to the paragraphs in the Letter.

Response to 9.1

We can confirm that based on the Environment Agency (EA) flood for map for planning the site is located within Flood Zones 2 and 3, Figure 2 of Report #4003/FRA. The main source of flooding to the site is Fluvial when referencing the EA flood map for planning. The Pyl Brook an EA main river is located to the north of the redline application boundary and is viewed as the source of flooding to the site from a fluvial mechanism, Paragraphs 4.2 to 4.17 discusses the risk of flooding to the site from this mechanism. Further climate change is considered in Section 5 of the report #4003/FRA. In addition, Ambiental, identified that the model was not as representative as it could have been and have made improvements to better understand the risk of flooding to the site and proposed development. The proposed development has been designed in accordance with the NPPF, 2019 and PPG Flood Risk and Coastal Change.

Surface Water flooding is discussed in Paragraph 9.1, with focus to Surface Water Flooding, an analysis of the EA longterm flood risk maps have been conducted with the FRA #4003. Paragraphs 4.18 to 4.24 discusses the risk in greater detail. To summarize three events were assessed, the 1 in 30-year event (high risk), 1 in 100 year (medium risk and viewed as present day event) and the 1 in 1000-year event (low risk event). The site is demonstrated not to be affected for the 1 in 30, high risk event and 1 in 100-year event, medium risk/present day event. The site is only demonstrated to be affected by surface water flooding for the more extreme event, 1 in 1000-year event (low risk).

The FRA has been produced in accordance with the Exception Test of the NPPF, the exception test consists of two parts;

Paragraph 160: The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

The FRA produced by Ambiental has discussed the existing risk of flooding to the site and how it could be mitigated post development to not increase flood risk elsewhere.

Response to 9.2

Ambiental have reviewed Appendix 1 of the Proof of Evidence of Raynes Park and West Barnes Residents Association, which does demonstrate surface water flooding in the London Borough of Merton. The roads listed do not evidence flooding directly from the existing site. The existing is an impermeable surfaced area. In addition of the images provided, the Roads listed are not fronting the site or acting as the main points of access/egress. It is therefore questioned of their relevance to the development, we do though appreciate that this would be of concern to residents and members. Ambiental as part of our work and in accordance with National, Local and London Plan Policies have promoted the use of Sustainable urban Drainage Systems (SuDS). Report 4003/SWDS, has discussed the runoff rates, volumes to be mitigated and how a betterment is proposed compared to the existing situation. Furthermore, the Risk of Surface Water Flooding maps of the EA previously discussed in this response, have demonstrated that for the High Risk and Medium Risk events the site would not be affected. It is only in the extreme low risk event that the site would be affected by surface water flooding based on the EA mapping.

With focus to access and egress in the event of flood, dedicated sections in Report 4003/FRA, 7.21 to 7.23 and accompanying figures demonstrates that access and egress is possible post development for the 1 in 100 +35% CC event.

Response to 9.3

Ambiental appreciate the concerns from the members. We have though produced a FRA #4003/FRA, that has been approved by the EA, London Borough of Merton and given that the analysis has identified where there is a risk from flooding and how they can be mitigated. In addition, we have promoted the use of SuDS to provide a betterment compared to the existing situation.

To conclude, our responses to the resident's comments have now been addressed and we respectfully ask that the objection be removed. However, should you have any questions or require any clarification, please do not hesitate to get in touch with me.

Yours Sincerely

Daniel Cook – Associate Director of AEA

AMBIENTAL
ENVIRONMENTAL ASSESSMENT

Appendix 9

Proposed illustrative view from junction of Westway and Brook Close looking South West

Existing view from junction of Westway and Brook Close looking South West